Réponses du Transporteur et du Distributeur à la demande de renseignements numéro 1 de la Régie («REGIE»)

Annexes

Réponses aux questions 3.2, 9.1, 9.3, 11.3, 11.4, 12.7, 13.1, 19.1, 19.5, 22.2, 24.1 et 26.1

Operating Company	*Description of Environmental Cost Recovery*
Consolidated Edison of New York	None
Florida Power and Light	Pursuant to statutes, the Florida Commission has established an Environmental Cost Recovery Clause that enables each utility to recover compliance costs associated with environmental laws or mandates that became effective after 1993. The clause is reviewed annually and permits recovery of environmental operations and maintenance costs, related capital investments, and a return on such capital investments.[1]
Connecticut Light and Power	None
NSTAR Electric	None
Public Service of New Hampshire	None
Western Massachusetts Electric	None
Alabama Power	Alabama Power's rate certificated new plant environmental (Rate CNP Environmental) allows for the recovery of Alabama Power's retail costs associated with environmental laws, regulations, or other such mandates. Rate CNP Environmental is based on forward-looking information and provides for the recovery of these costs pursuant to a factor that is calculated annually. Environmental costs to be recovered include operations and maintenance expenses, depreciation, and a return on certain invested capital.[2] Proposed and final environmental regulations could result in significant additional compliance costs that could affect future unit retirement and replacement decisions. On September 7, 2011, the Alabama PSC approved an order allowing for the establishment of a regulatory asset to record the unrecovered investment costs associated with any such decisions, including the unrecovered plant asset balance and the unrecovered costs associated with site removal and closure. These costs would be amortized over the affected unit's remaining useful life, as established prior to the decision regarding early retirement.[3]
Georgia Power	Under the 2010 alternative regulation plan, effective January 1, 2011, Georgia Power recovers approximately $3 million annually through the environmental compliance cost recovery tariff. The Company also maintains a reserve for environmental

[1] RRA Florida PSC Profile, accessed January 8, 2013.

[2] Southern Company, 2011 Form 10-K, at II-28.

[3] Southern Company, 2011 Form 10-K, at II-28.

	remediation as mandated by the Georgia PSC. The Company recognizes a liability for environmental remediation costs only when it determines a loss is probable and reduces the reserve as expenditures are incurred. Any difference between liabilities accrued and cost recovered through rates is deferred as a regulatory asset or liability. The annual recovery amount is expected to be reviewed by the Georgia PSC and adjusted in future regulatory proceedings. As a result of this regulatory treatment, environmental remediation liabilities generally are not expected to have a material effect on the Company's financial statements.[4]
Gulf Power	The Florida Legislature adopted legislation for an environmental cost recovery clause, which allows an electric utility to petition the Florida PSC for recovery of prudent environmental compliance costs that are not being recovered through base rates or any other recovery mechanism. Such environmental costs include operations and maintenance expenses, emissions allowance expense, depreciation, and a return on net average investment. This legislation also allows recovery of costs incurred as a result of an agreement between the Company and the Florida Department of Environmental Protection for the purpose of ensuring compliance with ozone ambient air quality standards adopted by the EPA.[5]
Mississippi Power	Since 1992, Mississippi Power has utilized an Environmental Compliance Overview (ECO) plan. The ECO plan establishes procedures to facilitate the PSC's review of the company's environmental compliance strategy and provides for base-rate recovery of costs (including the cost of capital) associated with PSC-approved environmental projects, on an annual basis, outside of a base rate case. Under the ECO plan, any increase in annual revenue requirement is limited to 2% of retail revenues. However, the plan also provides for carryover of any amount over the 2% limit into the next year's revenue requirement.[6]
Wisconsin Electric Power	None
Northern State Power – MN	Northern States Power – Minnesota has an Environmental improvement rider that recovers the costs of environmental improvements to the A.S. King, High Bridge and Riverside plants, which were renovated under the MERP program.[7]
Northern States Power – Wisc	None
Public Service Co. of Colorado	None

[4] Southern Company, 2011 Form 10-K, at II-235.
[5] Southern Company, 2011 Form 10-K, at II-291.
[6] RRA Mississippi PSC Profile, accessed January 8, 2013.
[7] Northern States Power - Minnesota, 2011 Form 10-K, at 6.

Southwestern Public Service - TX	The PUC of Texas has permitted utilities to include certain environmental compliance costs rate base for a cash return during construction (CWIP), following a finding that such treatment was necessary to maintain the utility's financial integrity.[8]

[8] RRA PUC of Texas Profile, accessed January 8, 2013.

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Rating Methodology:
Global Regulated Electric Utilities

Summary

This rating methodology covers electric utility companies worldwide whose credit profile is significantly affected by the presence of regulation. In order for a company to be included within this classification, at least 40% of its business should derive from regulated electric activities. The methodology thus excludes all other electric and power companies operating in the unregulated market, such as generators or power retailers, and other regulated industries such as water and gas utilities.

Based upon this definition, Moody's rates over 100 companies that either are electric utilities or are the parent holding companies for subsidiaries that operate predominantly in the electric utility business. In addition, Moody's rates a large number of utility operating subsidiaries of the ultimate parent companies. Figure 1 offers a breakdown of the ultimate parent companies by geographic region and rating category as of 1 February 2005:

Figure 1 – Electric Utility Companies Covered By This Methodology - by Geographic Region and Rating Category

	Aaa	Aa	A	Baa	Ba	B	TOTAL
Asia/Pacific		2	8	6	1	1	18
Europe	1	7	16	9	1		34
Japan		3	6				9
Americas			10	30	10	5	55
Totals	**1**	**12**	**40**	**45**	**12**	**6**	**116**

Moody's concludes that – despite the considerable number of common characteristics shared by electric utilities on a worldwide basis – country-by-country regulatory differences and cultural and economic considerations make this a local industry seen globally rather than a truly global industry.

In general, regulated electric utilities offer lenders some of the lowest business risks seen amongst corporate entities. However, many of the companies in question may also be active in unregulated businesses, such as speculative trading with exposure to unhedged commodity prices, which can be highly risky and may lead to serious financial difficulties despite the presence of a regulator.

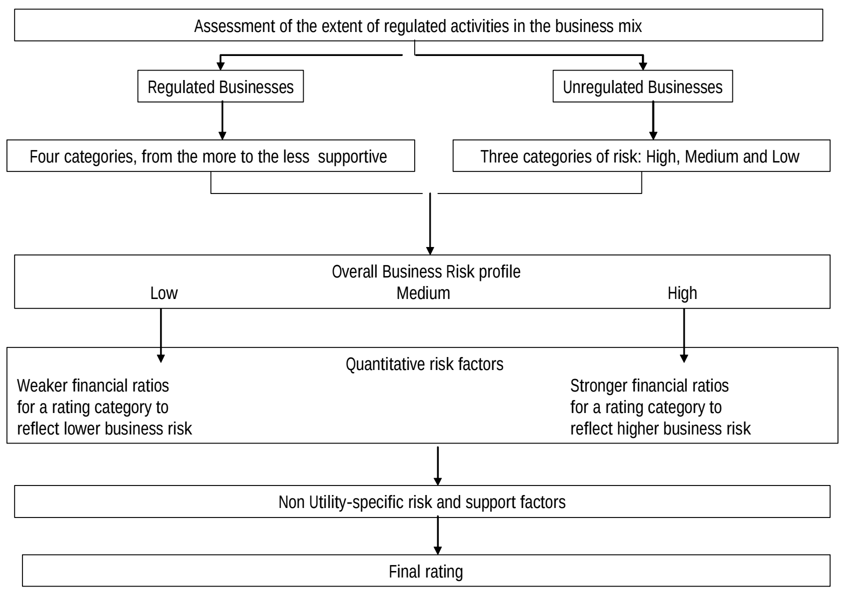
In addition, there is little consistency in the approach and application of regulatory frameworks around the world. Some are highly supportive of the "system" and those that operate within them, often offering implied sovereign support to ensure reliability of supply. Others are designed to protect the end-consumers from abuse of a monopoly supplier – a priority that may work to the detriment of companies operating in the system if they cannot meet regulators' expectations, or if the regulator fails to achieve the appropriate balance in the regulatory framework.

Under this rating methodology, Moody's:

1. Assesses the extent of a "regulated" company's exposure to its unregulated businesses. The strongest credit risk position is enjoyed by a company whose business is wholly regulated. Where non-utility activities are substantial, the main credit driver will be the assessment of these businesses.
2. Assesses the credit support that is gained from operating within a particular regulatory framework.
3. Considers the exact level of risk posed by the unregulated businesses to the overall credit.
4. Looks at six specific financial ratios which are considered the most useful when assessing an electric utility and the adjustments made to calculate these.
5. Considers more generic risk factors that are not specific to utility companies, e.g. the adequacy of liquidity arrangements, appetite for acquisitions.

Figure 2 depicts the broad methodology for regulated utilities:

Figure 2



Profile of Key Characteristics by Rating Category

Figure 3 below describes the key characteristics of regulated electric utilities falling within each rating category.

Figure 3

Rating Category	Ownership	Market and Regulatory Position	Non-Regulatory Risks
Aaa	Wholly owned by a Aaa-rated sovereign with unquestioned support if needed	Regulatory framework allows full cost recovery. No evidence of a regulator ever blocking regulated price rises. Large and well-protected service area. Support for the electric transmission system outweighs customer considerations. No or very limited competition. If owned by a Aaa-rated sovereign, the risk is deemed equivalent to that of the Aaa parent.	Zero or immaterial when considering revenue, earnings, cashflow and assets.
Aa	Wholly or majority owned by a Aaa or Aa rated sovereign or investor-owned with an effective monopoly and highly supportive regulation	Regulatory framework allows full cost recovery. No evidence of a regulator ever blocking regulated price rises. Large and well-protected service area. Support for the electric transmission system outweighs user considerations. No or very limited competition. Financially robust under all scenarios with unquestioned access to the financial markets and very strong liquidity. Many companies in this category are either sovereign-owned or are deemed to have certain support from the regulatory system or government in times of stress.	Non-electric utility businesses are predominantly low-risk businesses such as natural gas distribution

Figure 3

Rating Category	Ownership	Market and Regulatory Position	Non-Regulatory Risks
A	Wholly or partially owned by a Aa or A rated sovereign or rating is based on intrinsic strength without factoring in any uplift for sovereign ownership; or investor-owned with highly predictable and reliable regulation.	Medium to large-sized companies where the core operation is a stable, regulated electric utility business. Well-capitalized companies with moderately strong financials, that face more business risk and/or have weaker financial metrics than the issuers in the Aa category. If exposed to substantial competition, cost structure and rates are highly competitive for their region. Companies in this category often face greater competitive pressures than those in the Aa rating category. The regulatory environment has above-average stability and reliability. Recovery of costs under regulated rates is fairly predictable with automatic fuel and purchased power recovery provisions in some jurisdictions. Service territory has moderate to strong demographics. Customer base is predominantly commercial and residential, and issuer has only modest potential for harm from loss of important industrial customers. There may be some history of a lack of support by regulators on large spending decisions for the regulated business but any amounts disallowed have had only a modest impact on the issuer's creditworthiness.	Larger companies in this category may have substantial non-regulated businesses but the overall profile remains dominated by regulation. Smaller companies in this category are likely to have very limited unregulated activities.
Baa	Wholly or partially owned by a A or Baa rated sovereign or rating is based on intrinsic strength without factoring in any uplift for sovereign ownership; or investor-owned with highly predictable regulation that has modest potential for unexpected rate outcomes.	Medium-sized and smaller companies with average to below-average capitalization and cash flow coverages, that face more business risk and have weaker financial metrics than the issuers in the A category. Core operations are dominated by fairly stable integrated electric utility businesses. Issuers may be more exposed to competition, less competitive in costs and rates in their region, and may be at risk for the loss of large industrial customers. There may be substantial competition for wholesale customers and some competition for retail and small commercial customers. The regulatory environment has average to below-average stability and reliability. The regulatory environment may sometimes be challenging and politically charged. Recovery of costs under regulated rates is usually predictable with fuel and purchased power recovery provisions in some jurisdictions, but there is a greater tendency for regulatory surprises. There may be some history of regulators disallowing large spending decisions for the regulated business and disallowed amounts may have had a meaningful impact on the issuer's creditworthiness.	Issuers may have other utility and energy businesses, especially natural gas distribution. Unregulated non-utility businesses may be substantial in size relative to the regulated business, and unregulated businesses may have a higher risk profile than is the case for most issuers in the A category. Some issuers in this rating category have substantial investments in higher-risk unregulated businesses, including merchant power, energy trading, oil and gas production, real estate, telecom.
Ba	Most of the issuers that are rated Ba are holding companies for regulated utility subsidiaries that are rated in the Baa category. Excluding emerging markets, very few regulated utility operating companies have speculative grade senior ratings.	Medium-sized and smaller companies with below-average capitalization and cash flow coverages, that face more business risk and have weaker financial metrics than the issuers in the Baa category. Core operations may include fairly stable integrated electric utility businesses, but these are offset by substantial debt-financed investments in unregulated activities that are higher risk or have performed poorly. Liquidity is likely to be weak, especially at the parent holding company. Bank financing may be secured and the issuer may have limited headroom under its covenants. Some issuers in this rating category are substantially more exposed to competition, less competitive in costs and rates in their region, and may be at risk for the loss of large industrial customers. There may be substantial competition for all types of customers: wholesale, retail, and small commercial. Regulatory environment may be inconsistent, with surprisingly unfavorable rate decisions or regulatory unwillingness to make timely changes to address unexpected market volatility. Issuer has below-average relationship with regulators. There may be uncertainty of recovery for spikes in costs such as for fuel or purchased power.	Compared to those Baa issuers that also have substantial riskier unregulated investments, the investments are proportionately larger in relation to the regulated utility business and have performed more poorly. Issuers may have other utility and energy businesses, especially natural gas distribution. Unregulated businesses have a higher risk profile than is the case for most issuers in the Baa category. Issuers in this rating category usually have substantial investments in higher-risk unregulated businesses, including merchant power, energy trading, oil and gas production, real estate, telecom.
B	Some issuers in this rating category are majority owned by low-rated sovereign entities	Medium-sized and smaller companies with well below-average capitalization and cash flow coverages, that face more business risk and have weaker financial metrics than the issuers in the Ba category. Core operations may include fairly stable integrated electric utility businesses in some cases, but these are outweighed by large highly risky unregulated activities that were debt-financed and have performed extremely poorly. Some issuers have very poor regulatory relationships. Regulators may have engaged in second-guessing of spending decisions and denied recovery of amounts that jeopardize the issuer's ability to fund its ongoing business activities. Liquidity is likely to be very weak, especially at the parent holding company. Bank financing may be secured and the issuer may have limited headroom under its covenants. There is a significant risk of detrimental sovereign actions such as: politically motivated interference in the ratemaking process, actions based on social/political needs rather than financial returns. There may be a history of using the utility as a government funding source. These issuers also face higher potential for disruption in power and financial markets. The financial profile of these issuers may be relatively strong but susceptible to rapid deterioration.	Unregulated businesses tend to be higher-risk activities, including merchant power and energy trading.

Stand-Alone Company Credit Risk Factors

QUALITATIVE FACTORS

General rating methodology

Moody's framework for rating regulated electric utilities is constructed around a number of credit risk factors rather than on any one particular metric such as a financial ratio.

The first step is to assess the extent of a "regulated" company's exposure to unregulated businesses. The strongest position is enjoyed by those companies operating in a wholly regulated business. However, the majority of the companies we consider in this sector have additional exposure to unregulated businesses, whether those are unregulated power generation or supply activities or non-electric unregulated businesses.

The second step in the methodology is to assess the credit support that is gained from operating within a particular regulatory framework. Moody's considers each regulatory system and assesses whether there is a high or low expectation of predictability in the system and whether operators can reasonably expect to recover their costs and investments through regulator-approved revenue increases.

The third step is to consider the exact level of risk posed by the unregulated business. Note that a relatively small, but high-risk, unregulated business has the capacity to cause a major credit deterioration for the entity as a whole.

This then leads to an overall assessment of the qualitative business risk of the company's activities.

Each of these steps is now considered in more detail.

Assessment of the extent of regulation around a business

Moody's classifies companies into four categories to determine how much their business risk is influenced by regulated activities.

This is a measure of the relative weight of regulated to unregulated business within a rated entity. Weighting is based on the element of earnings, cashflows and assets that fall within or outside a regulatory framework. In order to define the "unregulated business" percentage, Moody's takes the highest percentage out of the three measures respectively based on earnings, cashflows and assets. This then allows us to derive the regulated business percentage and to assign the entity to one of the four categories as below:

Category 1: A wholly regulated business

Category 2: 80-99% of the business is regulated

Category 3: 60-80% of the business is regulated

Category 4: 40-60% of the business is regulated

Assessment of the supportiveness of the regulatory framework

We also classify entities into the following four categories based on a comparative assessment of the predictability and stability of regulated cashflows for a company operating under a particular regulatory framework – or the Supportiveness of Regulatory Environment (SRE):

SRE 1: Regulatory framework is fully developed, has shown a long track record of being highly predictable and stable and there is a very high expectation of timely recovery of costs and investments.

SRE 2: Regulatory framework is fully developed, is predictable and stable and there is a high expectation of timely recovery of costs and investments.

SRE 3: Regulatory framework is well developed but there is a lower assurance of timely recovery of costs and investments; there may also be evidence of some inconsistency or unpredictability in the way that the regulatory framework has been applied.

SRE 4: Regulatory framework is still being developed, is unclear, is undergoing considerable change or has a history of being unpredictable.

Consideration is given to the substance of a regulatory ringfence including restrictions on dividends, restrictions on capex and investments, separate financings, separate legal structure, and limits on the ability of the regulated entity to support its parent company. There is more credit uplift if these provisions are contained within a license or clear regulatory rules rather than in financing documents that can be renegotiated.

In general, Moody's sees regulatory frameworks as being fundamentally designed to achieve a balance between supply reliability and service, efficiency, prices, and financial returns to the utilities. All jurisdictions consider all of these factors, but there are regional differences in their application and degree of emphasis, as discussed below:

- Protecting the "system" to ensure a reliable supply. In such cases, the company receives considerable implied support from the government, which may be at the expense of the end-user. Japan is an example of a system that emphasizes these factors more heavily. Other examples would include systems where considerable infrastructure build-out is needed and incentives for investment outweigh the need to control customer prices. Italy and Spain are examples of jurisdictions that emphasize these factors more strongly.
- Protecting consumers from monopoly over-charging or from sudden large rate increases that could be imposed more gradually. When these concerns are more heavily weighted, companies are at financial risk if they cannot economically deliver a service at the regulated price. Some degree of financial deterioration of the utility may be accepted in the interests of protecting consumers from higher prices. California demonstrated a heavier weighting of these factors when wholesale market prices spiked in 2000-2001.
- Attempting to achieve a balance between satisfying the need of companies to be able to provide a return to their stakeholders and endeavoring to encourage efficiency and hold down prices. The regulatory systems of Australia and the UK are good examples of models that consistently stress these factors most heavily.

Examples of regulatory frameworks in each category:

SRE 1:	Australia, Canada, Iceland, Finland, Hong Kong, Japan, UK
SRE 2:	Austria, France, Germany, Italy, New Zealand, Portugal, Netherlands, Norway, Singapore, Spain, Sweden, U.S. states: Alabama, Delaware, District of Columbia, Florida, Georgia, Hawaii, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Mississipi, Nebraska, New York, North Carolina, Oklahoma, Oregon, Rhode Island, South Carolina, Tennessee, Utah, Virginia, Washington, Wisconsin
SRE 3:	Chile, Czech Republic, Estonia, Greece, Israel, Korea, Latvia, Malaysia, Taiwan, Thailand, U.S. states: Arizona, Arkansas, California, Colorado, Connecticut, Idaho, Illinois, Kansas, Louisiana, Maine, Michigan, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, North Dakota, Ohio, Pennsylvania, South Dakota, Texas, Vermont, West Virginia, Wyoming
SRE 4:	Brazil, Bulgaria, China, Colombia, India, Indonesia, Philippines, Romania, South Africa

Assessment of the risk of the unregulated businesses

A key component of Moody's ratings of electric utility companies is an individual assessment of the business risks as well as the financial risks for each company. The regulated activities of electric utility companies generally are more stable and carry lower risk than the business activities of most other corporate entities. As a result, utility companies are rated substantially higher than industrial companies that have a similar financial profile.

However, as noted above, many companies in the electric utility industry have a mix of regulated and unregulated businesses. These companies typically combine a low-risk electric utility business and what is in most cases a higher-risk unregulated business. The risk contribution from the unregulated businesses is determined by:

1) The relative proportion of the total company's business that comprises unregulated activities; and

2) The degree of risk of the particular unregulated activities.

Companies that have substantial unregulated activities that carry high or medium risk require stronger financial ratios to achieve a particular rating level than companies whose unregulated activities are small in size or are low in risk. Note that a company with a low-risk business profile will be rated more highly than a company that has the same financial profile but which has larger or higher-risk unregulated activities. The presence of a high proportion of risky non-regulated businesses could account for as much as a six rating notch differential over another company that was in a wholly regulated business.

Figure 4 shows a broad categorization of the relative riskiness of unregulated activities that are commonly part of the business of electric utility companies. These are grouped into broad categories of high, medium and low business risk. These classifications are general and do not fully capture individual company characteristics or differences in regional markets. For example, uncontracted wholesale power generation is likely to be riskier in the US, where the market is fragmented, than in Germany, where a smaller number of companies have relatively large market shares.

This categorization of the risks of unregulated businesses can be summarized as follows:

Category 1 – High

Category 2 – Medium

Category 3 – Low

Figure 4

High Business Risk
Merchant power generation that is located in highly competitive markets or merchant power generation that is high-cost and is not sold under long-term contract to a highly creditworthy counterparty.
Energy trading and marketing that is speculative or market-making in nature.
Investments in unregulated international power assets in unfamiliar markets.
Various investments outside the core area of industry expertise. Frequent areas for such diversified investment include: telecommunications; oil and gas exploration and production; and real estate development.
Medium Business Risk
Merchant power generation in markets in which competition is limited by the large market share of each participant, by geographic isolation, or by the utility's control of critical production and transmission infrastructure, or because the unregulated generation is relatively low-cost.
Affiliated energy generation and supply businesses that sell primarily under contract to the regulated utility or within the utility's core market area.
Energy trading and marketing that is strictly limited to trading around the utility's physical generation and transmission assets, with little or no market making trading.
Operation of coal mines or natural gas pipelines that are closely integrated with the utility's regulated generation business as the source of fuel for the regulated power plants.
Low Business Risk
Unregulated electricity generation that is wholly sold under long-term contract to highly creditworthy counterparties which assume all risk of fluctuation in the market prices of fuel and electricity.
Unregulated or lightly regulated electricity generation that is very well insulated from competition because of the utility's high market share or its ownership and tight control of the key infrastructure assets that are needed to generate or deliver electricity.
Selling and maintaining customer equipment that is related to the core utility business, or contractual arrangements to manage customers' fuel and electricity needs, under which the customer retains all risk of fluctuation in market prices.

High-Business-Risk Unregulated Activities

This higher business risk category includes merchant generation in highly competitive markets, energy trading and marketing that is speculative or market-making in nature, and unregulated electric generation investments in unfamiliar or poorly developed markets.

Merchant energy is considered to include unregulated power generation for which the output is not sold under long-term contract with a creditworthy counterparty. In the merchant model, power is sold into the competitive or merchant market, and cash flows are subject to market price volatility. The absence of contracts results in less predictable cash flows and higher business risk.

Energy marketing and trading is a related activity that often has a high level of risk associated with it. There can be substantial differences in the riskiness of energy trading and marketing, depending upon the strategy and size of this activity. Speculative trading activity has the potential to produce large swings in income or loss, has limited risk transparency, and may result in large swings in liquidity needs. Trading and marketing activities that are ancillary to a core utility business (trading around the physical assets) are considered to be much less risky than pure proprietary or speculative trading. However, all energy trading is viewed as having a higher business risk profile than regulated activities.

A number of other investments outside the core sector of industry expertise are likely to fall into the high business risk category. Such areas of diversification may include telecommunications, equity investments in leases, oil and gas exploration and production, miscellaneous manufacturing and real estate development.

Some companies have high-risk businesses that are sizeable in comparison to the more stable regulated business. These companies are expected to have financial ratios that are closer to those of an unregulated industrial company in the same rating category, in contrast to the financial ratios typical for a lower-risk regulated utility company. Companies with substantial high-risk activities will need lower leverage, and stronger cash flow coverage ratios to qualify for a particular rating category.

Medium-Business-Risk Unregulated Activities

Unregulated electricity generation may be medium-risk if competition is substantially limited by the structure of the market or by the generators' control over production and transmission infrastructure that is needed to reach customers, or if the unregulated generation has costs that are well below-average.

Also likely to fall into this category is unregulated generation that is largely sold back to the regulated utility without long-term contracts. This activity has a lower risk than merchant sales to third parties if the generating assets are advantageously located for the regulated utility. This is particularly likely when generating assets have been legally separated from the regulated utility. As part of the transition to deregulation, many utilities were required to disaggregate their generation, and these plants were often put into affiliated supply companies under a common parent holding company, but continue to sell a large portion of their output to the affiliated regulated utility.

Medium-risk unregulated generation is likely to have significant exposure to fluctuations in the price of fuel, or capital spending needs to maintain competitiveness or to meet environmental requirements.

Lower-Business-Risk Unregulated Activities

This category includes unregulated generation of electricity that is sold under long-term contract to highly creditworthy counterparties, with the purchaser bearing the risk of any change in the market price of fuel and wholesale power.

Unregulated electricity generation may also be low-risk if there is little competition due to the structure of the market or the generators' exclusive control over critical production and transmission infrastructure that is needed to reach customers.

Below-average costs are not necessarily sufficient for unregulated generation to be classified in the low-risk category. Without other mitigating factors being present, low-cost merchant generation is likely to be classified as medium-risk due to the potential for changes in relative cost competitiveness as market conditions change.

Conclusion on Qualitative factors

This analysis of qualitative factors – the split of regulated versus non regulated activities and the respective risk analysis of those businesses – allows us to determine how stable and predictable we feel the cashflows of the company should be. The lowest business risk will be a company with wholly regulated activities in a supportive regulatory framework. The highest business risk will be a company with a high degree of exposure to non-regulated businesses when those businesses are viewed to be relatively high-risk.

Companies with a lower business risk can have weaker financial metrics than one with higher business risk for the same rating category.

QUANTITATIVE FACTORS

Key ratios

Moody's uses financial ratio analysis as part of our quantitative analysis of all corporates, including electric utilities. Ratio analysis is a helpful way of comparing one company's performance to that of another and the performance in one year to that in another.

However, the importance of ratio analysis can be overstated. No two companies look exactly alike from a qualitative assessment standpoint and each company we rate is constantly changing. It is impossible to assign an accurate credit rating on the basis of financial ratio analysis alone, even less so on the basis of any one ratio. Therefore, Moody's does not have any specific "hurdle rate" to explain which ratio will make the difference between any two rating categories.

Nonetheless, we have identified six core ratios which we consider to be the most useful when looking at an electric utility company. These are supplemented by other ratios which are particularly useful for various local regulatory frameworks.

The six core ratios[1] are as follows:

Primary:

1. Retained Cashflow[2] / Adjusted gross debt[3]
2. FFO / Adjusted gross debt
3. FFO / Interest
4. Adjusted gross debt / Regulated Asset Value[4], or Capitalization

Secondary:

5. EBITDA Margin
6. Retained Cashflow / Capex

While other factors considered in this report may outweigh pure quantitative analysis, it is possible to provide broad guidance on the ratio ranges that may generally be seen at different rating levels.

In general, other factors – such as the degree of likely support from a sovereign – tend to outweigh financial ratios for companies operating in a very low business risk environment such as Japan or Finland. Similarly, considerations such as an undeveloped regulatory framework, potential political risk or relatively opaque corporate governance may outweigh financial ratios for companies operating in a high business risk environment. Our analysis also considers prospective future performance, which may differ from historic ratios.

Financial ratios are more useful for companies operating in a low business risk environment where there is a high degree of regulated activities and a supportive regulatory system. This might include the UK, US transmission and distribution utilities (T&Ds), Canada or many European countries. Medium-business-risk operating environments would include US integrated utilities.

As noted above, this is a local industry found globally rather than one where companies compete with each other outside their own local area. While companies in, say, Japan or in the US or in Germany, all tend to have similar profitability dynamics, there is little global similarity. Hence, measures of profitability are helpful in rank-ordering companies within their own local regulatory operating environment, but not helpful as a global indicator of ratings.

Measures of interest cover, cashflow to debt and balance sheet measures tend to be more consistent across the whole universe of global regulated electric utility companies.

As a guide, the following primary ratios, as set out in Figure 5, might be expected for a utility company without factoring in any uplift for possible sovereign support.

Figure 5

	Aa	*Aa*	*A*	*A*	*Baa*	*Baa*	*Ba*	*Ba*
Business risk	***Medium***	***Low***	***Medium***	***Low***	***Medium***	***Low***	***Medium***	***Low***
FFO int. cov. (X)	> 6	>5	3.5-6.0	3.0-5.7	2.7-5.0	2-4.0	<2.5	<2
FFO/Debt (%)	>30	>22	22-30	12-22	13-25	5-13	<13	<5
RCF/Debt (%)	>25	>20	13-25	9-20	8-20	3-10	<10	<3
Debt/Capital (%)	<40	<50	40-60	50-75	50-70	60-75	>60	>70

Other utility-specific issues relevant to quantitative analysis

Power Purchase Agreements ("PPAs")

Although many utilities own and operate power stations, some have entered into PPAs to source electricity from third parties to satisfy retail demand. The motivation for these PPAs may be one or more of the following: to outsource operating risks to parties more skilled in power station operation, to provide certainty of supply, to reduce balance sheet debt or to fix the cost of power. While Moody's regards these risk reduction measures positively, some aspects of PPAs may negatively affect the credit of utilities.

1. *Please see Appendix 2 for definitions.*
2. *Retained Cashflow (RCF) is FFO less dividends*
3. *Moody's concentrates on gross debt but will also consider net debt ratios if the cash is clearly being held for future debt maturities or for reasons such as hedging. A good example of this would be a company that has hedged the exchange risk of an overseas investment with the local currency debt despite having surplus cash at the parent level. In such cases, the net ratio will take predominance over the gross ratio.*
4. *The Regulated Asset Value (RAV) or Regulated Asset Base (RAB)*

Under most PPAs, a utility is obliged to pay a capacity charge to the power station owner (which may be another utility or an Independent Power Producer – IPP); this charge covers the portion of the IPP's fixed costs in relation to the power available to the utility. These fixed payments cover debt service and are made irrespective of whether the utility requires the IPP to generate. When the utility requires generation, a further energy charge, to cover the variable costs of the IPP, will also be paid by the utility. Some other arrangements are characterized as tolling agreements, or long-term supply contracts, but most have similar features to PPAs and are thus analyzed by Moody's as PPAs.

Factors determining the treatment of PPAs

PPAs have a wide variety of financial and regulatory characteristics and are thus each particular circumstance may be treated differently by Moody's. The most conservative treatment would be to treat the PPA as a debt obligation of the utility as, by paying the capacity charge, the utility is effectively providing the funds to service the debt associated with the power station. At the other end of the continuum, the financial obligations of the utility could also be regarded as an ongoing operating cost, with no long-term capital component recognized. Factors which determine where on the continuum Moody's treats a particular PPA are as follows:

- Risk management: An overarching principle is that PPAs have been used by utilities as a risk management tool and Moody's recognizes that this is the fundamental reason for their existence. Thus, Moody's will not automatically penalize utilities for entering into contracts for the purpose of reducing risk associated with power price and availability. Rather, we will look at the aggregate commercial position, evaluating the risk to a utility's purchase and supply obligations. In addition, PPAs are similar to other long-term supply contracts used by other industries and their treatment should not therefore be fundamentally different from that of other contracts of a similar nature.
- Pass-through capability: Some utilities have the ability to pass through the cost of purchasing power under PPAs to their customers. As a result, the utility takes no risk that the cost of power is greater than the retail price it will receive. Accordingly Moody's regards these PPA obligations as operating costs with no long-term debt-like attributes. PPAs with no pass-through ability have a greater risk profile for utilities. In some markets, the ability to pass through costs of a PPA is enshrined in the regulatory framework, and in others can be dictated by market dynamics. As a market becomes more competitive, the ability to pass through costs may decrease and, as circumstances change, Moody's treatment of PPA obligations will alter accordingly.
- Price considerations: The price of power paid by a utility under a PPA can be substantially below the current spot price of electricity. This will motivate the utility to purchase power from the IPP even if it does not require it for its own customers, and to sell excess electricity in the spot market. This can be a significant source of cash flow for some utilities. On the other hand, utilities that are compelled to pay capacity payments to IPPs when they have no demand for the power or when the spot price is lower than the PPA price will suffer a financial burden. Moody's will particularly focus on PPAs that have mark-to-market losses that may have a material impact on the utility's cash flow.
- Excess Reserve Capacity: In some jurisdictions there is substantial reserve capacity and thus a significant probability that the electricity available to a utility under PPAs will not be required by the market. This increases the risk to the utility that capacity payments will need to be made when there is no demand for the power. For example, Tenaga, the major Malaysian utility, purchases a large proportion of its power requirement from IPPs under PPAs. PPA payment totalled 42.5% of its operating costs in FY2004. In a high reserve margin environment existing in Malaysia, capacity payment under these PPAs are a significant burden on Tenaga, and some account must be made for these payments in its financial metrics.
- Risk-sharing: Utilities that own plant bear the associated operational, fuel procurement and other risks. These must be balanced against the financial and liquidity risk of contracting for the purchase of power under a PPA. Moody's will examine on a case-by case basis which of these two sets of risk poses greatest concern from a ratings standpoint.
- Default provisions: In most cases, a default under a PPA will not cross-default to the senior facilities of the utility and thus it is inappropriate to add the debt amount of the PPA to senior debt of the entity. The PPA obligations are not senior obligations of the utility as they do not behave in the same way as senior debt. However, it may be appropriate in some circumstances to add the PPA obligation to Moody's adjusted debt, in the same way as other off-balance sheet items.[5]

5. See "The Analysis of Off-Balance Sheet Exposures – A Global Perspective", Rating Methodology, July 2004.

Each of these factors will be weighed by Moody's analysts and a decision made as to the importance of the PPA to the risk analysis of the utility.

Methods of accounting for PPAs in our analysis

According to the weighting and importance of the PPA to each utility and the level of disclosure, Moody's may analytically assess the total obligations for the utility using one of the methods discussed below.

Operating Cost: If a utility enters into a PPA for the purpose of providing an assured supply and there is reasonable assurance that regulators will allow the costs to be recovered in regulated rates, Moody's may view the PPA as being most akin to an operating cost. In this circumstance, there most likely will be no imputed adjustment to the obligations of the utility.

Annual Obligation x 8: In some situations, the PPA obligation may be estimated by multiplying the annual payments by a factor of eight. This method is sometimes used in the capitalization of operating leases.[6] This method may be used as an approximation where the analyst determines that the obligation is significant but cannot be quantified otherwise due to limited information.

Net Present Value: Where the analyst has sufficient information, Moody's may add the NPV of the stream of PPA payments to the adjusted obligations of the utility. The discount rate used will be the cost of capital of the utility.

Debt Look-Through: In some circumstances, where the debt incurred by the IPP is directly related to the off-taking utility, there may be reason to allocate the entire debt (or a proportional part related to share of power dedicated to the utility) of the IPP to that of the utility.

Mark-to-Market: In situations in which Moody's believes that the PPA prices exceed the spot price and thus a liability is arising for the utility, Moody's may use a net mark-to-market method, in which the NPV of the net cost to the utility will be added to its total obligations.

Consolidation: In some instances where the IPP is wholly dedicated to the utility, it may be appropriate to consolidate the debt and cash flows of the IPP with that of the utility. Again, if the utility purchases only a portion of the power from the IPP, then that proportion of debt might be consolidated with the utility.

In some circumstances, Moody's will adopt more than one method to estimate the potential obligations imposed by the PPA. This approach recognizes the subjective nature of analyzing agreements that can extend over a long period of time and can have a different credit impact when regulatory or market conditions change. In all methods the Moody's analyst will account for the revenue from the sale of power bought from the IPP. We will focus on the term to maturity of the PPA obligation, the ability to pass through costs and curtail payments, and the materiality of the PPA obligation to the overall cash flows of the utility in assessing the affect of the PPA on the credit of the utility.

Nuclear liabilities

In several integrated European companies, nuclear power generation form a significant component of their power generation activities. These activities will usually be unregulated but comprise an important element of the analysis of these companies. The analysis is complicated by the lack of consistency in treating nuclear related items in different countries.

In general, nuclear waste management obligations are factored into debt using Moody's methodology for unfunded pensions. This recognizes the uncertainty of final amounts and timing in assessing the likely call on future cash flows. The methodology simulates a pre-funding of the obligation, taking into account access to the equity market and management's probable funding strategy. The existing debt-to-equity mix is generally used as a starting point.

For ratio analysis purposes, Moody's excludes reprocessing provisions from its calculation of total nuclear liability provisions if such provision is expected to remain a permanent component of the nuclear liabilities that will continually be replenished as fuel is used in the production process in line with the expectation that nuclear power will remain an important component of the company's generation portfolio for the foreseeable future.

For nuclear provisions that are recorded and funded on balance sheet, Moody's does consider the impact of their inclusion on adjusted debt ratio. However, we do recognize that their inclusion does understate the company's degree of financial flexibility for meeting financial debt obligations given the long duration of those provisions. This

6. *For further discussion of the methodology of rating lease obligations see "Off-Balance Sheet Leases: Capitalization and Ratings Implications – Out of Sight But Not Out of Mind", October 1999.*

is because the cash outflows for these liabilities will not occur for a number of years and will then extend out in a form similar to operating expenses over a further extended period of time. This is taken into account by looking at both gross and net debt ratios.

U.S. Securitization

Beginning in the late 1990s, legislatively approved stranded cost securitization has become an increasingly used financing technique among investor-owned electric utilities. In its simplest form, a stranded cost securitization isolates a dedicated stream of cash flow into a separate special purpose entity (SPE) and uses that stream of cash flow to provide annual debt service for the securitized debt instrument.

Moody's generally treats securitization debt of industrial and financial issuers as being on-credit debt. The debt that is being securitized usually carries a rating that is higher than that of the issuing entity, and the assets that are being sold to the separate SPE are often of better quality than the assets that remain with the issuer.

Stranded cost securitization differs somewhat from other generic securitizations because the asset being sold is often of poor quality prior to the passage of legislation and the completion of a securitization. In most cases, the asset represents stranded costs that would have been written off by the utility in the absence of legislation allowing for recovery through a surcharge on regulated customers.

Instead, the state regulator – and sometimes the state legislature – establishes the authority for a surcharge on customers' bills, and authorizes the sale of securitized debt. The utility then sells the right to collect a dedicated stream of future cash flows from its regulated customer base that is sufficient to provide debt service on the securitized piece of debt. The issuing utility is typically required to use the proceeds of the debt offering to retire both debt and equity in a manner intended to maintain a predetermined capital structure. The securitization generally has language that enables the tariff to be unilaterally raised in the event that future sales turn out to be lower than originally planned.

Generally speaking, Moody's views stranded cost securitization as being credit-neutral to credit-positive since it typically addresses a major credit overhang, some form of potential stranded costs, and legislatively requires the utilities to use the proceeds for debt and equity reduction in a manner that targets a relatively conservative capital structure.

For the most part, the securitization tariff is separate from the "general tariff" charged to customers and any increase in the size of the securitization tariff is not at the expense of the general tariff. However, in two states, Illinois and Michigan, the utilities operate under a rate freeze, which precludes them from raising rates until the termination of their respective rate freeze. As such, any increase in the securitization tariff is at the expense of revenues and cash flow that would be available to service debt of the remaining creditors of the utility.

Along the same lines, Moody's notes that the size of the securitization tariff relative to the total tariff is an important element in evaluating the credit implications of a securitization because it can impact the future ability of a utility to obtain subsequent rate relief for other costs of service. In effect, customers do not discriminate between the securitization tariff and the general tariff when paying their bills. Consequently, to the extent that the securitization tariff needs to be increased, the financial flexibility and associated credit quality of the utility may be compromised, particularly if the securitization tariff is large relative to the general tariff and if the increase is taken from the cash flow of the utility. As a consequence, Moody's considers the impact that a securitization may have on the ability of the utility to raise rates in the future.

In calculating balance sheet leverage, Moody's treats the securitized bonds as being fully non-recourse to the utility even though accounting guidelines require the debt to appear on the utility's balance sheet. Consistent with this view, all balance sheet capitalization metrics exclude the securitized debt from the capital structure given the legal separateness that exists between the debt of the utility and the debt of the SPE, and the fact that regulators set future rates based upon a capital structure that does not include the securitization debt.

However, in looking at cash flow coverages, Moody's analysis stresses ratios that include the securitized debt in the company's total debt as being the most consistent with the analysis of comparable companies. This recognizes that regulatory approval for recovery of stranded costs and securitization are not always inextricably linked. Many utilities have approval for recovery of stranded costs but do not execute a securitization financing. Regulatory approval of stranded costs can be a credit transforming event when there is substantial doubt about recovery. However, the subsequent completion of a securitization financing does not change the amounts that are expected to be recovered. A securitization transaction does make it extremely unlikely that regulators can later disavow an agreement to allow recovery, and regulatory approval is often packaged together with a securitization with the view that ratepayers will benefit from low borrowing costs.

While our standard credit ratios for funds from operations to total debt and funds from operations interest coverage include the securitization debt, Moody's also looks at these two metrics without the securitization debt, to ensure that the benefits of securitization are not ignored. In making this adjustment, funds from operations is adjusted downward by the amount of principal amortization that is annually paid to the SPE in support of the securitization. Consistent with that adjustment, Moody's excludes the principal amount of securitization debt in the denominator in calculating a company's Adjusted FFO/Adjusted Total Debt and excludes the portion of a company's interest costs relating to the securitized debt when calculating a company's Adjusted FFO/Adjusted Interest. The analytical benefit of making this adjustment helps to determine the amount of residual cash flow (cash flow after satisfying securitization debt service) that is available to service the debt of general creditors.

The recent bankruptcy of Pacific Gas and Electric Company (PG&E) fortifies the strength of the legal separation among cash flows available to the SPE and cash flows available to the utility. Throughout the bankruptcy, funds dedicated to the securitization debt were collected by the utility and transferred on a daily basis to the trustee for the SPE creditors and PG&E's general creditors and the bankruptcy judge never challenged the continued transfer of such funds to the SPE. For this reason, the securitization debt of PG&E remained rated Aaa while the company operated in bankruptcy for more than three years.

ADDITIONAL RISK CONSIDERATIONS

Analysis of Multiple Legal Entities within a Single Issuer Family

Utility companies may have multiple legal entities within a single consolidated organization. This is the prevalent legal structure in the US, even for small utilities. The multiple-entity legal structure is also common in Canada and the UK and is employed by a number of the larger international utilities in other countries. In the US, most utility families have an unregulated holding company. The holding company will have one or more regulated operating subsidiaries, and may have one or more unregulated subsidiaries. Most utility families in the US issue debt at multiple legal entities within the organizational family.

In the case of multiple legal entities within a single issuer family, our approach is to assess each issuer on a stand-alone basis as well as evaluating the creditworthiness of the consolidated entity. We then assess the degree of legal and regulatory insulation that exists between the lower-risk regulated entities and the higher-risk unregulated entities.

The degree of notching (i.e. the rating differential) between entities in a single family of companies depends upon the degree of insulation that exists between regulated and unregulated entities. If the regulatory framework or regulatory practice establishes that there is substantial ring-fencing type insulation for the regulated entity, there may be three or more notches of rating differential between the regulated and the unregulated entities. If there is little or no ring-fencing, there will usually be only a one- or two-notch differential between the unregulated entity (in most cases a holding company) and the regulated entity (in most cases an operating company).

Regulatory ring-fencing for utilities may include minimum equity requirements, limitations on the movement of funds from regulated entities to unregulated entities, and prohibitions against credit support by regulated entities for unregulated entities. This may exist by statute, but most typically takes the form of rules that are established by the regulator. In the United States, where these provisions are most common, the rules may differ for individual utilities in the same state.

Many regulators restrict the ability of utilities to extend intercompany loans, guarantees, or to make payments to unregulated affiliates and parent holding companies. For example, utilities in the state of Wisconsin may only pay dividends to their unregulated holding company (the ultimate parent company in these organizations) in excess of an amount established in each rate case if common equity falls below an authorized level.

Regulators also often have wide discretion to impose new restrictions on regulated entities when the utility appears to be threatened by weakness of its unregulated affiliates. For example, the state regulatory commission in Oregon established tight limitations on any movement of funds by Portland General to its parent company when the parent company filed for bankruptcy protection. These ring-fencing protections were a key reason that Portland General did not default or experience substantial financial distress while its parent was in bankruptcy.

Where regulated utility entities are not well insulated from unregulated affiliates, the ratings of these entities will be notched fairly closely, generally within one or two notches. This will be the case even when one entity has substantially stronger financial ratios than its affiliate, if there is little or no restriction upon movement of funds between the two entities, or if there is a substantial operational interdependence. For example, where the regulated utility is highly dependent upon contractual purchases of power from its unregulated generating affiliate, the ratings of these two entities will likely be one or two notches apart even if their individual financial profiles would suggest different ratings on a stand-alone basis.

Where regulated utility entities are strongly insulated from unregulated affiliates through prohibitions on loans and credit support, where there are strong regulatory limitations on dividends, and where there is little or no operational interrelationship between regulated and unregulated affiliates, the ratings will be driven more by the stand-alone credit quality of each entity, and may be three or more notches apart.

Non-specific utility risk factors

The majority of the risks considered in this rating methodology are specific to utilities. However, lenders to utilities are also exposed to many of the risks that are common to all industrial companies. These are not covered in detail here as a full analysis can be found in the relevant Moody's research. However, it should be noted that such factors may potentially outweigh the utility-specific considerations covered in depth in this report.

For example, a company that currently shows very strong financial ratios and operates in a supportive regulatory framework could still have a relatively low rating if it had very weak liquidity arrangements or high "event risk" such as if it were pursuing an acquisition policy that was very likely to result in a change in the company's business risk policy going forward.

The generic industrial company risks to which a utility may also be exposed include the following:[7]

- An assessment of the adequacy of the company's liquidity arrangements[8]
- An assessment of the quality of its corporate governance arrangements[9]
- An assessment of the quality of its management – their experience, appetite for risk and ability to fulfill the company's stated strategy
- An assessment of event risk and the probability that this could lead to a change in the company's financial position, business risk profile or its regulatory and political operating environment[10]
- Exposure to off-balance sheet risks[11]
- The potential support of or interference by a sovereign or sub-sovereign entity[12]

Regional Considerations

RATING DIVERGENCE LIMITED AMONG JAPANESE UTILITIES

Japanese electric utilities are rated in a relatively narrow range from Aa3 to A1. This reflects Moody's view that the conservative and predictable regulatory regime, and the individual companies' solidly established franchises in their operating regions, will not lead to major differences in credit risks among the rated utilities. Their financial profiles are more or less comparable, and they have simple corporate structures and limited business diversification exposures.

Moody's rates the three utilities that cover Japan's three largest economic areas at Aa3 (Chubu Electric Power, Kansai Electric Power, and Tokyo Electric Power), and six other utilities at A1 (Chugoku Electric Power, Hokkaido Electric Power, Hokuriku Electric Power, Kyushu Electric Power, Shikoku Electric Power, and Tohoku Electric Power).

Japan's regulator makes the maintenance of supply security its primary policy objective, followed in priority by environmental protection and, finally, allowing market mechanisms to work. This approach preserves utilities' integrated operations and makes them responsible for final supply to users in the liberalized market.

The government is gradually deregulating the industry and expanding the liberalized market. This market, which was partially introduced in 2000, was expanded from about 26% of the total to about 40% in April 2004, and will be

7. *See, for example, "Industrial Company Rating Methodology", July 1998*
8. *See, for example, "Moody's Liquidity Risk Assessments – Q&A", March 2002, "Moody's Analysis of US Corporate Rating Triggers Heightens the Need for Increased Disclosure" and "Rating Triggers in Europe: Limited Awareness but Widely Used Among Corporate Issuers", September 2002*
9. *See, for example, "U.S. and Canadian Corporate Governance Assessment", August 2003 and "Moody's Findings on Corporate Governance in the United States and Canada: August 2003 - September 2004", October 2004*
10. *See, for example, "Event Risk's Four Horsemen of the Apocalypse: Decapitalization, Cash-financed M&A, Litigation, and Accounting Irregularities", November 2000 and "Event Risk For European Corporates 2003 – Still A Credit Risk, Still Part Of Our Analysis", February 2003*
11. *See, for example, "The Analysis Of Off-Balance Sheet Exposures: a Global Perspective", July 2004*
12. *Note: Moody's paper "The Incorporation of Joint-Default Analysis into Moody's Corporate, Financial and Government Rating Methodologies" February 2005 which may effect the ratings of, for example, a municipality supported by a regional or national government.*

further expanded to about 63% in April 2005. However, the pace of deregulation has been set as moderate so that the regulator can monitor the risks and the effects on the power companies, especially in the context of supply security.

The Japanese utilities hold strongly established franchises in their operating regions, maintaining dominant market shares despite the market for large customers being deregulated. Some utilities still hold 100% shares.

Direct competition among integrated utilities has been very limited. This is mainly because: (1) each integrated operator holds a solid franchise in its operating region due to effective regional monopolies; (2) the companies display similar cost positions, and achievement of any meaningful differentiation in pricing is difficult; (3) the utilities are fully aware that an aggressive challenge by one utility in another's franchise would trigger industry-wide competition, which would, in turn, significantly weaken the industry's overall profitability; and (4) all the utilities exhibit similarly leveraged balance sheet positions and place priority on debt reduction, having completed most of their major investments.

In addition, the ability of power producers and suppliers (PPSs) to take utilities' shares has been restrained by limitations on: (1) their ability to purchase power from, for example, captive power plants; (2) their opportunities to build competitive plants on their own; and (3) their marketing abilities.

Although PPSs have been gaining minor shares in some utilities' franchise areas, and some are constructing their own power plants, their aggregate share is expected to remain insignificant over the intermediate term, due to power companies' rate strategies aimed at protecting their franchises and PPSs' ongoing limited access to power sources.

As such, although the rates are to be further lowered through the ongoing deregulation process, we expect the utilities' franchises to remain solid and stable over the intermediate term.

Government energy policy has made nuclear generation a core power source, while leaving actual implementation of the policy – construction and operation of nuclear power plants – to privately owned and managed utilities. Thus, these companies play an important role in the nation's energy policy, although the government remains the main driver by establishing and maintaining their nuclear power operation systems.

The government is now reviewing the economic feasibility of the nuclear fuel cycle, the allocation of back-end costs, and power utilities' reserves for back-end costs. While the outcome of the review could affect utilities' investment, cost, and balance sheet positions to some extent, we do not expect any significant changes in their policy role, business risks or cost competitiveness.

EUROPE

EU policy is the driver for regulatory development in Europe

The EU Electricity Directive of 1999, subsequently amended by the EU Energy Council in 2002, set the roadmap towards full supply liberalization in the European Union as well as addressing issues such as non-discriminatory access to the transmission grid and the granting of new generation licenses. The current aim is to have full liberalization within the EU by 2007.

Despite EU policy, there is a regulatory patchwork across Europe

Despite the EU directive, there is some flexibility in its implementation, leading to different regulatory models. The process has in most cases led to the establishment of an independent regulator, although the degree of independence from government influence varies significantly. In some countries, such as Spain and Greece, the government maintains control for final setting of tariffs and the regulator acts in an advisory capacity, whilst at the other end of the spectrum are those countries where there is a fully independent regulator, such as in the UK.

Having achieved full supply liberalization, the regulator can focus on regulating the monopoly wires activities – transmission and distribution. The UK has adopted an ex-ante approach, with a tight regulatory framework for wires activities. "Ex-ante" means setting the tariffs in advance, normally for a 3-5 year period, and the regulator allows the company to recover operating and capital expenditures as well as a return on capital. Normally the regulator will benchmark companies against their peers and will allow certain revenues (a revenue or price cap), often adjusted for inflation and an efficiency incentive, depending on how efficient the company is perceived to be.

By contrast, Sweden and Finland initially adopted a much lighter "ex-post" system, which allows companies to set their own prices to achieve a reasonable return on a cost-plus basis, with an arbitration mechanism to allow for complaints and remedies. Despite this looser regime, prices in these markets have been some of the lowest in Europe, benefiting no doubt from the overall greater price transparency from a fully liberalized market. However, under further direction from the EU, Finland and Sweden (and Denmark) are now moving towards an ex-ante regime and this we would expect to become the norm in Europe.

Germany has yet to establish an independent regulator – although it is now moving in this direction – with network tariffs being set within the context of a voluntary agreement between utilities. Access tariffs are set on a negotiated basis, but in practice the German market is difficult and expensive for new entrants to access.

In Moody's view, power shortages in 2003 have led to an easing in regulatory pressure as security of supply displaces cost as a key aim

Regulators initially introduced quite harsh efficiency incentives or tariff caps, with tariffs reduced in real terms as companies have become more efficient. However, recent tariff pressure has been upward, e.g. Spanish tariffs fell in real terms between 1996 and 2002 but the current tariff framework now allows for gradual increases. This can be explained by greater concern over security of supply, with Europe having experiencing blackouts during 2003. Moody's believes that regulators wish to ensure that an incentive to invest remains, particularly as some aged thermo capacity and a number of nuclear plants are earmarked for decommissioning in the next few years.

In Central and Eastern European countries, regulation is following in a similar direction but at a slower pace

Central and Eastern European countries and the Baltic states are following EU directives, but are at an earlier stage of regulatory evolution. Whilst most have put in place at least the first Energy Law, implementation is often at an early stage under an extended implementation timetable or relatively new and untested. Many of these countries have now established an independent regulator although there is still a state-owned incumbent with a dominant or monopoly position.

These countries typically face privatization, structural separation (generation, transmission, distribution and supply), tariff increases and issues concerning cross-subsidization – with accession states such as Romania and Bulgaria aiming to have completed the process by 2007. Electricity market development is often linked to the economic and structural development of the country in which they operate. Indeed, the requirements of the IMF or World Bank may allow for only a gradual increase in tariffs (Romania and Bulgaria).

From a credit perspective, whilst the timely recovery of all costs may be delayed or constrained, the impact of such can be mitigated by the dominant market position of these key utilities and/or their strategic importance to the State and the role they play in the development of the economy.

Rating the UK regulated transmission and distribution companies

The UK electricity system is divided into a number of monopoly areas for the high-voltage transmission and lower-voltage local distribution of electricity. There is one monopoly transmission area and 12 Distribution Network Operators (DNOs) covering England and Wales. Two additional companies have the monopoly rights to transmission and distribution in distinct areas within Scotland. As these businesses are monopolies they are subject to price control regulation primarily aimed at protecting the consumer's interests.

All of these businesses are regulated by the Office of Gas and Electricity Markets (OFGEM). OFGEM itself is an independent body governed by an authority made up of independent, non-executive Directors and an Executive team. OFGEM is not part of the UK government but its duties and powers were established by Acts of Parliament and they must have regard to guidance from the government on issues such as protecting the environment.

The revenue that a monopoly business can earn on its regulated business is restricted by an RPI-X price control formula that is reviewed every five years. The formula is designed to allow a company to increase prices to reflect inflation while encouraging efficiency through a "-X" from the RPI. In addition, at the start of each regulatory period, prices are raised or reduced by a one-off price adjustment known as the P_0 adjustment. In order to calculate the "X" and the "P_0" for each company, OFGEM considers the Regulatory Asset Base of each company and sets a formula to provide a fair rate of return on those assets, typically around 6-7%. The next regulatory period for the transmission companies starts in 2007 and for distribution companies in 2005.

The practical regulation system involves a very detailed analysis of each company's regulated asset base and operating and capital expenditures. The output is a very detailed and highly predictable cashflow forecast for the next regulatory period. If the companies can improve efficiency, then they can retain most of the benefit. However, if they lose efficiency or the regulatory outcome proves unachievable, then this is a risk for the stakeholders in that company.

For Moody's, the ratings of these businesses depend upon two key factors:

1. The projected financial position of the company once the final regulatory outcome is known. This is measured by a number of financial ratios including FFO interest cover and Debt/Regulated Asset Value.
2. The additional burdens placed on the regulated entity's cash flows by its parent, mainly in the form of additional parental debt which needs to be serviced by dividends from the regulated operating company.
3. DNO-specific issues such as unfunded pension deficits unrelated to the distribution business, debt maturity profile and debt capital structure considerations.

According to OFGEM, after these adjustments, the intention is that all companies will earn the same baselines return of 6.6% on a pre-tax, real basis if they perform in line with the regulator's projections. The main issues are expected to be the need to increase capex to replace network assets and improve network performance, to put a greater emphasis on quality of service, and to respond to the growth in sources of renewable energy. These final determinations for the 2005-2010 price control period will become effective in April 2005.

The main rating implication from these proposals is likely to fall on companies whose overall financial profile is burdened by the need to pay large dividends to service and repay debt at holding company levels. While this can lead to a significant cash drain, the debt at the holding companies is outside the regulatory ringfence and is not protected by the OFGEM framework. One such holding company, Avon Energy Partners, has already defaulted on its debt obligations, while the operating company Midlands Electricity had no financial difficulties, thus illustrating that lending to such holding companies is significantly more risky than lending to the regulated entity itself.

When looking at the financial ratios for regulated UK DNOs, there are a number of important considerations to bear in mind:

1. The Regulated Asset Value (RAV) is an important reference point as allowable revenues and allowable capital expenditures both feed from or into this. Hence, the Debt/RAV ratio is one of the more critical financial ratios to consider.
2. OFGEM's scope of regulation is limited to the regulated entity, while Moody's rating of the DNO also factors in debt which must be serviced by cash flows from the DNO. This means that an RCF number (cashflow after dividends) is an important one for a DNO. It also means that ratios factoring in any "Holdco" debt tend to outweigh pure "stand-alone" DNO ratios. In practice, there are no remaining stand-alone DNOs.
3. Some DNOs retain cash to meet future debt maturities and where this is the case, the emphasis falls on net rather than gross debt numbers.

As a guideline and ignoring other considerations, the following ratios might be expected for UK DNOs at various rating levels, without factoring the need to support other group debt (if there is such debt, stronger ratios would be needed for the same rating level):

Figure 6

DNO	RCF/Net debt	Net debt/RAV	FFO interest cover
Aa	> 17%	< 45%	> 4.5 X
A	7 – 18%	40 – 68%	2.8 – 5.0X

AUSTRALIAN T&D RATINGS ARE HIGHER THAN UK RATINGS FOR COMPARABLE ENTITIES

Differences in regulatory philosophy between Australia and the UK mean that Moody's on average rates Australian electricity transmission and distribution (T&D) companies one notch above the ratings of their UK peers, even though both parties may have approximately the same level of debt coverage measures.

Furthermore, the impact of the regulatory differences is such that when Australian and UK companies share the same rating level, the Australian companies conversely exhibit weaker debt coverage measures. Moody's believes that the financial profiles of Australian T&D companies are sustainable within their present ratings, given their benign regulatory environments.

Moody's compared – on a senior unsecured basis – Baa-rated T&D companies in Australia and those in the UK. The projected average financial ratios for Australian T&D companies over the next few years are as follows:

Figure 7 – Average Financial Ratios for Baa Credits	
Debt-to-Regulated-Asset-Base	103%
RCF-to-Debt	4%
FFO-to-Interest	2.3 times

The UK T&D companies – on the other hand – have higher financial ratio hurdles at the Baa rating range. For instance, UK Baa-rated T&D companies are expected to have Debt-to-RAB ratio in the range of 60-90%, RCF-to-Debt 10-15%, and FFO-to-Interest of above 2.8 times.

On one level, the Australian and UK regulatory regimes are close matches. For example, regulators in both countries have adopted similar frameworks for determining revenues and returns. However, on a practical level, regulators in Australia have assumed a more benign stance on requirements for revenues and returns.

Moody's believes that this situation reflects the Australian regulators' approach in the following areas: (1) more generous cost allowances for maintaining minimum levels of service and system reliability for T&D assets; (2) appropriate levels of return for regulated T&D companies; (3) regulators' willingness to allow the retention of efficiency out-performances; and (4) greater certainty in regulatory outcomes at the next resets.

A comparison of recent tariff resets in both countries supports the conclusion that the Australian environment is more benign, a situation which Moody's believes will prevail over the medium term. Consequently, we do not expect an aggressive tariff decision at the next reset, scheduled for 2006 for electricity distributors in the state of Victoria.

In the UK, electricity distributors are undergoing a tariff reset for the five-year period commencing April 2005. The expected outcome for this reset is still evolving. However, the UK electricity distributors' cash flows could come under some pressure as the regulator restricts the ability of distributors to carry through to the next regulatory period the efficiency savings achieved. At the same time, distributors are expected to face higher cash commitments as a consequence of increased tax obligations and capital expenditure requirements to support various policy initiatives. As a result, UK T&D companies would need a more prudent set of financial policies to preserve their credit profiles.

While there is relative certainty in the Australian regulatory environment over the next reset period, it is more difficult to predict with confidence developments in regulatory thinking over the longer term. Consequently, Australian T&D companies must adopt prudent financial policies in readiness for a possible evolution in regulatory thinking at the end of the next regulatory period in 2010.

In this regard, companies that persist with highly leveraged capital structures on a Debt-to-RAB basis – that is, a ratio of over 100% – and exhibit no ability or commitment to de-leverage over the longer term may be more exposed to severe regulatory outcomes.

The ability of a company to de-leverage is indicated by the extent of free cash flow generation – relative to debt levels – after servicing all operational, debt, and dividend obligations.

UNITED STATES

The US electric utilities are characterized by a substantial diversity in both their business models and their regulatory risk. Business models vary from the lowest-risk companies that have purely regulated activities and which operate in states that have supportive regulation, to the highest-risk companies that have substantial unregulated activities and which operate in states that have less supportive or less predictable regulation.

Moody's views the business risk of US utilities as being higher in most cases than that of utilities in some other developed countries, including Japan, Australia, and the United Kingdom. This difference in risk reflects the following factors:

1. State regulation is seen as less predictable than national regulation. State regulation is the primary form of regulation in the US. Compared to national regulators, state regulators represent a smaller economic region. As a result, Moody's believes that state regulators may be more likely to be responsive to the objections of local customers and politicians when a utility seeks a large rate increase to address a large increase in costs or capital expenditures. As noted in the default section in Appendix 3, failure to obtain timely rate increases was a key factor in four recent defaults by US utilities. In addition, various parties may seek to intervene in in U.S. state regulatory proceedings, which can cause delay and increased uncertainty.

2. A large fragmented market structure results in stronger competition in unregulated wholesale power markets. The US electric utility industry is fragmented in comparison to Japan and major countries in Europe. Although the US represents over one fourth of global electricity consumption, none of the US utilities ranks in the top ten in terms of revenues among global utility companies. As portions of the market have become deregulated, US utilities are more vulnerable to changes in wholesale power costs because their market share and market power is more limited than those of comparable utilities in most other countries. Regulators have strived to limit market power to protect consumers, resulting in longstanding legal and regulatory impediments to industry mergers and consolidation.
3. More volatile fuel and wholesale power markets. Natural gas prices are completely unregulated in the US, which can result in rapid and wide swings in prices. There is a large unregulated power market in the US, which responds quickly to changes in fuel costs and passes these changes through to wholesale power prices. This combination of factors can result in more rapid and wider swings in prices than in more controlled markets.
4. Low likelihood of extraordinary political action to support a failing company. Utilities provide an essential service, so financial distress has a high political profile. Governments in the US have broadly demonstrated a reluctance to intervene on behalf of troubled investor-owned utilities when this could be viewed as providing economic assistance to private shareholders. This approach is in sharp contrast to the large US municipal utility sector, in which supportive government action is far more likely. Governments in many other countries (for example, Japan or Canada) are perceived as being more likely to work with regulators and financial institutions to support electric utilities as highly visible entities that provide a critical service.
5. Holding company structures limit regulatory oversight. State regulators only have authority over the regulated operating utility. The vast majority of companies have established unregulated holding companies that have the ability to engage in higher-risk unregulated businesses in the hopes of earning shareholder returns that are higher than the returns provided for the regulated business.
6. Overlapping or unclear regulatory juridisction. The electric utilities industry in the US is characterized by regulation at both the federal and state levels. Traditionally, the federal government has regulated the interstate and wholesale transmission of electricity, while distribution and retail services to consumers have been regulated by the states. Each state exhibits its own unique regulatory characteristics which set the parameters and define the environment in which a particular utility operates. In some instances the jurisdictions can overlap, such as in the case of mergers and transactions with affiliates.

Federal Energy Regulatory Commission (FERC)

The key federal regulatory agency governing utilities in the US is the Federal Energy Regulatory Commission (FERC), an independent agency that regulates the interstate transmission of natural gas, oil, and electricity, as well as natural gas and hydroelectric power projects. In the electric market, the FERC's responsibilities include the approval of rates for the wholesale sale of electricity and transmission on an interstate basis for utilities, power marketers, power pools, power exchanges, and independent system operators. The FERC sets the price for those utility transmission systems that fall within its jurisdiction, although many portions of utility transmission systems fall under the jurisdiction of the state regulatory agencies.

In recent years, FERC has issued several orders aimed at opening the transmission lines of utilities in the US. In 1996, FERC Order 888 provided rules for open access of transmission lines to all suppliers and for competition in the wholesale market and set standards for regional transmission organizations (RTOs). In 1999, FERC Order 2000 encouraged utilities with transmission assets to voluntarily transfer control of their transmission systems to these RTOs, which could either be non-profit independent system operators (ISOs) or for-profit transmission companies. Although some utilities have transferred their transmission assets into RTOs, others have thus far resisted attempts to place their transmission assets under outside control.

Public Utility Holding Company Act (PUHCA)

The most significant piece of legislation governing public utility holding companies at the federal level is the Public Utility Holding Company Act, more commonly known as PUHCA. The Act was passed in 1935 to regulate interstate utility holding companies in response to the financial collapse of a number of such holding companies following the stock market crash of 1929. When utilities in different states combine or merge under a holding company, the new entity becomes registered under PUHCA, which provides for SEC regulation of their financing activities, including the sale and purchase of securities and assets. PUHCA gives the SEC the power to exercise broad oversight over business combinations that result in functional or geographic diversification of utilities.

Historically, the SEC has severely restricted the types of business activities in which registered holding companies may engage. The National Energy Policy Act of 1992 (NEPA) eased some of the regulatory restrictions imposed by PUHCA by allowing registered holding companies to establish non-utility generating subsidiaries and to purchase foreign utilities without seeking prior SEC approval. However, registered holding companies are still prohibited from owning both electric and gas operations or possessing unregulated businesses without SEC approval. Although there have been a number of attempts over the last few years to repeal PUHCA, most recently as part of comprehensive energy legislation considered but not passed in 2003, it remains a key federal regulatory constraint and limitation for those holding companies registered under PUHCA.

State Regulatory Commissions

The most important regulatory factor affecting the sale of electricity by utilities at the retail level are state agencies generally known as Public Utility Commissions or Public Service Commissions. These commissions comprise elected or appointed officials in each state who determine, among other things, whether utility expenditures are reasonable and how they should be passed on to consumers through their electric rates. They also regulate each utility's rates of return and monitor the quality and reliability of a utility's electric service. The state-level factors that Moody's takes into consideration when evaluating the credit quality of utilities include the following:

- **Status of Deregulation/Retail Access**

Since industry restructuring began in the mid-1990s, states have taken a variety of approaches to the question of whether they should deregulate their electricity markets. Some states have passed comprehensive deregulation legislation and completely restructured. Some have avoided it entirely, while others have introduced some elements of deregulation into their markets. Over the last several years, 18 states have undertaken some form of deregulation or retail open access, while 32 others have elected not to deregulate after studying and debating restructuring initiatives (see Figure 8 for details).

- **Ring-Fencing Provisions**

State commissions sometimes attempt to insulate and protect regulated operating utilities from the often riskier activities of their parent companies or unregulated subsidiaries. Some so-called "ring-fencing" provisions that have been adopted at the state level include: dividend limitations, minimum equity requirements, limits on unregulated activities, credit rating requirements, the maintenance of collateral, limitations on intercompany transactions, and restrictions on asset sales.

- **Transition Periods and Rate Caps**

Some utilities are subject to price limitations or rate freezes which were put in place as states implemented transition plans to deregulate their electric markets. These rates were often thought to be adequate to permit the utilities to both recover stranded costs and earn an adequate rate of return until a fully competitive environment developed. Many of these transition periods and associated rate caps are now ending without a fully competitive market having developed, and the likelihood that these transition periods will be extended is an important credit consideration.

- **Cost Recovery Provisions**

States have various policies with respect to fuel and wholesale power cost recovery, and the recent volatility in commodity prices have made these provisions important elements of a utility's cost management capability. Such provisions make it possible for utilities to quickly adjust rates in the event of an unexpected hike in fuel costs. Although the number of states permitting such recovery has declined, particularly in those that have transitioned to a competitive market, they remain critical risk mitigants to those utilities still operating in regulated environments.

- **Incentive- or Performance-Based Rates (Earnings Sharing)**

Utilities in the US have traditionally operated under "cost of service"-based rates under which revenues were set to permit the utility to cover its costs and provide for an acceptable rate of return. However, a number of state regulatory commissions have implemented incentive- or performance-based rates which give utilities incentives to operate better and more efficiently. Often, these incentives take the form of an earnings sharing mechanism, allowing a utility to keep some of the profits earned above a predetermined range, while returning any excess to ratepayers.

Figure 8 – Regulatory Characteristics of States in The U.S.

State	Deregulation	Rate Cap	Cost Recovery	Earnings Sharing
Alabama			X	X
Alaska	N/A	N/A	N/A	N/A
Arizona	X	X	X	
Arkansas			X	
California	X		X	X
Colorado			X	X
Connecticut	X	X	X	X
Delaware	X	X	X	
DC	X	X		
Florida			X	X
Georgia			X	X
Hawaii			X	
Idaho			X	
Illinois	X	X	X	X
Indiana			X	X
Iowa			X	
Kansas			X	
Kentucky			X	
Louisiana			X	
Maine	X		X	
Maryland	X	X		
Massachusetts	X		X	X
Michigan	X	X	X	
Minnesota			X	
Mississippi			X	X
Missouri				X
Montana				
Nebraska	N/A	N/A	N/A	N/A
Nevada			X	
New Hampshire	X	X	X	
New Jersey	X		X	
New Mexico		X		
New York	X		X	X
North Carolina			X	
North Dakota			X	X
Ohio	X	X		
Oklahoma			X	
Oregon			X	
Pennsylvania	X	X		
Rhode Island	X		X	
South Carolina			X	
South Dakota			X	
Tennessee			X	
Texas	X		X	
Utah				
Vermont				
Virginia	X	X		
Washington			X	
West Virginia			X	
Wisconsin			X	
Wyoming			X	

Source: Moody's, Regulatory Research Associates.

APPENDICES

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
EUROPE									
Landsvirkjun	Iceland	Aaa	0.2	28.2	2.7	6.7	6.4	67.7	68.2
EVN	Austria	Aa3	1.1	11.9	10.3	30.0	26.2	111.8	43.6
Fingrid	Finland	Aa3	0.3	33.9	2.6	8.1	7.5	165.2	78.4
Electricite de France	France	Aa3	45.4	13.4	4.3	20.1	16.9	93.6	64.2
E.on	Germany	Aa3	41.1	12.1	4.7	13.7	9.6	76.2	37.4
Terna	Italy	Aa3	1.2	50.8	3.8	17.7	15.7	43.9	50.0
Statnett	Norway	Aa3	0.5	30.8	3.1	15.6	9.7	92.3	57.6
Scottish & Southern Energy	UK	Aa3	7.2	15.4	8.5	38.6	20.7	94.9	45.3
			hi	50.8	10.3	38.6	26.2	165.2	78.4
			avg	24.1	5.3	20.6	15.2	96.9	53.8
			med	15.4	4.3	17.7	15.7	93.6	50.0
			low	11.9	2.6	8.1	7.5	43.9	37.4
Verbund	Austria	A1	2.3	21.9	2.1	8.7	7.6	311.4	74.4
RWE	Germany	A1	42.0	11.5	3.6	15.8	13.6	58.3	40.3
ENEL	Italy	A1	38.1	15.1	5.0	21.9	14.7	69.1	53.3
			hi	21.9	5.0	21.9	14.7	311.4	74.4
			avg	16.2	3.6	15.5	12.0	146.3	56.0
			med	15.1	3.6	15.8	13.6	69.1	53.3
			low	11.5	2.1	8.7	7.6	58.3	40.3
Suez	France	A2	45.2	9.3	2.3	12.0	7.8	42.0	68.8
EWE	Germany	A2	2.9	7.3	22.4	77.5	69.4	100.8	42.9
Essent	Netherlands	A2	8.8	10.4	5.6	28.4	25.5	152.5	61.3
Nuon	Netherlands	A2	4.7	9.4	7.0	28.6	25.2	93.9	40.8
Red Electrica de Espana	Spain	A2	0.5	36.6	8.2	25.2	18.1	37.0	56.9
Iberdrola	Spain	A2	7.0	18.7	3.3	14.4	9.9	72.3	57.9
National Grid Company	UK	A2	2.5	0.4	4.0	0.2	0.1	1.2	0.6
United Utilities Electricity	UK	A2	0.5	53.6	4.5	22.2	14.4	75.8	52.4
			hi	53.6	22.4	77.5	69.4	152.5	68.8
			avg	18.2	7.2	26.1	21.3	71.9	47.7
			med	9.9	5.0	23.7	16.3	74.0	54.6
			low	0.4	2.3	0.2	0.1	1.2	0.6
Eesti Energia	Estonia	A3	0.3	12.6	10.9	49.6	49.6	71.2	23.3
Energie Baden-Wuerttemberg (EnBW)	Germany	A3	9.7	6.9	2.3	5.8	3.6	21.9	80.3
Electricidade de Portugal	Portugal	A3	8.7	11.8	3.6	10.8	7.3	65.2	58.3
Endesa	Spain	A3	21.0	19.4	3.3	12.7	9.2	-971.8	66.6
Vattenfall	Sweden	A3	13.6	16.5	4.0	15.6	14.0	84.1	53.9
			hi	19.4	10.9	49.6	49.6	84.1	80.3
			avg	13.4	4.8	18.9	16.7	-145.9	56.5
			med	12.6	3.6	12.7	9.2	65.2	58.3
			low	6.9	2.3	5.8	3.6	-971.8	23.3

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
CEZ	Czech Republic	Baa1	2.2	18.7	8.4	50.0	45.6	145.7	21.8
Public Power Corp (PPC)	Greece	Baa1	3.5	19.6	4.9	15.8	14.4	101.6	69.3
Latvenergo	Latvia	Baa1	0.3	11.8	14.6	63.2	59.0	63.0	25.3
Eskom	South Africa	Baa1/A3	3.5	37.3	3.4	24.2	23.8	202.7	53.2
Scottish Power plc	UK	Baa1	9.3	19.5	3.8	16.2	8.7	30.6	56.6
			hi	37.3	14.6	63.2	59.0	202.7	69.3
			avg	21.4	7.0	33.9	30.3	108.7	45.2
			med	19.5	4.9	24.2	23.8	101.6	53.2
			low	11.8	3.4	15.8	8.7	30.6	21.8
Israel Electric Corporation (IEC)	Israel	Baa2	2.6	17.3	2.2	7.5	7.4	65.1	69.9
Union Fenosa	Spain	Baa2	5.6	15.7	2.1	4.4	2.3	54.8	65.1
WPD Holdings UK	UK	Baa3	0.5	47.7	2.4	9.1	6.7	50.0	68.3
CE Electric	UK	Baa3	1.1	36.8	2.6	10.5	8.1	-1.1	75.0
			hi	47.7	2.6	10.5	8.1	65.1	75.0
			avg	29.4	2.3	7.9	6.1	42.2	69.6
			med	27.0	2.3	8.3	7.1	52.4	69.1
			low	15.7	2.1	4.4	2.3	-1.1	65.1
Transelectrica	Romania	Ba3	0.2	-1.4	7.3	77.1	76.4	122.6	10.1
			hi	-1.4	7.3	77.1	76.4	122.6	10.1
			avg	-1.4	7.3	77.1	76.4	122.6	10.1
			med	-1.4	7.3	77.1	76.4	122.6	10.1
			low	-1.4	7.3	77.1	76.4	122.6	10.1
ASIA/PACIFIC									
Singapore Power	Singapore	Aa1	2.6	26.0	7.0	32.0	-8.0	-362.0	48.0
SP PowerAssets		Aa1	0.4	44.0	6.0	8.0	8.0	625.0	61.0
			hi	44.0	7.0	32.0	8.0	625.0	61.0
			avg	35.0	6.5	20.0	0.0	131.5	54.5
			med	35.0	6.5	20.0	0.0	131.5	54.5
			low	26.0	6.0	8.0	-8.0	-362.0	48.0
CLP Holdings		A1	3.4	35.0	14.0	22.0	49.0	94.0	20.0
			hi	35.0	14.0	22.0	49.0	94.0	20.0
			avg	35.0	14.0	22.0	49.0	94.0	20.0
			med	35.0	14.0	22.0	49.0	94.0	20.0
			low	35.0	14.0	22.0	49.0	94.0	20.0
Australian Gas Light Company	Australia	A2	3.8	13.0	4.1	23.0	14.0	96.0	49.0
			hi	13.0	4.1	23.0	14.0	96.0	49.0
			avg	13.0	4.1	23.0	14.0	96.0	49.0
			med	13.0	4.1	23.0	14.0	96.0	49.0
			low	13.0	4.1	23.0	14.0	96.0	49.0

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
KEPCO		A3	18.0	24.0	6.0	33.0	31.0	112.0	40.0
Citipower		A3	0.5	39.0	3.0	10.0	7.0	132.0	88.0
ETSA		A3	0.7	42.0	2.0	4.0	-2.0	69.0	64.0
Powercor		A3	0.6	42.0	4.0	12.0	12.0	111.0	51.0
SPI Powernet		A3	0.3	62.0	2.0	10.0	10.0	258.0	71.0
TXU Australia		A3		24.0	3.0	10.0	8.0	171.0	57.0
			hi	62.0	6.0	33.0	31.0	258.0	88.0
			avg	38.8	3.3	13.2	11.0	142.2	61.8
			med	40.5	3.0	10.0	9.0	122.0	60.5
			low	24.0	2.0	4.0	-2.0	69.0	40.0
United Energy		Baa1	0.4	32.0	3.0	13.0	7.0	71.0	60.0
Vector		Baa1	0.5	39.0	3.0	8.0	5.0	117.0	67.0
Electranet		Baa1	0.1	46.0	2.0	3.0	3.0	151.0	74.0
Gasnet		Baa1	0.1	61.0	2.0	6.0	4.0	687.0	68.0
			hi	61.0	3.0	13.0	7.0	687.0	74.0
			avg	44.5	2.5	7.5	4.8	256.5	67.3
			med	42.5	2.5	7.0	4.5	134.0	67.5
			low	32.0	2.0	3.0	3.0	71.0	60.0
Tenaga		Baa2	4.1	18.0	3.0	11.0	10.0	82.0	61.0
			hi	18.0	3.0	11.0	10.0	82.0	61.0
			avg	18.0	3.0	11.0	10.0	82.0	61.0
			med	18.0	3.0	11.0	10.0	82.0	61.0
			low	18.0	3.0	11.0	10.0	82.0	61.0
National Thermal Power Corporation		Baa3	4.1	20.5	5.5	31.2	25.7	93.8	29.1
			hi	20.5	5.5	31.2	25.7	93.8	29.1
			avg	20.5	5.5	31.2	25.7	93.8	29.1
			med	20.5	5.5	31.2	25.7	93.8	29.1
			low	20.5	5.5	31.2	25.7	93.8	29.1
Tata Power		Ba1	1.1	17.9	3.6	28.6	25.1	133.3	42.7
			hi	17.9	3.6	28.6	25.1	133.3	42.7
			avg	17.9	3.6	28.6	25.1	133.3	42.7
			med	17.9	3.6	28.6	25.1	133.3	42.7
			low	17.9	3.6	28.6	25.1	133.3	42.7
National Power Corporation		B1	2.1	29.7	2.1	3.6	1.9	129.0	94.5
			hi	29.7	2.1	3.6	1.9	129.0	94.5
			avg	29.7	2.1	3.6	1.9	129.0	94.5
			med	29.7	2.1	3.6	1.9	129.0	94.5
			low	29.7	2.1	3.6	1.9	129.0	94.5

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
AMERICAS									
WPS Resources Corp	USA	A1	2.4	9.1	4.1	18.4	11.9	51.1	51.7
			hi	9.1	4.1	18.4	11.9	51.1	51.7
			avg	9.1	4.1	18.4	11.9	51.1	51.7
			med	9.1	4.1	18.4	11.9	51.1	51.7
			low	9.1	4.1	18.4	11.9	51.1	51.7
Consolidated Edison Inc	USA	A2	9.2	16.7	4.1	20.3	14.0	80.3	45.3
FPL Group, Inc.	USA	A2	8.7	17.0	6.0	29.0	23.0	57.0	47.0
Hydro One, Inc	CAN	A2	3.3	25.1	3.0	13.0	9.3	83.3	60.3
NSTAR	USA	A2	2.9	16.0	3.5	16.7	12.8	127.0	52.7
Otter Tail Corporation	USA	A2	0.7	13.3	4.3	17.6	11.9	84.9	53.0
			hi	25.1	6.0	29.0	23.0	127.0	60.3
			avg	17.6	4.2	19.3	14.2	86.5	51.7
			med	16.7	4.1	17.6	12.8	83.3	52.7
			low	13.3	3.0	13.0	9.3	57.0	45.3
Ameren Corporation	USA	A3	4.1	24.3	5.0	19.5	11.1	51.2	44.0
Scana Corporation	USA	A3	3.3	18.3	3.1	13.2	9.7	99.3	54.3
Southern Company (The)	USA	A3	10.7	24.3	4.7	19.7	12.3	67.0	50.0
Wisconsin Energy Corp	USA	A3	3.9	18.1	3.8	15.3	13.1	124.1	60.1
			hi	24.3	5.0	19.7	13.1	124.1	60.1
			avg	21.3	4.2	16.9	11.6	85.4	52.1
			med	21.3	4.2	17.4	11.7	83.2	52.2
			low	18.1	3.1	13.2	9.7	51.2	44.0
Constellation Energy	USA	Baa1	6.1	18.7	3.7	16.3	14.0	135.0	52.0
Dominion Resources	USA	Baa1	11.0	23.0	3.3	14.4	10.3	45.7	54.3
Duke Energy Corp	USA	Baa1	18.7	15.0	3.4	17.3	12.7	166.0	49.3
OGE Energy Corp.	USA	Baa1	3.3	9.2	3.9	16.5	11.4	117.6	53.0
Sempra Energy	USA	Baa1	7.2	15.1	4.0	18.6	18.1	76.3	56.3
Xcel Energy Inc.	USA	Baa1	7.9	15.8	4.6	18.8	14.0	114.3	61.6
			hi	23.0	4.6	18.8	18.1	166.0	61.6
			avg	16.1	3.8	17.0	13.4	109.1	54.4
			med	15.4	3.8	16.9	13.3	116.0	53.7
			low	9.2	3.3	14.4	10.3	45.7	49.3

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
Cinergy Corp	USA	Baa2	4.1	22.3	4.2	14.4	9.5	55.8	56.3
DTE Energy Company	USA	Baa2	6.5	24.0	2.8	11.0	7.5	NM	58.0
Emera Inc.	CAN	Baa2	1.0	27.8	2.7	10.5	7.0	151.7	64.9
Empire District Electric Company	USA	Baa2	0.3	21.0	3.0	15.0	8.0	51.0	51.0
Energy East Corporation	USA	Baa2	4.1	16.0	2.6	11.1	8.3	127.0	58.0
Exelon Corp	USA	Baa2	15.2	25.8	4.4	24.7	14.0	86.1	39.9
Great Plains Energy Inc.	USA	Baa2	1.8	16.9	4.3	17.4	11.9	139.1	56.6
IDACORP, Inc.	USA	Baa2	1.0	14.3	4.3	19.7	14.0	98.7	44.0
Northeast Utilities	USA	Baa2	5.7	18.1	2.9	11.0	9.6	124.7	42.9
Pepco Holdings, Inc.	USA	Baa2	5.8	12.5	3.3	10.8	8.4	136.2	56.5
Pinnacle West Capital Corp.	USA	Baa2	2.6	21.7	4.8	18.8	15.3	81.2	50.8
Progress Energy	USA	Baa2	8.3	15.1	3.4	14.4	10.1	68.6	59.1
Public Service Enterprise Group Inc.	USA	Baa2	8.7	23.7	2.4	10.0	6.3	52.7	59.0
			hi	27.8	4.8	24.7	15.3	151.7	64.9
			avg	19.9	3.5	14.5	10.0	97.7	53.6
			med	21.0	3.3	14.4	9.5	92.4	56.5
			low	12.5	2.4	10.0	6.3	51.0	39.9
American Electric Power Co	USA	Baa3	13.5	19.6	3.4	13.2	9.0	208.0	58.5
Cleco Corp	USA	Baa3	0.8	22.0	3.4	16.0	12.0	132.3	57.0
Duquesne Light Holdings	USA	Baa3	1.0	16.9	3.9	18.9	13.4	428.4	54.4
Edison International	USA	(P)Baa3	11.6	33.6	3.0	17.7	17.6	NM	59.8
Entergy Corporation	USA	Baa3	9.0	19.0	4.1	21.1	18.0	100.4	41.3
FirstEnergy Corp.	USA	Baa3	10.8	18.1	3.0	10.9	8.3	108.6	60.1
MidAmerican Energy Holding Co.	USA	Baa3	5.1	25.1	2.2	8.6	8.6	128.4	75.7
PG&E Corporation	USA	Baa3	10.4	28.7	2.9	14.4	14.3	142.4	76.4
PNM Resources, Inc.	USA	Baa3	1.6	11.4	4.4	17.4	14.8	83.0	52.5
PPL Corporation *	USA	Baa3	5.4	21.6	2.5	13.6	11.1	104.5	67.1
UIL Holdings Corporation	USA	Baa3	1.0	12.3	4.0	16.0	10.3	100.7	50.3
** Rating on guaranteed debt issued by PPL Capital*									
			hi	33.6	4.4	21.1	18.0	428.4	76.4
			avg	20.8	3.3	15.3	12.5	153.7	59.4
			med	19.6	3.4	16.0	12.0	118.5	58.5
			low	11.4	2.2	8.6	8.3	83.0	41.3
Avista Corp	USA	Ba1	1.2	15.7	2.3	10.0	8.7	128.0	54.3
Empresa Nacional de Electricidad S.A.	Chile	Ba1	1.5	35.3	2.1	8.2	6.3	217.7	56.0
Enersis S.A.	Chile	Ba1	4.0	17.7	2.3	11.5	9.3	207.0	76.0
Puget Energy, Inc.	USA	Ba1	2.6	15.0	2.8	13.3	10.0	94.7	56.3
TXU Corp	USA	Ba1	10.3	17.0	2.9	13.0	10.0	160.3	62.0
Westar Energy	USA	Ba1	1.4	26.2	2.1	8.9	7.0	93.1	60.7
			hi	35.3	2.9	13.3	10.0	217.7	76.0
			avg	21.1	2.4	10.8	8.5	150.1	60.9
			med	17.3	2.3	10.8	9.0	144.2	58.5
			low	15.0	2.1	8.2	6.3	93.1	54.3

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
Centerpoint Energy, Inc.	USA	Ba2	9.4	17.0	2.4	9.7	7.0	90.0	65.0
DPL Inc.	USA	Ba2	1.2	35.8	2.6	12.6	8.1	107.2	67.0
TECO Energy	USA	Ba2	2.6	8.8	2.7	11.0	5.6	24.3	59.4
			hi	35.8	2.7	12.6	8.1	107.2	67.0
			avg	20.5	2.6	11.1	6.9	73.8	63.8
			med	17.0	2.6	11.0	7.0	90.0	65.0
			low	8.8	2.4	9.7	5.6	24.3	59.4
COELCE	Brazil	Ba3	0.3	22.3	6.3	43.5	28.9	113.3	35.8
			hi	22.3	6.3	43.5	28.9	113.3	35.8
			avg	22.3	6.3	43.5	28.9	113.3	35.8
			med	22.3	6.3	43.5	28.9	113.3	35.8
			low	22.3	6.3	43.5	28.9	113.3	35.8
Allegheny Energy Inc.	USA	B1	2.2	2.4	1.9	6.2	4.1	40.6	62.0
CEMIG	Brazil	B1	1.8	16.8	2.4	15.7	11.8	66.7	43.9
CMS Energy Company	USA	B1	7.4	6.5	1.8	5.2	5.2	-46.8	84.0
			hi	16.8	2.4	15.7	11.8	66.7	84.0
			avg	8.6	2.0	9.0	7.0	20.2	63.3
			med	6.5	1.9	6.2	5.2	40.6	62.0
			low	2.4	1.8	5.2	4.1	-46.8	43.9
Sierra Pacific Resources	USA	B2	3.5	5.2	-0.1	-6.3	-7.0	NM	64.7
			hi	5.2	-0.1	-6.3	-7.0	NM	64.7
			avg	5.2	-0.1	-6.3	-7.0	NM	64.7
			med	5.2	-0.1	-6.3	-7.0	NM	64.7
			low	5.2	-0.1	-6.3	-7.0	NM	64.7
EDELNOR	Chile	B3	0.1	6.0	1.8	3.0	3.0	343.6	49.1
			hi	6.0	1.8	3.0	3.0	343.6	49.1
			avg	6.0	1.8	3.0	3.0	343.6	49.1
			med	6.0	1.8	3.0	3.0	343.6	49.1
			low	6.0	1.8	3.0	3.0	343.6	49.1

Note: The listed U.S. issuers are all holding company parent entities. Almost all have regulated operating utility subsidiaries that have higher ratings.

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
JAPAN									
Tokyo Electric Power Company, Inc.	Japan	Aa3	46.6	13.1	6.0	15.8	12.3	150.3	92.7
Chubu Electric Power Company, Inc.	Japan	Aa3	20.2	14.5	5.4	17.4	13.5	153.9	81.7
Kansai Electric Power Co., Inc.	Japan	Aa3	24.4	13.5	7.1	19.3	15.4	156.7	77.9
			hi	14.5	7.1	19.3	15.4	156.7	92.7
			avg	13.7	6.2	17.5	13.8	153.7	84.1
			med	13.5	6.0	17.4	13.5	153.9	81.7
			low	13.1	5.4	15.8	12.3	150.3	77.9
Hokuriku Electric Power Co., Inc.	Japan	A1	4.3	15.2	4.8	15.1	13.0	128.1	85.5
Chugoku Electric Power Co., Inc.	Japan	A1	9.3	12.9	5.5	15.9	11.6	167.3	80.7
Tohoku Electric Power Company, Inc.	Japan	A1	15.0	13.1	5.4	18.2	14.0	142.3	80.6
Shikoku Electric Power Company, Inc.	Japan	A1	5.4	13.3	6.6	21.0	17.4	199.7	76.0
Kyushu Electric Power Company, Inc.	Japan	A1	13.4	13.7	6.0	18.2	16.2	154.8	81.6
Hokkaido Electric Power Co., Inc.	Japan	A1	5.0	15.5	5.9	20.3	16.3	137.0	72.1
			hi	15.5	6.6	21.0	17.4	199.7	85.5
			avg	13.9	5.7	18.1	14.7	154.9	79.4
			med	13.5	5.7	18.2	15.1	148.5	80.7
			low	12.9	4.8	15.1	11.6	128.1	72.1

Appendix 2 – Definition of Ratios

FFO Interest cover

(Cash Flow from Operations – Changes in Working Capital + Interest Expense) / (Interest Expense + Capitalized Interest Expense)

FFO / Adjusted gross debt

(Cash Flow from Operations – Changes in Working Capital) / (Total debt + operating lease adjustment + under-funded pension liabilities + basket-adjusted hybrids + securitizations + guarantees + other debt-like items)

Retained Cash Flow / Adjusted gross debt

(Cash Flow from Operations – Changes in Working Capital – Common and Preferred Dividends) / (Total debt + operating lease adjustment + under-funded pension liabilities + basket-adjusted hybrids + securitizations + guarantees + other debt-like items)

Adjusted gross debt / Regulated Asset Value or Capitalization

(Total debt + operating lease adjustment + under-funded pension liabilities + basket-adjusted hybrids + securitizations + guarantees + other debt-like items) / RAV or (Shareholders' equity + minority interest + deferred taxes + goodwill write-off reserve + Total debt + operating lease adjustment + under-funded pension liabilities + basket-adjusted hybrids + securitizations + guarantees + other debt-like items)

EBITA / Sales (margin)

(Net operating income + Equity Earnings of Affiliates + Income from Financial Asset Investments + Goodwill amortization + Interest Component of Operating Lease (1/3 of Rent) + Interest Income – Other expense) / Total revenues

Retained Cash Flow / Capex

(Cash Flow from Operations – Changes in Working Capital – Common and Preferred Dividends) / (Capex + Acquisitions – Divestitures)

Appendix 3 – Description of Utilities Bond Default History

Electric utilities have historically enjoyed a relatively strong credit quality thanks to their stable and predictable cash flows and the tendency of regulators to be supportive when a utility experiences financial stress. Over the past 70 years (since the Great Depression), only five rated investor-owned utilities have experienced bond defaults in highly developed countries; these were all US-domiciled issuers:

1988 Public Service Company of New Hampshire (bankruptcy)

1992 El Paso Electric (bankruptcy)

2001 Pacific Gas & Electric Company (bankruptcy)

2001 Southern California Edison Company (payment default)

2003 Northwestern Corporation (bankruptcy)

Two principal factors contributed to these defaults. In four of the five defaults, a state regulatory commission failed to provide sufficient and timely rate relief for recovery of costs or capital investment in utility plant. This reflected regulatory commission concerns about the impact of large rate increases on customers, as well as debate about the appropriateness of the regulatory relief being sought by the utility. In two of these four cases, transition towards deregulation of the electricity market was a key contributing factor in that it exposed the utilities to dramatic increases in wholesale market prices for purchased power. These two California utilities also lacked long-term contracts such as PPAs, leaving them highly exposed to sharp spikes in market prices. In the remaining case, the default resulted from a failed diversification into unregulated businesses that were totally unrelated to the basic utility business.

These defaults resulted in an average recovery for bondholders that is well above the average for corporate bonds. Holders of secured debt recovered 100% of principal and interest in all five cases. In the case of Pacific Gas & Electric and Southern California Edison Company, 100% of all debt holder claims were ultimately paid.

Figure 9 below lists each of the five bond defaults within the sector and categorizes the reasons for the defaults as the "Principal Factor" or a "Contributing Factor".

Figure 9 – Bond Defaults of US Investor-Owned Utilities: Principal and Contributing Factors

Issuer	Regulators/ Legislators Failed to Respond on a Timely Basis	Transition from a Regulated Environment to a Unregulated Marketplace	Poor-Performing Unregulated Investments
Public Service Company of New Hampshire	Principal Factor		
El Paso Electric Company	Principal Factor		Contributing Factor
Pacific Gas and Electric Company	Principal Factor	Principal Factor	
Southern California Edison Company	Principal Factor	Principal Factor	
Northwestern Corporation			Principal Factor

LESSONS FROM THE ELECTRIC UTILITY INDUSTRY'S DEFAULT HISTORY

Among rated utilities in developed countries, only US utilities have experienced defaults in the last 70 years. In addition to the five US defaulting utilities, several US utilities have narrowly avoided default. In 2002, Allegheny Energy and Centerpoint Energy each experienced a serious liquidity crisis and only avoided defaulting on debt payments due to last-minute agreements with bank lenders that allowed all payments to be made on a timely basis. The greater historic tendency for US companies to default is consistent with Moody's view that regulatory risk is greater in the US than in a number of other highly developed countries.

Related Research

Rating Methodology:

The Analysis of Off-Balance Sheet Exposures – A Global Perspective, Rating Methodology, July 2004, #87408

Off-Balance Sheet Leases: Capitalization and Ratings Implications, October 1999, #48591

Industrial Company Rating Methodology, July 1998, #36188

Special Comment:

Moody's Liquidity Risk Assessments – Q&A, March 2002, #74571

Moody's Analysis of US Corporate Rating Triggers Heightens the Need for Increased Disclosure, July 2002, #75412

Rating Triggers in Europe: Limited Awareness but Widely Used Among Corporate Issuers, September 2002, #76199

U.S. and Canadian Corporate Governance Assessment, August 2003, #78666

Moody's Findings on Corporate Governance in the United States and Canada: August 2003 - September 2004, October 2004, #89113

Event Risk's Four Horsemen of the Apocalypse: Decapitalization, Cash-financed M&A, Litigation, and Accounting Irregularities, November 2000, #61838

Event Risk For European Corporates 2003 – Still A Credit Risk, Still Part Of Our Analysis, February 2003, #77436

The Analysis Of Off-Balance Sheet Exposures: a Global Perspective, July 2004, #87408

The Incorporation of Joint-Default Analysis into Moody's Corporate, Financial and Government Rating Methodologies, February 2005, #91617

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

To order reprints of this report (100 copies minimum), please call 1.212.553.1658.
Report Number: 91730

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MOODY'S
INVESTORS SERVICE

REQUEST FOR COMMENT

Proposed Refinements to the Regulated Utilities Rating Methodology and our Evolving View of US Utility Regulation

Table of Contents:

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Introduction

We are seeking market feedback on a number of refinements that we are proposing to make in an update to our Regulated Electric and Gas Utilities Rating Methodology, which was last published in August 2009. The proposed updated rating methodology will continue to have a particular focus on regulatory risk and financial performance. The grid that is part of the proposed updated rating methodology is comprised of the same four factors as the existing grid: regulatory framework, ability to recover costs and earn returns, diversification, and financial strength. However, it will provide additional granularity on individual factor scores, add new sub-factors, and increase the relative weighting of the financial metrics when determining the grid-indicated rating. We do not expect that implementation of the proposed refinements will lead to any changes in current ratings.

On a separate issue, we are also seeking market commentary on our evolving view of the credit supportiveness of the US utility regulatory framework. Based on our observations of trends and events, we propose to adopt a generally more favorable view of the relative credit supportiveness of the US utility regulatory environment. Our updated view considers improving regulatory trends that include the increased prevalence of automatic cost recovery provisions, reduced regulatory lag, and generally fair and open relationships between utilities and regulators. While US state regulatory environments have been characterized by a process that is more openly adversarial than some other global jurisdictions, there have been very few instances where eventual regulatory outcomes deviated enough from the established regulatory framework to severely undercut utility creditworthiness. In the few instances where inconsistent regulatory decisions have led to serious credit stress, courts have proved to be a reliable secondary support for utility credit worthiness through rulings that mandate that regulatory decisions must follow the established regulatory framework.

Our revised view that the regulatory environment and timely recovery of costs is in most cases more reliable than we previously believed is expected to lead to a one notch upgrade of most regulated utilities in the US, with some exceptions. This evolving view is independent of the proposed changes in the methodology that are highlighted in the Summary section that follows, and would have taken place even if the 2009 methodology were to remain in place without modification.

Although the change of our US regulatory view does not by itself require the publication of a Request for Comment, based on an unusual confluence of factors in this instance, including the proximity in time of this change in view to an expected update in the methodology (even though the two are unrelated), the heavy weighting that regulatory factors have in our ratings as reflected in both the existing and proposed methodologies, the large number of US utilities that are potentially affected and the magnitude of debt outstanding in the sector, we think it is important to clearly communicate our developing views in this document and to solicit comments from market participants who may have interest.

We invite market participants to provide comments on this proposal and to make other suggestions for consideration by sending comments by October 23, 2013. Comments should be sent to RFC@moodys.com using the Request for Comment Form (the "RFC Response Form") available on the Request for Comment topic page on www.moodys.com. If your comments pertain to the proposed refinements to the rating methodology, please reference "Part I: Regulated Utility Methodology" in the topic line of your response. If your comments pertain to our evolving view of US utility regulation, please reference "Part II: US Utility Regulation" in the topic line of your response. The RFC response period for each of these topics will be open for at least 30 days from the date of publication of this Request for Comment.

Summary

PART I: Proposed Update of the Regulated Electric and Gas Utilities Methodology

Changes to the Grid: Additional sub-factors and changes to factor weighting

» We propose to add sub-factors under Factor 1- Regulatory Framework and Factor 2- Ability to Recover Costs and Earn Returns, to provide more granularity and to better distinguish among regulated utilities. The sub-factors include Sub-factor (1a) – Legislative and Judicial Underpinnings to Regulatory Framework (12.5% weighting) , Sub-factor (1b) – Consistency and Predictability of Regulation (12.5%), Sub-factor (2a) – Timeliness of Recovery of Operating and Capital Costs (12.5%), and Sub-factor (2b) - Sufficiency of Rates and Returns (12.5%). A preliminary draft of the grid for the updated rating methodology is included in Appendix A and shows the new sub-factors.

» We propose to refine Factor 3 – Diversification to focus more on regulatory diversity and the strength of the service territory economy as the key considerations in the scoring of the Market Position sub-factor. We also propose to change the Generation and Fuel Diversity sub-factor by replacing the emphasis on carbon fuels with the broader concepts of "challenged" and "threatened" sources of generation, as detailed in Appendix B.

» The range of possible scores under each factor, previously Aaa to B, has been expanded to include the Caa rating category. The purpose is to provide greater transparency in the thinking behind our ratings for issuers at the lower end of the spectrum.

» The Liquidity sub-factor, currently weighted at 10% in the grid, will be removed from the methodology grid entirely and instead analyzed as a key rating consideration outside the grid. However, there will be no diminution in our emphasis on liquidity as a key rating driver, since it always an important credit consideration and can become the primary rating consideration if it is mismanaged or becomes problematic for a utility.

» The weighting in the grid for the four financial ratios that comprise Factor 4 – Financial Strength will increase to 40% from 30%, although the specific ratios will remain the same. Additional weighting and importance will be given to the two cash flow to debt ratios: CFO pre-WC/Debt (to 15% from 7.5%) and CFO pre-WC less Dividends/Debt (to 10% from 7.5%), with the other two ratios continuing to be weighted at 7.5%. The above-mentioned expansion of the scoring range will cause some changes in grid parameters outlined for each rating category, primarily at the lower end of the grid.

» The scoring grids, including the ranges for financial ratios, are primarily oriented toward vertically integrated utilities. We are contemplating lowering the financial ratio threshold ranges by approximately one category for certain utilities viewed as having lower business risk, for instance many US natural gas local distribution companies (LDC's) and certain US electric transmission and distribution companies (T&D's, which lack generation but generally retain some procurement responsibilities for customers). The purpose would be to better align the grid-scoring to our view, reflected in current ratings, that utilities at the same rating category level with an inherent lower business risk can have somewhat lower financial metrics. Alternately, business risk may be addressed in a different manner; for instance, by incorporating it more broadly into the qualitative factor scoring grids. Typically, lower risk utilities would be those having no electric generation assets, very strong insulation from commodity risks, good protection from volumetric risks, fairly limited capex needs and low exposure to storms, major accidents and natural disasters.

Additional summary comments about the updated rating methodology:

» As is our current practice, actual ratings of utility holding companies may be lowered by a notch or more because of structural subordination, and we are contemplating the potential of including this notching into our grid-indicated ratings to provide greater transparency. Our approach has and will consider the relative percentage of debt at the holding company versus debt at the operating subsidiaries, the diversity of holding company cash flows, the composition and materiality of non-utility businesses, and other considerations.

» We also propose to maintain our existing approach to notching between classes of debt. In most regions, we rate the senior secured debt of a utility one notch above its senior unsecured debt. However, US utility first mortgage bonds are typically rated two notches higher than the senior unsecured debt of the same issuer, given their first priority lien on critical infrastructure assets and the very high historical recovery rates for this class of debt in default situations.

The grid in the proposed methodology contains the same four factors as the existing rating methodology with the same weighting for each factor, but there are changes in the sub-factors and their weighting. We propose to assign equal weighting to four new sub-factors related to the regulatory framework and ability to recover costs and earn returns because we believe these sub-factors typically work together in approximately equal proportion as indicators of regulatory risk. These four sub-factors would still total 50% of the overall grid score, reflecting our view that the regulatory environment is the most important determinant of credit quality in the sector and generally comprises about half of the elements that are most pertinent for credit quality.

The grid in the proposed rating methodology would use the same four financial ratios but with some changes in weighting. The weighting of the two existing measures of cash flow generation relative to debt is to be increased because we believe these financial ratios are the strongest direct indicators of current capacity to service debt. The proposed 15% weight for CFO Pre-WC/Debt reflects our view that this is the single most predictive financial measure, followed in importance by CFO Pre-WC -

Dividends/Debt with a proposed 10% grid weighting. The additional weighting of these ratios is to be balanced by elimination of the separate liquidity sub-factor that has a 10% weighting in the existing grid. We propose to remove liquidity from the grid and consider it as a qualitative assessment outside the grid because its credit importance varies greatly over time and by issuer and accordingly is not well represented by a fixed grid weight. The weighting of the grid indicators for diversification are unchanged, but the proposed descriptive criteria have been refined to place greater emphasis on the economic and regulatory diversity of each utility's service area rather than the diversity of operations, because we think this emphasis better distinguishes credit risk.

As noted in the Summary above, we do not expect that implementation of the proposed refinements in the updated rating methodology will by themselves lead to any changes in current ratings.

PART II: Revised View of US Utility Regulation

» Our view of the credit supportiveness of regulatory jurisdictions around the globe is constantly evolving along with events. In most cases we would expect to simply update our view and to simultaneously make any rating changes that result. However, considering the large number of rated US utilities and the volume of their rated debt, combined with the magnitude of change in our view, we are soliciting comments on our rationale for a more favorable view of the US regulatory environment. We believe that many US regulatory jurisdictions have become more credit supportive of utilities over time and that the assessment of the regulatory environment in the US that has been incorporated in ratings may now be overly conservative.

» While we had previously viewed individual state regulatory risks for US utilities as generally being higher than utilities in most other developed countries (where regulation usually occurs at the national level), we have observed an overall decrease in regulatory risk in the US. While state regulatory jurisdictions seem to be more prone to highly visible disputes and parochial political intervention than national regulatory frameworks, which has sometimes raised concerns about regulatory consistency, we now believe that the more openly adversarial process in the US does not lead to materially less reliable regulatory outcomes for credit quality.

» There have been a number of favorable regulatory changes in recent years. For example, the increasing prevalence of riders, trackers, and other automatic cost recovery provisions in the US has reduced the amount of time between when a utility incurs and recovers costs, or "regulatory lag." These changes have happened incrementally - jurisdiction by jurisdiction or even issuer by issuer. We now believe that these changes, in aggregate, represent a significant improvement in the timeliness of cost recovery.

» We believe the majority of US utilities enjoy relatively fair and open relationships with their regulators, and that most regulators strive to maintain reliable, financially viable utilities in their states, while also balancing the needs of the state's commercial, industrial, and residential utility customers.

» There have been selected instances of regulatory and political pressure leading to financial distress for utilities in some US states, such as California, Illinois, and Maryland. However, it is noteworthy that state regulators have stopped short of triggering defaults after the experience in California where subsequent court rulings reversed regulatory actions that contributed to defaults by the two largest utilities in the state. We think regulatory decisions consider eventual judicial outcomes, and we propose to give more emphasis to the relatively consistent US judicial framework as a factor that discourages highly inconsistent regulatory actions that would have a severe credit impact.

» Part of the evolution to our thinking is to give greater emphasis to the judicial framework into our analysis. A material number of litigated regulatory matters over the past decade could be viewed as an indication of a less supportive framework. However, the resultant body of case law has provided greater clarity into the rules of engagement for both utilities and regulators, which we view as providing a generally greater level of stability.

» We continue to believe US utilities may have more incentives to enter bankruptcy proceedings relative to similarly rated corporate issuers, due to their good track record of being able to reorganize and obtain rate relief while under the protection of federal bankruptcy courts. Nonetheless, utilities have experienced default rates that are lower than non-financial corporate issuers and much lower losses given default. This has been well documented in Moody's default and recovery studies on regulated utility debt.

» A comparison of key financial ratios used under the Regulated Electric and Gas Utilities Rating Methodology in rating utilities across several developed international jurisdictions with credit supportive regulatory frameworks (including Canada and Japan) shows that US regulated utilities in recent years have exhibited stronger financial ratios relative to similarly rated regulated international utility peers.

» We acknowledge that every regulatory framework will need to accommodate new realities and challenges that arise to confront the industry. Current examples of such challenges in the US include new nuclear construction, public policy initiatives on renewable energy, and the rise of distributed generation. However, our current view is that regulators and utilities will be able to reach reasonable agreements regarding these issues.

» As previously noted, our view of regulatory environments is constantly evolving and we normally make changes in our view and resulting rating changes without publishing a Request for Comment. We have seen a decline in the credit supportiveness of some regulatory environments that had been previously viewed as highly credit supportive. For example, we adopted a more conservative assessment for the regulatory environment and timely cost recovery for all of the Japanese utilities following the Fukushima disaster in 2011. This led to downgrades of their ratings and was reflected in lower scoring in our assessment of the regulatory and cost recovery factors in the grid.

For these reasons, we believe a more positive view of US utility regulation is warranted. This is expected to lead to a one notch upgrade of the ratings of most regulated utility credits in the US, with some exceptions. An improved view of US state regulatory frameworks is also likely to lead to higher scoring for many US utilities under the grid factors for utility regulatory frameworks and/or cost recovery provisions.

In most cases, we would expect all of the debt classes of a utility's capital structure to be upgraded by the same number of notches, although there could be some limited exceptions to this general rule. Most utility holding companies will be upgraded by the same number of notches to the extent that the upgraded regulated utility subsidiaries represent the holding company's predominant business and there are no extenuating circumstances, such as a large amount of holding company debt, substantial unregulated or other higher risk businesses, or other factors that may increase credit risk at the holding company.

While we anticipate that most US regulated utilities will be upgraded, there are issuer specific circumstances that may preclude an upgrade. These may include but are not limited to the following:

» Utilities that are part of corporate families that have significant unregulated or other higher risk operations as part of their overall business mix;

» Other corporate family considerations, such as a highly levered holding company, a complex corporate structure, or exposure to contagion risk due to the existence of lower rated affiliates;

» Utilities that are engaged in substantial construction programs for new generation plants (especially those with long lead-times or with technology that is less tested) or are in the midst of other major capital projects;

» Utilities that face material cost recovery risks or challenges related to significant capital investments;

» Utilities subject to concentration and/or event risk that are exposed to potentially sudden and unexpected changes in credit profile; and

» Utilities that are under downward credit pressure, particularly where this is reflected in a review for downgrade or a negative rating outlook.

Part I: Detailed Explanation of Proposed Refinements to Regulated Utilities Rating Methodology

This report includes a detailed rating grid that provides a reference tool that can be used to approximate credit profiles within the regulated electric and gas utility sector in most cases. The grid provides summarized guidance for the factors that are generally most important in assigning ratings to companies in this sector. However, the grid is a summary that does not include every rating consideration. The weights shown for each factor in the grid represent an approximation of their importance for rating decisions, but actual importance may vary substantially. In addition, the illustrative mapping examples typically included in the rating methodology and some of our other published research use historical results while ratings are based on our forward-looking expectations. As a result, the grid-indicated rating is not expected to match the actual rating of each company in most cases.

The rating methodology is not intended to be an exhaustive discussion of all factors that our analysts consider in assigning ratings in this sector. We note that our analysis for ratings in this sector covers factors that are common across all industries such as ownership, management, liquidity, corporate legal structure, governance and country related risks which are not explained in detail in this document as well as factors that can be meaningful on a company-specific basis. Our ratings consider these and other qualitative considerations that do not lend themselves to a transparent presentation in a grid format. The grid used for this methodology reflects a decision to avoid greater complexity that would result in grid-indicated ratings that map more closely to actual ratings in favor of a simple and more transparent presentation.

Addition of Sub-factors under Factor 1 - Regulatory Framework and Factor 2 - Ability to Recover Costs and Earn Returns

We have added sub-factors under Factor 1 – Regulatory Framework and Factor 2 – Ability to Recover Costs and Earn Returns, to provide more granularity and to better distinguish among regulated utilities. With Factors 1 and 2 each weighted at a relatively high 25% of the overall grid outcome in the current methodology, incremental changes in a utility's regulation or cost recovery provisions are not easily indicated. Breaking down these two broad factors into two sub-factors will allow us to better reflect and communicate sometimes subtle differences in regulatory and/or cost recovery provisions among utilities. The new sub-factors include Sub-factor (1a) – Legislative and Judicial Underpinnings to Regulatory Framework (12.5% weighting) , Sub-factor (1b) – Consistency and Predictability of Regulation (12.5%), Sub-factor (2a) – Timeliness of Recovery of Operating and Capital Costs (12.5%), and Sub-factor (2b) - Sufficiency of Rates and Returns (12.5%). A draft of each of these new methodology sub-factors is included in Appendix A.

Factor 1 – Regulatory Framework

Sub-factor 1a – Legislative and Judicial Underpinnings to Regulatory Framework (12.5% weighting)

For this sub-factor, we consider the scope, clarity, transparency, supportiveness and granularity of utility legislation, decrees, and rules. We also consider the strength of the regulator's authority over rate-making and other regulatory issues affecting the utility, the effectiveness of the judiciary or other independent body in arbitrating disputes in a disinterested manner, and whether the utility's monopoly has meaningful or growing carve-outs. In addition, we look at how well developed the framework is – both how fully fleshed out the rules and regulations are and how well tested it is, as well as the extent to which regulatory or judicial decisions have created a body of precedent that will help determine future rate-making. Finally, we consider how effective the utility is in navigating the regulatory framework – both the utility's ability to shape the framework and adapt to it. The inclusion of this sub-factor also represents a more explicit acknowledgement that the judicial system can be a major determinant of the regulatory framework.

Sub-factor 1b – Consistency and Predictability of Regulation (12.5%)

For this sub-factor, we consider the track record of regulatory decisions, in terms of consistency, predictability and supportiveness. We evaluate the utility's interactions in the regulatory process as well as the overall stance of the regulator toward the utility. In scoring this sub-factor, we will primarily evaluate the actions of regulators, politicians and jurists rather than their words. Nonetheless, words matter when they are an indication of future action. We seek to differentiate between political rhetoric that is encouraged by a relatively open regulatory process, and statements that are more clearly indicative of future actions and trends in decision-making.

Factor 2 – Ability to Recover Costs and Earn Returns

Sub-factor 2a – Timeliness of Recovery of Operating and Capital Costs (12.5%)

The criteria we consider in our assessments for this sub-factor include provisions and cost recovery mechanisms for operating costs, mechanisms that allow actual operating and/or capital expenditures to be trued-up periodically into rates without having to file a rate case (this may include formula rates, rider and trackers, or the ability to periodically adjust rates for construction work in progress) as well as the process and timeframe of base rate cases – those that are fully reviewed by the regulator, generally in a public format that includes testimony of the utility and other stakeholders and interest groups. We also look at the track record of the utility and regulator for timeliness. For instance, having a formula rate plan is positive, but if the actual process has included reviews that are delayed for long periods, it may dampen the benefit to the utility. In addition, we seek to measure, or at least estimate, the lag between the time that a utility incurs major construction expenditures and the time that the utility will start to recover and/or earn a return on that expenditure.

Sub-factor 2b - Sufficiency of Rates and Returns (12.5%)

The criteria we consider in our assessments for this sub-factor include statutory protections that assure full cost recovery and a reasonable return for the utility on its investments, the regulatory mechanisms used to determine what a reasonable return should be, and the track record of the utility in actually recovering costs and earning its allowed returns. We examine rate case outcomes and compare them to the rate request submitted by the utility, to prior rate cases for the same utility and to recent rate case outcomes for a peer group of comparable utilities. We look at regulatory disallowances of costs or investments, with a focus on their financial severity and also the reasons given by the regulator, to determine the likelihood that such disallowances will be repeated in the future.

Refinement and Broadening of Factor 3 - Diversification

Sub-factor 3a – Market Position (5% or 10%)

The market position sub-factor will be refined to focus primarily on the economic diversity of the utility's service territory and the diversity of its regulatory regime. We will also consider the diversity of utility operations (e.g., regulated electric, gas, water, steam) when there are material operations in more than one area. Economic diversity is typically a function of the size and breadth of the territory and the businesses that drive its GDP and employment. For diversity of regulatory regimes, we typically look at the number of regulators and the percentages of revenues and utility assets that are under the purview of each. For vertically integrated utilities that have a meaningful amount of generation, this sub-factor will continue to have a weighting of 5%. For electric and transmission utilities without meaningful generation and for natural gas local distribution companies, this sub-factor will continue to have a weighting of 10%.

Sub-factor 3b – Generation and Fuel Diversity (0% or 5%)

We have changed this sub-factor by replacing the emphasis on exposure solely to carbon fuels in the current methodology with the broader concepts of exposure to "challenged" or "threatened" sources of generation. The sub-factor will continue to consider the fuel type of the issuer's generation and important power purchase agreements, the ability of the issuer to economically shift its generation and power purchases when there are changes in fuel prices, the degree to which the utility and its rate-payers are exposed to or insulated from changes in commodity prices, and exposure to the aforementioned "challenged" or "threatened" sources. For issuers with a meaningful amount of generation, this factor will continue to have a weighting of 5% and for those with no generation, 0%. The definition of "challenged" and "threatened" sources of generation is included in Appendix B.

Liquidity Analyzed as Key Rating Consideration Outside of Methodology Grid

The Liquidity sub-factor, weighted at 10% in the current grid, will be removed from the grid and will be analyzed as a key rating consideration outside the grid. However, there will be no diminution in our emphasis on liquidity as a key rating driver. Liquidity is always an important credit consideration and can become the primary rating consideration if it is mismanaged or becomes problematic for a utility. Liquidity can be of particular importance in an industry in which companies frequently generate negative free cash flow due to high capital expenditures and significant dividend payments.

Our fundamental analysis of a utility's liquidity will remain unchanged in the updated rating methodology. Using our projections of the financial performance of an issuer, we evaluate how its projected sources of cash (cash from operations, cash on hand, and existing multi-year credit facilities) compare to its projected uses (including all planned capital expenditures, dividends, maturities of short and long-term debt, and our projection of potential liquidity calls on financial hedges). Our assessment of liquidity assumes no access to capital markets, no incremental credit facilities, no renewal of existing credit facilities, no decrease in capital expenditures from the plan, and no reduction in dividends.

Methodology Grid Expanded to Include "Caa" Category

The range of possible scores under each factor in the grid, currently ranging from Aaa to B, will be expanded to include a "Caa" category. The purpose of this change is to provide greater transparency in our scoring of the grid for ratings at the lower end of the spectrum. While regulated utilities predominantly comprise an investment grade sector, with most issuers unlikely to be assigned grid scores of Caa, regulated utilities experiencing severe financial stress and some utilities in certain emerging markets are more likely to be scored at the lower end of the grid. As is demonstrated in the revised methodology sub-factor grids included in Appendix A, the criteria for Caa scoring is categorized as utilities with very unsupportive regulatory frameworks, poor or highly uncertain cost recovery provisions, little to no diversification, and extremely weak financial metrics. The inclusion of the Caa level in the grid will provide greater granularity that better enables distinctions among utilities at the lower end of the grid.

Weighting of Four Key Financial Ratios Increased to 40% from 30%

The overall weighting of the four key financial ratios included in Factor 4 – Financial Strength will increase to 40% from 30%, although the ratios themselves will remain the same. The ratios will continue to include Moody's standard adjustments and, in certain instances, analyst-determined adjustments specific to the issuer.

In the revised grid that is part of the proposed updated methodology, additional weighting will be given to the two cash flow to debt ratios to better reflect their importance in our financial analysis and in our credit rating discussions. For the most part, the financial parameters outlined for each scoring category will remain the same, except at the lower end of the grid, where slight adjustments to the parameters have been made to accommodate the aforementioned expansion of the grid to include a "Caa" scoring category.

The four financial ratios and their revised weightings where applicable are listed below:

» Cash from operations before changes in working capital (CFO Pre-W/C) + interest / interest – 7.5%*

» CFO Pre-W/C / debt – 15% (up from 7.5%)*

» CFO Pre-W/C - dividends / debt – 10% (up from 7.5%)*

» Debt / capitalization or debt / regulated asset value (RAV) – 7.5%*

*It is anticipated that the illustrative examples in the updated rating methodology document will use three year historical averages for financial ratios. However, the factors in the grid can be assessed using various time periods and rating committees may find it analytically useful to examine both historic and expected future performance for various periods of time.

Financial Ratio Threshold Ranges May Be Lowered Based on Business Risk

In our view, the different types of utility entities covered under this methodology have different levels of business risk. Vertically integrated utilities generally have a higher level of business risk because they are engaged in power generation. We view power generation as the highest-risk component of the electric utility business, as generation plants are typically the most expensive part of a utility's infrastructure (representing asset concentration risk) and are subject to the greatest risks in both construction and operation, including the risk that incurred costs will either not be recovered in rates or recovered with material delays. Other types of utilities may have lower business risk, due to factors that could include a generally greater transfer of risk to customers, very strong insulation from exposure to commodity price movements, good protection from volumetric risks, fairly limited capex needs and low exposure to storms, major accidents and natural disasters For instance, we tend to view many US natural gas local distribution companies (LDC's) and certain US electric transmission and distribution companies (T&D's, which lack generation but generally retain some procurement responsibilities for customers), as typically having a lower business risk profile than their vertically integrated peers.

The scoring grids, including the financial ratio ranges in the Factor 4 grid shown in Appendix A, are primarily oriented toward vertically integrated utilities. We are contemplating lowering the financial ratio threshold ranges for utilities with lower business risk, including lower risk T&D's and LDC's in the US, by approximately one category. As an example, the threshold for a Baa category scoring in interest coverage for a vertically integrated utility (3.0x - 4.5x) would, for a utility with lower business risk, be the range for an A category scoring. The purpose would be to better align the grid-scoring to our view, reflected in current ratings, that at the same rating category, utilities with lower business risk can have somewhat lower financial metrics. Alternately, business risk may be addressed in a different manner, for instance by incorporating it more broadly into the qualitative factor scoring grids. In cases of T&D's that we do not view as having materially lower risk than their vertically integrated peers, for instance due to increased risks from substantial storm exposure, a regulatory framework that exposes T&D's to energy supply risk, large capital expenditures for required maintenance or upgrades, or increased regulatory scrutiny due to poor reliability or other issues, we may instead use the same Factor 4 grid ranges as those for integrated utilities. The same may be true for LDC's that in our view do not have materially lower risk; for instance, due to their ownership of high pressure pipes or older systems requiring extensive gas main replacements, where gas commodity costs are not fully recovered in a reasonably contemporaneous manner, or where the LDC is not well insulated from declining volumes.

Notching of Utility Holding Company Ratings Due to Structural Subordination May Be Included as a Grid Adjustment

Many utility company structures consist of a holding company that owns one or more operating subsidiaries. Under our current practices, ratings of utility holding companies are in many cases likely to be below those of operating companies due to structural subordination, since creditors of an operating subsidiary typically have a more direct claim on the cash flows and assets of these subsidiaries than do creditors of a holding company. When deciding whether or not to rate a holding company lower than it would be rated if it were an operating company, our considerations may include the relative percentage of debt at the holding company versus debt at the utility operating subsidiaries, operating company debt as a percentage of consolidated assets, the regulatory or effective limitations on movement of cash among the companies in the corporate family, the diversity of holding company cash flows, the composition and materiality of non-utility businesses, as well as other considerations. While structural subordination may exist in any industry sector, it is a particularly prevalent credit issue in the utility sector, because incurrence of debt at both operating and holding companies is more widespread. We are contemplating the potential of including our notching practices into our grid-indicated ratings to provide greater visibility into the impact of this risk factor on ratings.

US Utility First Mortgage Bond Ratings are Typically Two Notches Above the Senior Unsecured Rating

In most regions, the typical rating relationship between different debt classes of regulated utilities is the same as for other investment grade non-financial corporate sectors, with senior secured debt rated one notch higher than the same issuer's senior unsecured rating. For the relatively small number of speculative grade utility issuers in certain regions, we apply our loss given default ratings methodology. However, our existing practice is to generally apply a two notch uplift to the first mortgage bond ratings of regulated electric and gas utilities in the US, and the updated rating methodology will not affect such rating relationships.

First mortgage bond holders in the US generally benefit from a first lien on most of the fixed assets used to provide utility service, including such assets as generating stations, transmission lines, distribution lines, switching stations and substations, and gas distribution facilities, as well as a lien on franchise agreements. In our view, the critical nature of these assets to the issuers and to the communities they serve has been a major factor that has led to very high recovery rates for this class of debt in situations of default, thereby justifying a two notch uplift. The combination of the breadth of assets pledged and the bankruptcy-tested recovery experience has been unique to the US.

We may not always rate US first mortgage bonds two notches higher than the senior unsecured rating, for instance if the pledged property is not viewed by Moody's as being critical infrastructure, or if the mortgage is materially weakened by carve-outs, lien releases or similar creditor-unfriendly terms.

PART II: Additional Details on Our Evolving View of US Utility Regulation

Note that the following discussion of our evolving view of US utility regulation does not represent a change in our rating methodology and does not require that a Request for Comment be published. However, given the large number of US utilities affected and the magnitude of debt outstanding in the US utility sector, in the interest of clarity, we thought it was important to share our views broadly by including them in this document and soliciting comments from those who may have interest. This change in our view of US utility regulation is independent of proposed revisions to the rating methodology and would have the same rating impact under the existing rating methodology and the proposed update to the rating methodology.

The Overall US Regulatory Environment Has Become More Credit Supportive

In recent years we believe that some regulatory jurisdictions have become more credit supportive of regulated utilities, most notably in the US. While we had previously viewed the regulatory risk of US utilities, typically regulated at the state level, as being higher than utilities in most other developed countries where regulation occurs at the national level, we are contemplating a significant revision of our view. We see improved levels of regulatory support across the US, which includes the increased use of single issue riders and trackers, timely rate case outcomes or rate settlements, and a collaborative approach toward infrastructure investment and refurbishment.

The increased prevalence of riders, trackers, and other automatic cost recovery mechanisms in the US has materially reduced the amount of time between when a utility incurs and recovers costs, otherwise known as "regulatory lag." These changes have occurred incrementally – jurisdiction by jurisdiction or even issuer by issuer. We now believe that these changes, in aggregate, represent a significant improvement in cost recovery.

EXHIBIT 1

Average Regulatory Lag

Source: SNL Financial/Edison Electric Institute

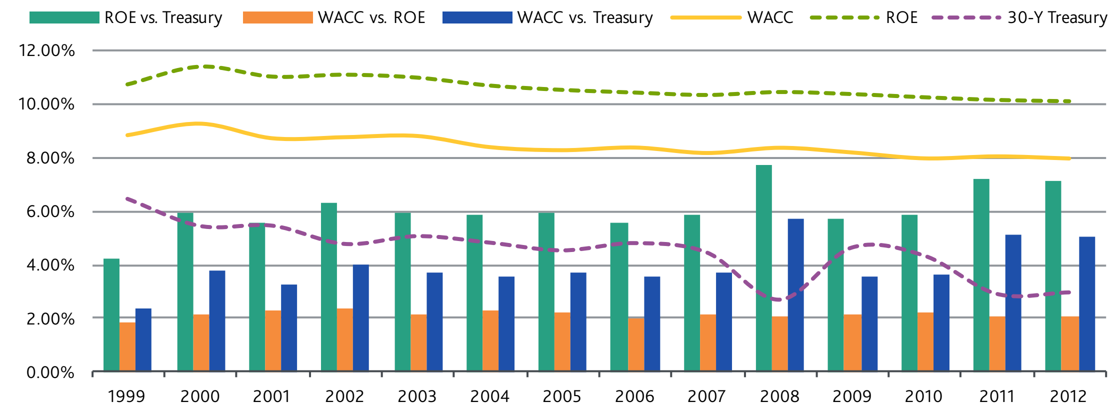
We also believe that the majority of US utilities enjoy relatively fair and open relationships with their regulators, and that most regulators strive to maintain reliable, financially viable utilities in their states, while also balancing the needs of the state's commercial, industrial, and residential utility customers. We see a high degree of regulatory support continuing for much of the sector, as sustained low natural gas prices help to foster a collaborative relationship between utilities, regulators, and customers. Low fuel prices, which are the industry's most significant expense, provide increased economic flexibility for regulators to more easily approve and for utilities to implement base rate increases and other cost recovery mechanisms.

While state regulation has the potential to reflect more intensive disputes and parochial interests, a regional business model is particularly well suited to effective constituency outreach efforts. Utilities are important contributors to the well-being of their local communities, and are typically one of the largest publically traded companies and largest employers in their areas, as well as a major source of property taxes for state and local governments.

Although allowed ROE's are in decline, we observe that they remain at favorable levels compared to the historical average 30 year treasury rates and that ROE's are in line with historical levels of a utility's weighted average cost of capital. However, as treasury rates have begun to increase in 2013, we note that US utility ROE levels may not increase commensurately or on as timely a basis, potentially pressuring industry profitability going forward.

EXHIBIT 2

US Regulated Utility Returns vs. Costs



Source: SNL Financial/Bloomberg

Over the intermediate term, we see utilities experiencing a decline in general rate case filings, whether due to prescriptive and forward looking rate plans that have been approved by their regulators, or due to a utility's willingness to postpone rate cases and focus on managing costs in an environment of low inflation and low fuel costs. This has been an evolution from historical experience, where many utilities filed more frequent rate cases requesting smaller rate increases in order to reduce regulatory lag and avert potential customer resistance. We view this change as a result of several factors, including the aforementioned growing use of tracking mechanisms, as well as increased willingness of regulators to be more forward looking in their rate setting than historically. We have also found that differentiating among rate case outcomes among individual states has become increasingly difficult, as most utilities have in recent years experienced fair and balanced rate case outcomes, with many agreeing to rate settlements or other negotiated outcomes.

Part of the evolution of our thinking has been an increased emphasis on the relevant judicial framework in our assessment of a utility's regulatory framework. The material number of litigated regulatory matters in the US could be viewed as indication of a less supportive framework. However, it may simply reflect a greater tendency for parties to pursue court remedies, and the resultant body of relatively consistent case law has provided greater clarity into the rules of engagement for utilities and their regulators as well as greater visibility into the legal outcomes that would result from a regulatory dispute, thereby reducing the likelihood that a critical regulatory issue between a utility and regulatory commission would depart so far from expectations as to trigger a default.

We are contemplating a more favorable view of US regulatory environments, which would be reflected in stronger grid scoring for the regulatory framework and/or cost recovery factors for some US regulated utilities. We acknowledge that regulatory frameworks will need to accommodate new challenges and some may not support higher scoring under the methodology. Current examples of such challenges include utilities that are pursuing new nuclear construction projects in Georgia and South Carolina, public policy initiatives encouraging greater use of renewable energy, and the growth of distributed generation. These new market developments will continue to require collaborative solutions on the part of utilities, regulators, and political stakeholders. New rate compacts and incentive pricing mechanisms will need to be implemented that maintain both electricity network reliability and the financial health of the incumbent utility. Our current view is that regulators and utilities will be able to reach reasonable agreements regarding these issues.

While we have a more favorable view of US utility regulation in general, we acknowledge that challenging regulatory decisions will continue to occur in some jurisdictions as they have in the past, whether for political, populist, economic , or other reasons. The state of Florida, for example, had a long track record of credit supportive utility regulation before political intervention in utility rate cases in 2010 caused a deterioration in that regulatory framework. Following the election of a new governor and a the appointment of several new utility commissioners, Florida's regulatory framework has improved and is again considered credit supportive. Similarly, the state of California had a very good regulatory regime before the California energy crisis in 2000-2001 led to a dramatic decline in its credit supportiveness. Partly as a result of the lessons learned and improvements made following that experience, California's utility regulatory framework is again considered to be strong. Because US utility regulation remains highly fragmented and is primarily implemented at the state level, scenarios such as these will continue to emerge and influence future rating actions.

Sector Has Experienced Few Defaults, While Recovery Has Been Extraordinarily High

While there have been selected instances of regulatory and political pressure leading to financial distress for utilities in some US states (California, Illinois, and Maryland, for example), the overall number of US regulated utility defaults have been extremely low. This has occurred despite the propensity of regulated utilities to be more likely to consider and pursue strategic bankruptcy filings at an earlier stage of distress compared to unregulated non-financial corporate issuers. In the few instances where this has occurred, the company has continued to operate as a going concern, while regulators and other parties work collaboratively to resolve issues, allowing the utility to eventually exit bankruptcy proceedings.

The essential nature of the service that regulated utilities provide, as well as the critical nature of their generation, transmission, and distribution assets, makes it almost impossible to liquidate or otherwise disaggregate a utility during bankruptcy proceedings. As result, in the few regulated utility defaults that have occurred in the US, holders of secured debt eventually recovered 100% of principal and interest on a nominal basis in most cases. Recovery on other classes of debt has also been very high. This has been documented in Moody's default and recovery studies. Although not a key driver of our evolving overall view of US utility credit risk, these studies support and corroborate our view that ratings in the US regulated utility sector could be higher.

In 2009, we published a default study on the regulated utility industry entitled "Default, Recovery, and Credit Loss Rates for Regulated Utilities, 1983-2008". This study concluded that the history of regulated utility defaults indicates that Baa-rated regulated utilities have had significantly lower one-year default rates than Baa-rated nonfinancial corporate issuers, while A-rated utilities have had modestly higher one-year default rates than A-rated nonfinancial corporate issuers. Regulated utilities have also experienced lower loss given default rates (and, by definition, higher recovery rates) than other corporate issuers. Overall, this regulated utility default study showed that regulated utilities have experienced lower credit losses than non-financial, non-utility corporate issuers.

More recently, in December 2012 we published our first report on the historical credit performance of Moody's rated long-term infrastructure debts entitled "Infrastructure Default and Recovery Rates, 1983-2012H1." The study compared historical cumulative default and recovery rates for a broader set of infrastructure debts, including US regulated utilities, with non-financial corporate issuers. Like the previous regulated utility default study discussed above, the infrastructure default study also showed that A-rated corporate infrastructure debts have higher one year default rates but lower losses given default than non-financial corporate issuers, while Baa-rated corporate infrastructure debts (representing the higher proportion of corporate infrastructure debts) have very similar one year default rates as Baa-rated non-financial corporate debts. However, as recoveries have been better among the infrastructure debts, total credit loss rates have been about 30% lower than those of non-financial corporate debts, although in absolute terms they are of the same order of magnitude, indicating overall comparability in performance.

Credit loss rates for Ba-rated corporate infrastructure debts (representing a small proportion of corporate infrastructure debts) are lower than for non-financial corporate debts. This is driven by regulated utilities' (the major sub-factor of all Ba-rated infrastructure corporate debts) very low propensity to default and their high recovery rates. All other Ba-rated corporate infrastructure debts have credit loss rates similar to their non-financial corporate counterparts.

US Utility Financial Metrics Are Higher Than Similarly Rated International Utility Peers

In comparing financial ratios we use in the rating methodology for Regulated Electric and Gas Utilities of approximately 150 utility companies in several developed international jurisdictions with credit supportive regulatory frameworks (including Canada and Japan), US regulated utilities exhibit stronger ratios relative to similarly rated regulated international peers. For example, US utilities produce ratios of cash flow to debt that are almost twice as high as similarly rated international peers. The analysis included utilities with senior unsecured ratings in the A or Baa rating categories, and included electric, gas, networks, and water utilities, using historical financial data from Moody's Financial Metrics, as adjusted.

EXHIBIT 3

	Average (2005 - 2012)		Year-end 2012	
Jurisdiction	CFO / debt	FFO / debt	CFO / debt	FFO / debt
Average of international peers (A/Baa)	12%	12%	11%	10%
US - vertically integrated (A/Baa)	22%	23%	24%	23%
US - T&D, LDC (A/Baa)	18%	19%	19%	19%

Source: Moody's Financial Metrics

We note that federal tax policies, including accelerated bonus depreciation, have helped increase cash flows for many US utilities in recent years. But even if we exclude these benefits, in this example, by reducing the ratio of cash flow to debt by 300 basis points as a simplifying assumption, we still see more robust cash flow to debt ratios, roughly 50% higher than international peers.

EXHIBIT 4

	Average (2005 - 2012)		Year-end 2012	
Jurisdiction	CFO / debt	FFO / debt	CFO / debt	FFO / debt
Average of international peers (A/Baa)	12%	12%	11%	10%
US - vertically integrated (A/Baa)	19%	20%	21%	20%
US - T&D, LDC (A/Baa)	15%	16%	16%	16%

Source: Moody's Financial Metrics

In addition, US regulated utilities have lower balance sheet leverage and a larger equity cushion to absorb losses than similarly rated international peers, which is in part driven by the respective regulatory framework. With that said, higher leverage exhibited by some of the international peers is a function of those specific regulatory environments and the overall rate recovery structure in those jurisdictions. US utilities also have a sizeable contribution towards their capitalization from generous federal tax policies through the use of deferred taxes.

EXHIBIT 5

	Average (2005 - 2012)			Year-end 2012		
Jurisdiction	Debt / Equity	Debt / Book Capitalization	Debt + Equity / Book Capitalization	Debt / Equity	Debt / Book Capitalization	Debt + Equity / Book Capitalization
Average of international peers (A/Baa)	223%	65%	94%	247%	66%	94%
US - vertically integrated (A/Baa)	116%	45%	84%	112%	43%	81%
US - T&D, LDC (A/Baa)	124%	45%	81%	125%	44%	78%

Source: Moody's Financial Metrics

Although we believe the wide differences in historical financial ratios is partly explained by the differences in regulatory framework, we are increasingly viewing the stronger US financials as more than mitigating the slightly higher overall regulatory risk profile that the US holds relative to its international peers that typically operate under a national regulatory regime.

In the table below, we show selected median financials for the 2005 – 2012 period against the year-end 2012 financials. The international peers saw a 23% increase in debt, a 29% increase in revenue, a 21% increase in assets and an 11% decline in CFO. In the US, we see an 18% increase in debt, a 2% decline in revenue, and a 20% and 28% increase in assets and CFO, respectively.

EXHIBIT 6

		2005 - 2012 Median Totals ($ Millions)				2012 total ($ Millions)			
Jurisdiction	Number of Companies	Debt	Revenue	Assets	CFO	Debt	Revenue	Assets	CFO
Total international utility peers	58	$309,566	$158,364	$513,109	$35,967	$374,061	$211,673	$628,912	$33,824
US - vertically integrated	57	$171,395	$166,941	$484,970	$35,271	$202,311	$171,198	$600,779	$48,044
US - T&D, LDC	38	$78,719	$79,523	$213,408	$14,229	$86,494	$67,511	$238,117	$16,712
Total US regulated utility	95	$250,114	$246,463	$698,378	$49,500	$288,805	$238,709	$838,896	$64,756
Total regulated utilities	153	$559,680	$404,828	$1,211,487	$85,467	$662,866	$450,383	$1,467,808	$98,580

Source: Moody's Financial Metrics

Credit Supportiveness of Some Regulatory Jurisdictions has Declined in Recent Years

In recent years we have perceived a decline in the credit supportiveness of some regulatory jurisdictions that we had previously viewed as highly credit supportive. For example, following the 2011 Fukushima nuclear disaster in Japan, we downgraded the ratings of nine Japanese utilities, partly reflecting our expectation of a less supportive Japanese government regulatory framework for these utilities going forward. At the same time, we re-evaluated the Japanese utility industry's relative position as a regulatory environment and modified the grid scoring for Japanese utilities accordingly.

While we continue to view the Japanese regulatory framework as credit supportive due to the strong support of the utilities by their key regulator, the Ministry of Economy, Trade, and Industry (METI), as well as the Japanese government, we felt it had become somewhat less supportive than before the

Fukushima crisis, particularly as it relates to nuclear power. As a result, we lowered the grid scoring for Factor 1 of the methodology, Regulatory Framework, to either Aa or A from Aaa, depending on each utility's particular circumstances. Based on our current view, Japan's electric utilities that have nuclear generation capabilities are currently scored A for this factor, due to the ongoing uncertainty associated with regard to nuclear generation, while in general the gas utilities and non-nuclear exposed electric utilities are currently still viewed as appropriately scored at the Aa level.

Our updated view was also reflected in the grid scoring for Factor 2 – Ability to Recover Costs and Earn Returns for Japan's utilities. Although Japanese utility regulation includes statutory provisions that insure the timely recovery of operating, capital, fuel and financing costs, plus a rate of return, there are some limitations on automatic fuel related rate increases for both electric and gas utilities. This limitation, in addition to some of the utilities expanding internationally and into non-utility businesses, resulted in our decision to slightly revise the grid scoring for this factor, with most of the utilities initially lowered to an A score from a Aa score.

Subsequently, the prolonged shut-down of nuclear plants in Japan and the resulting higher reliance on fossil fuels have significantly raised operating costs for those utilities previously reliant on nuclear power. Although some of the nuclear-dependent utilities have successfully raised their tariffs, the new rates are insufficient to return them to profitability, as they are based on cost structures that incorporate some nuclear restarts. As a result, the scoring of some of the nuclear dependent utilities for this grid factor was subsequently lowered to Baa.

Conclusion

The refinements we are proposing to make to our Regulated Electric and Gas Utilities Rating Methodology are intended to provide additional granularity on individual factor grid scores by adding new sub-factors and to increase the relative weighting of the financial metrics when determining the grid-indicated rating. The methodology will continue to emphasize both regulatory risk and financial performance. The grid that is part of the methodology will continue to focus on the same four factors: regulatory framework, ability to recover costs and earn returns, diversification, and financial strength. The proposed refinements are not expected to lead to any rating changes. Comments on these refinements are welcome using the instructions on the cover page of this document.

At the same time, and unrelated to the update of the rating methodology, we are seeking comment on our view that the relative credit supportiveness of the US utility regulatory framework has improved, and that we should assess regulatory risks more favorably for US utilities. Improvements include the increased prevalence of automatic cost recovery provisions, reduced regulatory lag, generally fair and open relationships between utilities and regulators, and the demonstration of a strong judicial framework. As a result, we intend to take a more positive view of US utilities in factoring regulatory risks into ratings. This would also be reflected in higher grid scoring for utility regulatory frameworks and cost recovery provisions under the rating methodology. Our more favorable view of US regulation relative to other global jurisdictions is expected to lead to a one notch upgrade of most US regulated utilities, with some exceptions. In most cases, we would expect all of the debt classes of a utility's capital structure to be upgraded by the same number of notches, although there could be limited exceptions. The US utility sector's low number of defaults, high recovery levels, and comparatively strong financial metrics provide additional corroboration for our view that ratings should generally be higher. Comments on our evolving view of US utility regulation are also welcome using the instructions on the cover page of this document.

Appendix A: Preliminary Regulated Electric and Gas Utilities Methodology Factor Grid

Factor 1a: Legislative and Judicial Underpinnings to Regulatory Framework (12.5%)

Aaa	Aa	A	Baa
Utility regulation occurs under a fully developed framework that is national in scope based on legislation that provides the utility a nearly absolute monopoly within its service territory, an unquestioned assurance that rates will be set in a manner that will permit the utility to make and recover all necessary investments, an extremely high degree of clarity as to the manner in which utilities will be regulated and prescriptive methods and procedures for setting rates. Existing utility law is comprehensive and supportive such that changes in legislation are not expected to be necessary; or any changes that have occurred have been strongly supportive of utilities credit quality in general and sufficiently forward-looking so as to address problems before they occurred. There is an independent judiciary that can arbitrate disagreements between the regulator and the utility should they occur, including access to national courts, very strong judicial precedent in the interpretation of utility laws, and a strong rule of law. We expect these conditions to continue.	Utility regulation occurs under a fully developed national, state or provincial framework based on legislation that provides the utility an extremely strong monopoly (see note 1) within its service territory, a strong assurance, subject to limited review, that rates will be set in a manner that will permit the utility to make and recover all necessary investments, a very high degree of clarity as to the manner in which utilities will be regulated and reasonably prescriptive methods and procedures for setting rates. If there have been changes in utility legislation, they have been timely and clearly credit supportive of the issuer in a manner that shows the utility has had a strong voice in the process. There is an independent judiciary that can arbitrate disagreements between the regulator and the utility, should they occur including access to national courts, strong judicial precedent in the interpretation of utility laws, and a strong rule of law. We expect these conditions to continue.	Utility regulation occurs under a well developed national, state or provincial framework based on legislation that provides the utility a very strong monopoly (see note 1) within its service territory, an assurance, subject to reasonable prudency requirements, that rates will be set in a manner that will permit the utility to make and recover all necessary investments, a high degree of clarity as to the manner in which utilities will be regulated, and overall guidance for methods and procedures for setting rates. If there have been changes in utility legislation, they have been mostly timely and on the whole credit supportive for the issuer, and the utility has had a clear voice in the legislative process. There is an independent judiciary that can arbitrate disagreements between the regulator and the utility, should they occur, including access to national courts, clear judicial precedent in the interpretation of utility law, and a strong rule of law. We expect these conditions to continue.	Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation that provides the utility a strong monopoly within its service territory that may have some exceptions such as greater self-generation (see note 1), a general assurance that, subject to prudency requirements that are mostly reasonable, rates will be set will be set in a manner that will permit the utility to make and recover all necessary investments, reasonable clarity as to the manner in which utilities will be regulated and overall guidance for methods and procedures for setting rates; or (ii) under a new framework where independent and transparent regulation exists in other sectors. If there have been changes in utility legislation, they have been credit supportive or at least balanced for the issuer but potentially less timely, and the utility had a voice in the legislative process. There is either (i) an independent judiciary that can arbitrate disagreements between the regulator and the utility, including access to courts at least at the state or provincial level, reasonably clear judicial precedent in the interpretation of utility laws, and a generally strong rule of law; or (ii) regulation has been applied (under a well developed framework) in a manner such that redress to an independent arbiter has not been required. We expect these conditions to continue.

Ba	B	Caa
Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation or government decree that provides the utility a monopoly within its service territory that is generally strong but may have a greater level of exceptions (see note 1), and that, subject to prudency requirements which may be stringent, provides a general assurance (with somewhat less certainty) that rates will be set will be set in a manner that will permit the utility to make and recover necessary investments; or (ii) under a new framework where the jurisdiction has a history of less independent and transparent regulation in other sectors. Either: (i) the judiciary that can arbitrate disagreements between the regulator and the utility may not have clear authority or may not be fully independent of the regulator or other political pressure, but there is a reasonably strong rule of law; or (ii) where there is no independent arbiter, the regulation has mostly been applied in a manner such redress has not been required. We expect these conditions to continue.	Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation or government decree that provides the utility monopoly within its service territory that is reasonably strong but may have important exceptions, and that, subject to prudency requirements which may be stringent or at times arbitrary, provides more limited or less certain assurance that rates will be set in a matter that will permit the utility to make and recover necessary investments; or (ii) under a new framework where we would expect less independent and transparent regulation, based either on the regulator's history in other sectors or other factors. The judiciary that can arbitrate disagreements between the regulator and the utility may not have clear authority or may not be fully independent of the regulator or other political pressure, but there is a reasonably strong rule of law. Alternately, where there is no independent arbiter, the regulation has been applied in a manner that often requires some redress adding more uncertainty to the regulatory framework. . There may be a periodic risk of creditor-unfriendly government intervention in utility markets or rate-setting.	Utility regulation occurs (i) under a national, state, provincial or municipal framework based on legislation or government decree that provides the utility a monopoly within its service territory, but with little assurance that rates will be set in a manner that will permit the utility to make and recover necessary investments; or (ii) under a new framework where we would expect unpredictable or adverse regulation, based either on the jurisdiction's history of in other sectors or other factors. The judiciary that can arbitrate disagreements between the regulator and the utility may not have clear authority or is viewed as not being fully independent of the regulator or other political pressure. Alternately, there may be no redress to an effective independent arbiter. The ability of the utility to enforce its monopoly or prevent uncompensated usage of its system may be limited. There may be a risk of creditor-unfriendly nationalization or other significant intervention in utility markets or rate-setting.

Note 1: The strength of the monopoly refers to the legal, regulatory and practical obstacles for customers in the utility's territory to obtain service from another provider. Examples of a weakening of the monopoly would include the ability of a city or large user to leave the utility system to set up their own system, the extent to which self-generation is permitted (e.g. cogeneration) and/or encouraged (e.g., net metering, DSM generation). At the lower end of the ratings spectrum, the utility's monopoly may be challenged by pervasive theft and unauthorized use. Since utilities are generally presumed to be monopolies, a strong monopoly position in itself is not sufficient for a strong score in this sub-factor, but a weakening of the monopoly can lower the score.

Factor 1b: Consistency and Predictability of Regulation (12.5%)

Aaa	Aa	A	Baa
The issuer's interaction with the regulator has led to a strong, lengthy track record of predictable, consistent and favorable decisions. The regulator is highly credit supportive of the issuer and utilities in general. We expect these conditions to continue.	The issuer's interaction with the regulator has a led to a considerable track record of predominantly predictable and consistent decisions. The regulator is mostly credit supportive of utilities in general and in almost all instances has been highly credit supportive of the issuer. We expect these conditions to continue.	The issuer's interaction with the regulator has led to a track record of largely predictable and consistent decisions. The regulator may be somewhat less credit supportive of utilities in general, but has been quite credit supportive of the issuer in most circumstances. We expect these conditions to continue.	The issuer's interaction with the regulator has led to an adequate track record. The regulator is generally consistent and predictable, but there may some evidence of inconsistency or unpredictability from time to time, or decisions may at times be politically charged. However, instances of less credit supportive decisions are based on reasonable application of existing rules and statutes and are not overly punitive. We expect these conditions to continue.

Ba	B	Caa	
We expect that regulatory decisions will demonstrate considerable inconsistency or unpredictability or that decisions will be politically charged, based either on the issuer's track record of interaction with regulators or other governing bodies, or our view that decisions will move in this direction. The regulator may have a history of less credit supportive regulatory decisions with respect to the issuer, but we expect that the issuer will be able to obtain support when it encounters financial stress, with some potentially material delays. The regulator's authority may be eroded at times by legislative or political action. The regulator may not follow the framework for some material decisions.	We expect that regulatory decisions will be largely unpredictable or even somewhat arbitrary, based either on the issuer's track record of interaction with regulators or other governing bodies, or our view that decisions will move in this direction. However, we expect that the issuer will ultimately be able to obtain support when it encounters financial stress, albeit with material or more extended delays. Alternately, the regulator is untested, lacks a consistent track record, or is undergoing substantial change. The regulator's authority may be eroded on frequent occasions by legislative or political action. The regulator may more frequently ignore the framework in a manner detrimental to the issuer.	We expect that regulatory decisions will be highly unpredictable and frequently adverse, based either on the issuer's track record of interaction with regulators or other governing bodies, or our view that decisions will move in this direction. Alternately, decisions may be credit supportive, but often unenforceable. The regulator's authority may have be seriously eroded by legislative or political action. The regulator may consistently ignore the framework to the detriment of the issuer.	

Factor 2a: Timeliness of Recovery of Operating and Capital Costs (12.5%)

Aaa	Aa	A	Baa
Tariff formulas and automatic cost recovery mechanisms provide full and highly timely recovery of all operating costs and essentially contemporaneous return on all incremental capital investments, with statutory provisions in place to preclude the possibility of challenges to rate increases or cost recovery mechanisms. By statute and by practice, general rate cases are efficient, focused on an impartial review, quick, and permit inclusion of fully forward -looking costs.	Tariff formulas and automatic cost recovery mechanisms provide full and highly timely recovery of all operating costs and essentially contemporaneous or near-contemporaneous return on most incremental capital investments, with minimal challenges by regulators to companies' cost assumptions. By statute and by practice, general rate cases are efficient, focused on an impartial review, of a very reasonable duration before non-appealable interim rates can be collected, and primarily permit inclusion of forward-looking costs.	Automatic cost recovery mechanisms provide full and reasonably timely recovery of fuel, purchased power and all other highly variable operating expenses. Material capital investments may be made under tariff formulas or other rate-making permitting reasonably contemporaneous returns, or may be submitted under other types of filings that provide recovery of cost of capital with minimal delays. Instances of regulatory challenges that delay rate increases or cost recovery are generally related to large, unexpected increases in sizeable construction projects. By statute or by practice, general rate cases are reasonably efficient, primarily focused on an impartial review, of a reasonable duration before rates (either permanent or non-refundable interim rates) can be collected, and permit inclusion of important forward -looking costs.	Fuel, purchased power and all other highly variable expenses are generally recovered through mechanisms incorporating delays of less than one year, although some rapid increases in costs may be delayed longer where such deferrals do not place financial stress on the utility. Incremental capital investments may be recovered primarily through general rate cases with moderate lag, with some through tariff formulas. Alternately, there may be formula rates that are untested or unclear. Potentially greater tendency for delays due to regulatory intervention, although this will generally be limited to rates related to large capital projects or rapid increases in operating costs.

Ba	B	Caa	
There is an expectation that fuel, purchased power or other highly variable expenses will eventually be recovered with delays that will not place material financial stress on the utility, but there may be some evidence of unwillingness of regulators to make timely rate changes to address volatility in fuel, or purchased power, or other market-sensitive expenses. Recovery of costs related to capital investments may be subject to delays that are somewhat lengthy , but not so pervasive as to be expected to discourage important investments.	The expectation that fuel, purchased power or other highly variable expenses will be recovered may be subject to material delays due to second-guessing of spending decisions by regulators or due to political intervention. Recovery of costs related to capital investments may be subject to delays that are material to the issuer, or may be likely to discourage some important investment.	The expectation that fuel, purchased power or other highly variable expenses will be recovered may be subject to extensive delays due to second-guessing of spending decisions by regulators or due to political intervention. Recovery of costs related to capital investments may be uncertain, subject to delays that are extensive, or that may be likely to discourage even necessary investment.	

Note: Tariff formulas include formula rate plans as well as trackers and riders related to capital investment.

Factor 2b: Sufficiency of Rates and Returns (12.5%)

Aaa	Aa	A	Baa
Sufficiency of rates to cover costs and attract capital is (and will continue to be) unquestioned.	Rates are (and we expect will continue to be) set at a level that permits full cost recovery and a fair return on all investments, with minimal challenges by regulators to companies' cost assumptions. This will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are strong relative to global peers.	Rates are (and we expect will continue to be) set at a level that generally provides full cost recovery and a fair return on investments, with limited instances of regulatory challenges and disallowances. In general, this will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are generally above average relative to global peers, but may at times be average.	Rates are (and we expect will continue to be) set at a level that generally provides full operating cost recovery and a mostly fair return on investments, but there may be somewhat more instances of regulatory challenges and disallowances, although ultimate rate outcomes are sufficient to attract capital without difficulty. In general, this will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are average relative to global peers, but may at times be somewhat below average.

Ba	B	Caa	
Rates are (and we expect will continue to be) set at a level that generally provides recovery of most operating costs but return on investments may be less predictable, and there may be decidedly more instances of regulatory challenges and disallowances, but ultimate rate outcomes are generally sufficient to attract capital. In general, this will translate to returns (measured in relation to equity, total assets, rate base or regulatory asset value, as applicable) that are generally below average relative to global peers, or where allowed returns are average but difficult to earn. Alternately, the tariff formula may not take into account all cost components and/or remuneration of investments may be unclear or at times unfavorable.	We expect rates will be set at a level that at times fails to provide recovery of costs other than cash costs, and regulators may engage in somewhat arbitrary second-guessing of spending decisions or deny rate increases related to funding ongoing operations based much more on politics than on prudency reviews. Return on investments may be set at levels that discourages investment. We expect that rate outcomes may be difficult or uncertain, negatively affecting continued access to capital. Alternately, the tariff formula may fail to take into account significant cost components other than cash costs, and/or remuneration of investments may be generally unfavorable.	We expect rates will be set at a level that often fails to provide recovery of material costs, and recovery of cash costs may also be at risk. Regulators may engage in more arbitrary second-guessing of spending decisions or deny rate increases related to funding ongoing operations based primarily on politics. Return on investments may be set at levels that discourage necessary maintenance investment. We expect that rate outcomes may often be punitive or highly uncertain, with a markedly negative impact on access to capital. Alternately, the tariff formula may fail to take into account significant cash cost components, and/or remuneration of investments may be primarily unfavorable.	

Factor 3: Diversification (10%)

	Sub-Factor Weighting	Aaa	Aa	A	Baa
Market Position	5% *	A very high degree of multinational and regional diversity in terms of regulatory regimes and/or service territory economies.	Material operations in three or more nations or substantial geographic regions providing very good diversity of regulatory regimes and/or service territory economies.	Material operations in two to three nations, states, provinces or regions that provide good diversity of regulatory regimes and service territory economies. Alternately, operates within a single regulatory regime with low volatility, and the service territory economy is robust, has a very high degree of diversity and has demonstrated resilience in economic cycles.	May operate under a single regulatory regime viewed as having low volatility, or where multiple regulatory regimes are not viewed as providing much diversity. The service territory economy may have some concentration and cyclicality, but is sufficiently resilient that it can absorb reasonably foreseeable increases in utility rates.
Generation and Fuel Diversity	5% **	A high degree of diversity in terms of generation and/or fuel sources such that the utility and rate-payers are well insulated from commodity price changes, no generation concentration, and very low exposures to Challenged or Threatened Sources (see definitions below).	Very good diversification in terms of generation and/or fuel sources such that the utility and rate-payers are affected only minimally by commodity price changes, little generation concentration, and low exposures to Challenged or Threatened Sources.	Good diversification in terms of generation and/or fuel sources such that the utility and rate-payers have only modest exposure to commodity price changes; however, may have some concentration in a source that is neither Challenged nor Threatened. Exposure to Threatened Sources is low. While there may be some exposure to Challenged Sources, it is not a cause for concern.	Adequate diversification in terms of generation and/or fuel sources such that the utility and rate-payers have moderate exposure to commodity price changes; however, may have some concentration in a source that is Challenged. Exposure to Threatened Sources is moderate, while exposure to Challenged Sources is manageable.

	Sub-Factor Weighting	Ba	B	Caa	Definitions
Market Position	5% *	Operates in a market area with somewhat greater concentration and cyclicality in the service territory economy and/or exposure to storms and other natural disasters, and thus less resilience to absorbing reasonably foreseeable increases in utility rates. May show somewhat greater volatility in the regulatory regime(s).	Operates in a limited market area with material concentration and more severe cyclicality in service territory economy such that cycles are of materially longer duration or reasonably foreseeable increases in utility rates could present a material challenge to the economy. Service territory may have geographic concentration that limits its resilience to storms and other natural disasters, or may be an emerging market. May show decided volatility in the regulatory regime(s).	Operates in a concentrated economic service territory with pronounced concentration, macroeconomic risk factors, and/or exposure to natural disasters.	"Challenged Sources" are generation plants that face higher but not insurmountable economic hurdles resulting from penalties or taxes on their operation, or from environmental upgrades that are required or likely to be required. Some examples are carbon-emitting plants that incur carbon taxes, plants that must buy emissions credits to operate, and plants that must install environmental equipment to continue to operate, in each where the taxes/credits/upgrades are sufficient to have a material impact on those plants' competitiveness relative to other generation types or on the utility's rates, but where the impact is not so severe as to be likely require plant closure.
Generation and Fuel Diversity	5% **	Modest diversification in generation and/or fuel sources such that the utility or rate-payers have greater exposure to commodity price changes. Exposure to Challenged and Threatened Sources may be more pronounced, but the utility will be able to access alternative sources without undue financial stress.	Operates with little diversification in generation and/or fuel sources such that the utility or rate-payers have high exposure to commodity price changes. Exposure to Challenged and Threatened Sources may be high, and accessing alternate sources may be challenging and cause more financial stress, but ultimately feasible.	Operates with high concentration in generation and/or fuel sources such that the utility or rate-payers have exposure to commodity price shocks. Exposure to Challenged and Threatened Sources may be very high, and accessing alternate sources may be highly uncertain.	"Threatened Sources" are generation plants that are not currently able to operate due to major unplanned outages or issues with licensing or other regulatory compliance, and plants that are highly likely to be required to de-activate, whether due to the effectiveness of currently existing or expected rules and regulations or due to economic challenges. Some recent examples would include coal fired plants in the US that are not economic to retro-fit to meet mercury and air toxics standards, plants that cannot meet the effective date of those standards, nuclear plants in Japan that have not been licensed to re-start after the Fukushima Dai-ichi accident, and nuclear plants that are required to be phased out within 10 years (as is the case in some European countries).

*10% weight for issuers that lack generation **0% weight for issuers that lack generation

Factor 4: Financial Strength (40%)

	Sub-Factor Weighting	Aaa	Aa	A	Baa	Ba	B	Caa
(CFO pre-WC + Interest) / Interest	7.5%	≥ 8x	6x - 8x	4.5x - 6x	3x - 4.5x	2x - 3x	1x - 2x	< 1x
(CFO pre-WC) / Debt	15%	≥ 40%	30% - 40%	22% - 30%	13% - 22%	5% - 13%	1% - 5%	< 1%
(CFO pre-WC – Dividends) / Debt	10%	≥ 35%	25% - 35%	17% - 25%	9% - 17%	0% - 9%	(5%) - 0%	< (5%)
Debt / Capitalization *	7.5%	< 25%	25% - 35%	35% - 45%	45% - 55%	55% - 65%	65% - 75%	≥ 75%
Debt / RAV *		< 30%	30% - 45%	45% - 60%	60% - 75%	75% - 85%	85% - 95%	≥ 95%

* The use of Debt / Capitalization or Debt / Regulated Asset Value (RAV) will depend largely on the regulatory regime in which the utility operates. Debt / Capitalization is currently used for most of the issuers rated under this methodology, because in many regions (currently including North America and many Asian countries) RAV does not exist. Where RAV exists, the Debt / RAV ratio may be preferable. The regulated asset base is comprised of the physical assets that are used to provide regulated distribution services, and the RAV represents the value (determined by regulators) on which the utility is permitted to earn a return. RAV can be calculated in various ways, using different rules that can be revised periodically, depending on the regulatory regime. Where RAV is calculated using consistent rules, we view Debt / RAV as the better credit measure and use it for this sub-factor. Where RAV does not exist or the method of calculation is subject to arbitrary or unpredictable revisions, we use Debt / Capitalization.

Appendix B: "Challenged" and "Threatened" Generation Sources

By "Challenged Sources", we mean generation plants that face higher but not insurmountable economic hurdles resulting from penalties or taxes on their operation, or from environmental upgrades that are required or likely to be required. Some examples are carbon-emitting plants that incur carbon taxes, plants that must buy emissions credits to operate, and plants that must install environmental equipment to continue to operate, in each where the taxes/credits/upgrades are sufficient to have a material impact on those plants' competitiveness relative to other generation types or on the utility's rates, but where the impact is not so severe that plant closure is likely.

By "Threatened Sources", we mean generation plants that are not currently able or permitted to operate due to major unplanned outages or issues with licensing or other regulatory compliance, and plants that are highly likely to be required to de-activate, whether due to the effectiveness of currently existing or expected rules and regulations or due to economic challenges. Some recent examples would include coal fired plants in the US for which retro-fitting to meet mercury and air toxics standards is not economically viable or cannot be achieved by the effective date of those standards, nuclear plants in Japan that have not been licensed to re-start after the Fukushima Dai-ichi accident, and nuclear plants that are required to be phased out within 10 years (as is the case in some European countries).

Moody's Related Research

Rating Methodology:

» Regulated Electric and Gas Utilities, August 2009 (118481)

Cross-Sector Rating Methodologies:

» Loss Given Default for Speculative-Grade Non-Financial Companies in the US, Canada, and EMEA, June 2009 (114838)

» Updated Summary Guidance for Notching Bonds, Preferred Stocks and Hybrid Securities of Corporate Issuers, February 2007 (102248)

Special Comments:

» Default, Recovery, and Credit Loss Rates for Regulated Utilities, 1983-2008, May 2009 (115424)

» Regulatory Frameworks – Ratings and Credit Quality for Investor-Owned Utilities, June 2010 (125664)

» Cost Recovery Provisions Key to U.S. Investor Owned Utility Ratings and Credit Quality, June 2010 (122304)

» Liquidity: A Key Component to Investor-Owned Utility Ratings and Credit Quality Evaluating a Utility's Liquidity Profile, September 2010 (127546)

» Re-Evaluating Japanese Utility Credit Quality post-Fukushima, July 2011 (133194)

» Pacific Northwest Utilities: Regulatory Support Paves Way for Improving Credit Profiles, November 2011 (146170)

» Infrastructure Default and Recovery Rates, 1983-2012H1 December 2012 (146791)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

» contacts continued from page 1

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MOODY'S INVESTORS SERVICE

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EFFECTS OF CAPITAL STRUCTURE ON UTILITIES' COSTS OF CAPITAL AND REVENUE REQUIREMENTS

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Abstract

EFFECTS OF CAPITAL STRUCTURE ON
UTILITIES' COSTS OF CAPITAL AND REVENUE REQUIREMENTS

Electric, gas, and telephone utilities have recently been reducing their debt ratios and generally improving their balance sheets. This trend has raised two questions: (1) How do changes in capital structure affect the cost of equity? (2) Is there an optimal capital structure, defined as one that minimizes revenue requirements over the long run, and if so, what is it? The Florida PSC asked us to study these issues.

We began our analysis with a review of the business risks faced by the utilities. That analysis indicated that, even though most utilities' positions have improved during the past two or three years, the general trend in business risk has been up, and all utilities today face more business risk than they did in the 1960s and early 1970s. Since the optimal capital structure depends heavily on business risk--the higher its business risk, the lower a company's debt ratio--the recent balance sheet improvements are highly desirable.

We also examined the major theoretical and empirical works on the relationship between capital structure and capital costs, and we did some empirical work of our own. We concluded that a one percentage point change in the debt ratio causes, on average, a change of about 12 basis points in the cost of equity. However, we also found, using a Lotus 1-2-3 computer model, that changes in the costs of debt and equity are offset by changes in the weights used to calculate the overall rate of return. As a result, the overall rate of return is not affected significantly by capital structure changes.

Our major conclusion is that capital structure decisions, within the range over which most utilities operate, have negligible effects on revenue requirements. Operating decisions, on the other hand, can and do have major effects. Therefore, capital structure decisions should be focused on insuring that financial constraints do not hinder operations.

SUMMARY AND OVERVIEW: CAPITAL STRUCTURE, COST OF CAPITAL, AND REVENUE REQUIREMENTS

Most utilities have recently been reducing their debt ratios and generally improving their balance sheets. This trend has raised two questions: (1) How do changes in capital structure affect the cost of equity? (2) Is there an optimal capital structure, defined as one that minimizes revenue requirements over the long run, and if so, what is it? The Florida PSC asked us to study these issues.

Our report consists of this 30-page Summary and Overview section plus seven technical appendices which provide details of the study. Here is an outline of the entire report:

Background

One of the most controversial aspects of a typical rate case is the rate of return the utility is allowed to earn on its rate base. Generally, a weighted average cost of capital (WACC) is found using this equation:[1]

$$WACC = w_d k_d + w_p k_p + w_s k_s. \tag{1}$$

Here the w's are the weights and the k's are the component costs of debt, preferred, and common equity. Embedded costs are used for debt and preferred, but a current cost rate is used for common equity. The weights can be based on the actual capital structure at a given date, or on an "imputed" capital structure if there is reason to believe that the actual capital structure is for some reason inappropriate. The choice of weights can have a significant effect on the resulting weighted average cost, and that, in turn, can have a significant effect on revenue requirements, customers' bills, and the company's earnings. Thus, capital structure can be an important rate case issue.

The optimal capital structure depends primarily on a company's business risk: The higher its business risk, the lower

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[1]For unregulated companies, the equation is written as

$$WACC = w_d k_d (1 - T) + w_p k_p + w_s k_s,$$

where T is the marginal corporate tax rate, and where current rather than embedded cost rates are used for debt and preferred as well as for common equity. Further, in most of the academic work on the cost of capital, weights are based on market values rather than book values. Those differences are truly profound, and they require major modifications when one tries to apply work done on industrial companies to utilities.

its optimal debt ratio, other things held constant. Further, the past 20 years have witnessed a sharp increase in business risk for all utilities--since 1965, business risk has trended up due to inflation, regulatory lag, increased competition, nuclear problems, and declining growth rates.[2] Further, there has been a change in regulators' attitudes toward who should bear these risks, customers or investors, and today the general feeling is that investors are being required to bear a larger share than in the past.

Because of these increases in business risk, the utilities should have begun to raise their equity ratios back in the 1960s. However, the top section of Table 1 shows that did not happen--equity ratios actually fell from 1965 to 1975, when business risk was rising most rapidly. However, after the 1975 low point, the situation improved. Earnings increased, so retained earnings increased, and market/book ratios moved up, making it more feasible to issue common stock. Even more important, construction programs slowed, so the equity buildup was not offset by an increase in debt. Currently the electric and gas companies, on average, have stronger equity ratios than in 1965, while the telephone companies are approaching their earlier levels.

The timing of these events differed significantly among companies. For example, Consolidated Edison stopped building new plants back in the early 1970s, so its equity buildup began relatively early, and by 1985 its equity ratio was close to 55

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[2]See Appendix A for a discussion of business risk.

percent versus an industry average of about 42 percent. That difference prompted the New York Commission to hold hearings on Con Ed's capital structure, and the result was a 50 percent regulatory cap on equity and an agreement by the company to institute a stock repurchase program designed to bring its actual equity ratio down closer to the cap. Similar situations have developed in other states.

Table 1
Equity Ratios in the Utility Industries

A. 1965-1983

	Equity Ratios			
	Electric	Gas	Telephone	Industrials
1965	38%	44%	66%	75%
1975	33	39	45	64
1983	39	47	55	65

B. 1981-1989

	Equity Ratios			
	Electric (East)	Gas	Telephone (Entire Industry)	Industrials
1981	38%	50%	51%	n.a.
1983	40	50	54	n.a.
1985E	42	52	56	n.a.
1986E	42	52	57	n.a.
1989E	43	52	58	n.a.

Sources: Section A: Compustat. The electric and gas data represent weighted average industry data on a book value basis. The telephone data reflect only AT&T, which represented about 80 percent of the industry prior to 1984.

Section B: Value Line. April 25, 1986; October 11, 1985; March 28, 1986. The telephone data reflect the entire industry as reported by Value Line.

The telephone companies, especially the Bell regional holding companies, have also come under study. It has been observed (1) that the telcos have higher equity ratios than the electrics and (2) that the telcos' equity buildup over the last 10 years has been especially pronounced. This has raised the question of whether some telcos have "too much" equity. Again, New York has been a leader in this regard, in part due to the interest generated by the Con Ed case. However, there are significant differences between telephone and electric companies, and one can argue that the telcos are exposed to more business risk than the non-nuclear-construction segment of the electric industry, and, consequently, that the telcos should use more equity. Indeed, Judge Green took exactly that position when he decreed that the regional holding companies should be spun off from AT&T with a minimum of 55 percent common equity. (The average electric at the time (1983) had a 40 percent common equity ratio and a total equity ratio, including preferred, of about 50 percent.) Based on evidence presented in the hearings, the New York Commission decided not to use an imputed capital structure in a recent New York Telephone rate case--rates were based on an actual capital structure that contained well over 55 percent equity.

Capital Structure and Diversification

Many utilities are diversifying, and that raises another capital structure issue. The argument can be made that utility operations are exposed to less business risk than non-utility operations, and consequently that utilities should employ more debt than industrial companies. Now consider the implications if a utility diversifies and has this situation:

	Utility Subsidiary		Unregulated Subsidiary		Consolidated	
Debt	$ 450	45%	$ 50	25%	$ 500	41.7%
Preferred	100	10	0	0	100	8.3
Common	450	45	150	75	600	50.0
	$1,000	100%	$200	100%	$1,200	100.0%

No regulatory problems should arise in this situation--the utility's own capital structure should be used for ratemaking purposes. Questions would arise, though, if the parent company issued its own debt and used the money raised to supply equity to the utility--this would raise the issue of "double leverage." The key thing is to keep the utility totally separate from the other elements of the holding company system.

Note, though, that a possible problem exists even with a separated system. Suppose the cost of equity is determined on the basis of market data using DCF methodology, as it would be in most jurisdictions. The DCF equity cost would be that of the parent--only the parent company's stock price, dividend, and growth rate can be used in a direct DCF analysis. However, the parent's DCF cost of equity reflects the combined business risk of the utility and non-utility operations, and both subsidiaries' financial risks. This makes it difficult to determine the utility's cost of equity.[3]

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[3]One should in this situation attempt to find a group of nondiversified utilities with business and financial risks similar to the utility subsidiary of the holding company, and then allow the utility to earn a return equal to the average DCF cost of the comparable companies. However, it is getting harder and harder to find comparable nondiversified utilities.

Capital Structure Theories

Finance theory provides helpful insights into capital structure issues, but the theory leaves many key questions unresolved. A quotation from Professor Stewart Myers' 1983 Presidential Address to the American Finance Association summarizes the situation:

> We know very little about capital structure. We do not know how firms choose the debt, equity, or hybrid securities they issue.... There has been little if any research to test whether or not the relationships between financial leverage and investors' required returns is what theory would predict. In general, we have an inadequate understanding of corporate financing behavior, and of how that behavior affects security returns.
>
> I do not want to sound too pessimistic or discouraged. We have accumulated many helpful insights into capital structure choice.... We have thought long and hard about what these insights imply for optimal financial structure. Many of us have translated these theories, or stories, of optimal capital structure into more or less definite advice to managers. Yet our theories don't seem to explain actual financing behavior, and it seems presumptuous to advise firms on optimal capital structure when we are so far from explaining actual decisions.[4]

Myers' statement is absolutely true--finance theory can provide useful insights into the factors that determine an appropriate capital structure, but one cannot use finance theory either to specify the effect of leverage on the costs of debt or equity or to identify the optimal capital structure for a given company. Capital structure decisions must be made on the basis of informed judgment and market data, not by mathematical formulas. Still,

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[4]See Stewart C. Myers, "The Capital Structure Puzzle," Journal of Finance, July 1984, 575-592. Also, see Appendix B for a more thorough discussion of capital structure theories.

finance theory can provide insights which can help us make better judgments.

Capital structure theory has been developed along two major lines:

1. Tradeoffs between Tax Savings and the Costs of Financial Distress. The tax savings tradeoff theory is associated with Franco Modigliani and Merton Miller (MM), and it postulates that the optimal capital structure for a firm can be established by examining the tax savings that result from the use of debt versus the drawbacks of leverage associated with various aspects of financial distress.
2. Signalling, or Asymmetric Information, Theory. This theory postulates (1) that managers and investors have different information about firms and their prospects, (2) that investors generally view an equity offering as a sign that the issuing firm's prospects are not bright, and (3) that investors therefore lower the price of a firm's stock and consequently raise its cost of equity when a new stock offering is announced. From this it follows that firms should use less debt than they otherwise would during "normal" times so as to build "reserve borrowing capacity" that can be used when above average amounts of funds are needed.

Both theories have merit, and both should be taken into account.

The Relationship between Financial Leverage and the Cost of Equity

Theoretical Studies

Several theories, all of them rooted in the classic propositions set forth by Modigliani and Miller (MM) in 1958 and 1963, have been proposed to explain the effect of leverage on the cost of equity. MM themselves postulated that the cost of equity increases with the use of debt in a precise manner: The cost of equity to a firm that uses debt equals the cost of equity to an unlevered firm plus a risk premium that increases linearly with the debt-to-equity ratio. However, the MM model is based on some simplifying assumptions that do not hold in the real world, so other finance theorists, including Miller, have modified the original MM model. All the theories agree that the cost of equity increases as a firm uses more and more debt. However, the exact specification of the relationship depends on the underlying assumptions, and no one knows which set of assumptions is most correct, or even if any of the assumption sets is good enough for practical applications.

Figure 1 and its accompanying notes show the relationship between financial leverage and the cost of equity under perhaps the three best known theories. We do not present this material to indicate what we believe the true relationship to be--rather, we use it to demonstrate the huge differences between three popular theories.

Several others have relaxed MM's assumptions, which is good, but as a result their models do not provide specific, mathematically precise formulas into which real-world data can be inserted to produce "answers." As a rule, though, the alternative tradeoff theories suggest results which lie between the extremes shown in Figure 1.

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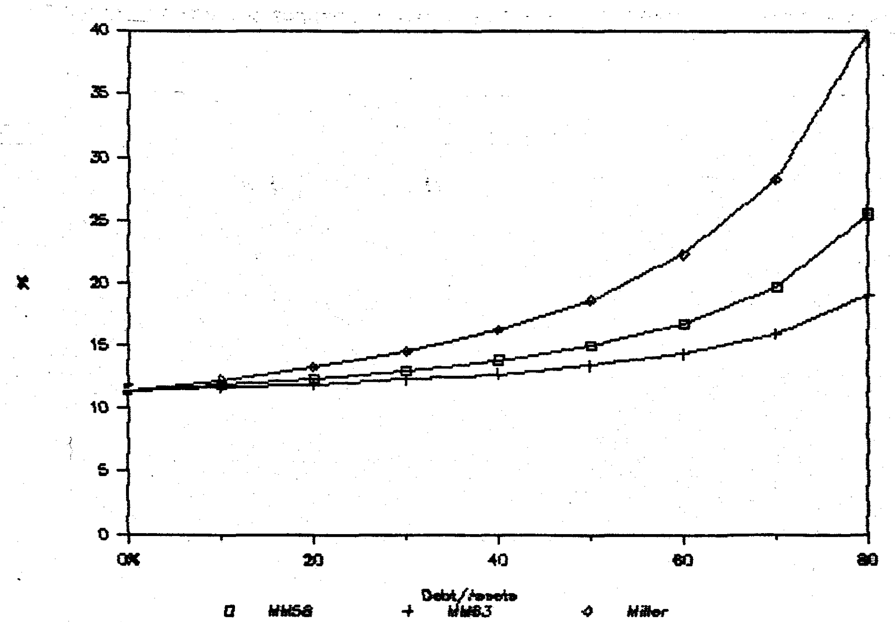
Figure 1
Theoretical Relationships between
Financial Leverage and the Cost of Equity



D/A	D/E	Cost of Equity MM (1958) (1)	MM (1963) (2)	Miller (3)
0%	0.00	11.50%	11.50%	11.50%
10	0.11	11.89	11.71	12.29
20	0.25	12.38	11.97	13.30
30	0.43	13.01	12.31	14.55
40	0.67	13.85	12.77	16.31
50	1.00	15.00	13.39	18.68
60	1.50	16.75	14.34	22.27
70	2.33	19.66	15.90	28.23
80	4.00	25.50	19.06	40.22

Notes:

a. For these calculations we assume that the firm uses only debt and common equity.

(Figure continued)

b. Capital structure ratios must be measured in market value terms to apply the MM and Miller equations. For a public utility operating under "perfect," lag-free regulation, market values must be equal to book values. For unregulated firms, the benefits of leverage (tax savings) accrue to stockholders and result in higher stock prices. For utilities, tax benefits accrue to customers, so market values remain equal to book values.

c. All calculations of k_s assume that for an unlevered firm k_s = 11.5%, k_d = 8%, and T = 46%.

d. Both MM and Miller assume that k_d for the leveraged firm is equal to k_d of the unlevered firm; that is, k_d = 8% regardless of the level of debt financing.

e. In their 1958 work, MM assumed zero taxes, and they developed the following equation, which we used to calculate the Column 1 values:

$$k_s = k_u + (k_u - k_d)(D/E)$$

$$= 11.5\% + (11.5\% - 8\%)(D/E)$$
$$= 11.5\% + 3.50(D/E).$$

f. MM in 1963 brought corporate taxes into the analysis, but no personal taxes, and they then developed this equation which we used to calculate the Column 2 values:

$$k_s = k_u + (k_u - k_d)(1 - T)(D/E)$$

$$= 11.5\% + (11.5\% - 8\%)(0.54)(D/E)$$
$$= 11.5\% + 1.89(D/E).$$

g. Miller in his 1977 work assumed corporate and personal taxes; the Column 3 values were calculated using this equation:

$$k_s = k_u + [k_u - (1 - T)k_d](D/E)$$

$$= 11.5\% + [11.5\% - (1 - 0.46)8\%](D/E)$$
$$= 11.5\% + 7.18(D/E).$$

==

Empirical Studies

When it became clear that theory could not be used to establish the relationship between leverage and the cost of equity, researchers turned to empirical studies. Table 2 summarizes several key studies, along with the predictions of the three main versions of the tradeoff theory. The empirical results vary considerably, and while they all show that equity costs increase with leverage, they are generally smaller than suggested by the theories.

Table 2
Results of Prior Empirical Studies
Compared to Theoretical Results

Theoretical Studies	Increase in Equity Cost when Debt-to-Total-Assets Ratio Increases from 40 to 50 Percent
MM (1958)	115 basis points
MM (1963)	62
Miller (1977)	237
Average	138
Empirical Studies	
Brigham & Gordon (1968)	34
Gordon (1974)	45
Robichek et al. (1973)	75
Mehta et al. (1980)	109
Gapenski (1986)	72
Average	67
Risk Premium	
Brigham, Vinson & Shome (1983)	120

Note: The studies reported here are discussed more fully in Appendices C and D. The theoretical models (MM and Miller) were fitted using 1986 data, and the empirical studies were all adjusted to reflect changes in interest rates between the time the studies were conducted and 1986.

As a part of the PURC project, Louis Gapenski conducted a new, updated study of the empirical relationship between capital costs and financial leverage; his results are described in detail in Appendix D. Basically, Gapenski found that an increase in the debt-to-total-assets ratio from 40 to 50 percent resulted in an increase in the cost of equity of about 72 basis points when leverage is measured in terms of expected book values. As Table 2 shows, Gapenski's findings are reasonably consistent with the earlier empirical work.

However, as we explain in Appendices D and E, all of the empirical studies, Gapenski's included, understate the true relationship because of errors in measuring the independent (leverage) variable. Thus, the effect of a change in leverage is greater than the empirical studies indicate. Once the measurement error bias is corrected, a change in the debt ratio from 40 to 50 percent range leads to a 120 basis point change in the cost of equity.

<u>The Bond Rating (Risk Premium) Method</u>

The effects of changes in leverage on the cost of equity can also be estimated by the risk premium approach as described in Appendix E. The approach combines the bond rating guidelines published by Standard & Poor's, interest rates on bonds with different ratings, and a knowledge of the relationship between the costs of debt and equity to a company. For example, to be rated AA, the guidelines indicate that an electric utility should have a debt-to-capital ratio in the range of 40 to 45 percent. The rating guidelines, along with bond yield data, can be used to estimate the relationship between leverage and debt costs, and, with less precision, the effect of leverage on equity costs.

For the electric utilities, each percentage point change in the debt-to-capital ratio results in a 7.8 basis point change in interest rates within the 42.5 to 48 percent debt leverage range, and a 10 basis point increase for debt ratios within the 48 to 54 percent range. The data did not permit analysis outside the 42.5 to 54 percent range, so we cannot state exactly what would happen to interest rates if debt were below 42.5 or above 54 percent. However, assuming that the 7.8 basis point adjustment also applies in the 42.5 to 40 percent range, a change in the debt ratio from 40 to 50 percent would cause the cost of debt to change by 82 basis points:

$$\text{Change in cost of debt} = 2.5(7.8) + 5.5(7.8) + 2(10)$$
$$= 82.4 \text{ basis points.}$$

This methodology can be extended to estimate the effects of leverage on the cost of equity. We know that the same fundamental factors that affect the riskiness of a company's bonds also affect the riskiness of its stock. Therefore, if something occurs to cause the riskiness and consequently the cost of the firm's debt to increase, then the cost of its equity would also rise. Most of the work in finance theory, and also common sense, suggests that the effect of an increase in leverage should be greater on the cost of equity than on the cost of debt. The reason, basically, has to do with the fact that bond interest is a fixed claim against income whereas stockholders' returns are a residual. Therefore, as long as operating income exceeds interest charges, changes in operating income have no effect on bondholders' returns, but any change whatever affects common stockholders. For this reason, at very low debt ratios, adding more debt has little effect on a bond's risk and required return, but the additional debt would affect stockholders.

Our studies indicate that if a 10 percentage point increase in the debt ratio, from 40 to 50 percent, would increase the cost of debt by 82 basis points, then the effect on the cost of equity would be 30 to 40 basis points greater.

The PURC Capital Structure Model

From a regulatory viewpoint, the key capital structure issue is its long-run effect on revenue requirements. To assess this effect, we developed a Lotus 1-2-3 model which tests the sensitivity of revenue requirements and other output variables to capital structure changes.

Table 3 gives the key results of the model runs for the electrics. Similar runs were made with a version of the model adapted to telephone companies. Data were generated for every year from 1986 to 2001, but to avoid unnecessary detail, only selected years are shown. Section I focuses on the weighted average cost of capital, Section II on revenue requirements, Section III on residential bills per 1,000 KWH, and Section IV on interest coverage ratios.[5]

By comparing Lines 1 and 4 in Sections I, II, and III, we can see the results in the most likely case versus the no-capital-structure-change case. The most striking feature is that

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[5]The weighted average cost of capital given in Table 3 is different from the one discussed in rate cases. The one we show "grosses up" the return on preferred and common to a before-tax basis. If the before-tax WACC is at a minimum, then the sum of interest, preferred dividends, the return to common, and income taxes will also be minimized.

Table 3
Key Results of the Energy Model Runs

I. WACC	1986	1987	1990	1995	2000	2001
Most Likely Case	15.91%	16.04%	16.45%	16.53%	16.49%	16.48%
Low Sensitivity Case	16.11%	16.24%	16.66%	16.75%	16.71%	16.70%
High Sensitivity Case	15.72%	15.84%	16.24%	16.32%	16.27%	16.26%
Base Case: No Cap. Struc. Chge	16.30%	16.30%	16.30%	16.30%	16.30%	16.30%

II. Revenue Requirements	1986	1987	1990	1995	2000	2001
Most Likely Case	$4,310	$4,628	$5,731	$8,080	$11,376	$12,182
Low Sensitivity Case	$4,326	$4,645	$5,753	$8,112	$11,421	$12,230
High Sensitivity Case	$4,295	$4,611	$5,709	$8,048	$11,331	$12,134
Base Case: No Cap. Struc. Chge	$4,335	$4,643	$5,704	$8,038	$11,326	$12,130

III. Average Bill	1986	1987	1990	1995	2000	2001
Most Likely Case	$93.19	$98.11	$114.48	$146.18	$186.41	$195.70
Low Sensitivity Case	$93.53	$98.47	$114.92	$146.75	$187.15	$196.48
High Sensitivity Case	$92.86	$97.75	$114.04	$145.60	$185.67	$194.93
Base Case: No Cap. Struc. Chge	$93.74	$98.43	$113.94	$145.42	$185.60	$194.87

IV. Coverage Ratio	1986	1987	1990	1995	2000	2001
Most Likely Case	3.79	3.92	4.33	4.50	4.53	4.53
Low Sensitivity Case	3.84	3.97	4.39	4.56	4.59	4.59
High Sensitivity Case	3.75	3.87	4.28	4.44	4.47	4.48
Base Case: No Cap. Struc. Chge	3.86	3.86	3.86	3.86	3.86	3.86

capital structure changes have a very small impact on any of these key variables. In 2001, 16 years after the decision to change the capital structure, and 11 years after the change was fully implemented, revenue requirements differ by only $52 million on a base of over $12 billion (4/10th of 1%), and the average customer's bill differs by only 83 cents on a base of $195 (again, 4/10th of 1%). Differences are even smaller in the near term. In view of the uncertainty over the values to assign to the inputs, these differences are not significant.

<u>The overriding conclusion to be drawn from our analysis is this: Capital structure changes have little impact on a utility's revenue requirements or its customers' bills. Capital structure does affect the cost rates of both debt and equity, but changes in those variables are offset by changes in the weights of each capital structure component.</u>

The model also shows that the impact of capital structure changes is dwarfed by the impact of operating cost changes. The output provided with this report does not show it, but when we sat in front of the monitor and changed our assumptions about fixed and variable costs, tax rates, inflation, growth in demand, and the like, we observed huge changes in revenue requirements and customers' bills. The effects of capital structure changes simply do not compare in magnitude with the effects of possible changes in operating conditions. <u>That, in turn, leads to the conclusion that the primary focus of capital structure decisions should be on insuring that financial constraints do not hinder efficient operations, not on the effects of capital structure per se on revenue requirements.</u>

Shock Cases: What Happens if Projections Are Not Met?

In our computer runs, we projected unit sales, fixed costs, variable costs, inflation, and so on, and then the model calculated the revenues needed to achieve a target rate of return. Our results show that, under the expected set of conditions, capital structure has little effect on the key output variables. Suppose, though, that things do not work out as projected. Here are some business risks that could throw the projections off:

1. Fixed operating costs could increase due to an increase in depreciation. If a company builds a plant which ends up costing more than was originally projected, then both fixed operating costs (which include depreciation) and financing costs will rise. This has happened to many electric utilities, especially those with nuclear plants.

2. Demand could fall below the projected level. For example, an electric company could forecast a demand for X KWH of power in 1993 and build the capacity to meet that load, but then find, in 1993, that actual demand is far below the original forecast. Conservation, low industrial production, losses to cogeneration, by-pass for telephone companies, or fuel oil price declines for gas companies could produce an excess capacity situation.

3. Variable costs could rise sharply; the best recent example of this was the electric industry's experience when oil prices rose during the 1970s.

4. Inflation might return to double-digit levels. We projected inflation at 5 percent, which is in line with many current forecasts, but the rate of inflation could move back up to 10 percent or more. If that happened, the cost of capital would rise, as would variable operating costs and, with a lag, fixed operating costs.

5. Plant retrofits might be required to protect the environment. Acid rain has long been a concern, and now studies are coming out which suggest that a serious "greenhouse" effect may be occurring.

6. All utilities with nuclear plants face the possibility of an accident or a prolonged (or even permanent) unscheduled shut-down. Such an event would require expensive

replacement power, and it might also require the construction of new generating plants.

These are all examples of business risks, and they are the kinds of events that a strong capital structure is designed to help a firm overcome. Indeed, the main reason for having a strong equity ratio is to enable a company to recover from adverse business conditions with minimum damage.

When analyzing the capital structures of industrial companies, the standard procedure is to run different business risk scenarios to see how different capital structures affect a company's ability to deal with shocks. Table 4 gives a simplified example of how one might examine the effects of demand shifts on earnings per share and on the coverage ratio.[6] The main points to note are these: (1) If conditions are bad, net income, EPS, and the interest coverage ratio will all drop, and vice versa if conditions are good. (2) The effects of shocks are more pronounced the greater the company's use of financial leverage. (3) Under bad conditions, the highly leveraged firm will have great difficulty raising capital to correct its problems, because it will not be covering its interest and it will have negative earnings. However, with less leverage, the firm will be able to raise capital even under bad operating conditions.

Would these same results hold for a regulated utility? The answer is not clear. Notice that the top section of Table 4,

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[6]For an in-depth analysis of a capital structure model for industrial firms, see P.D. Cretien, S.E. Ball, and E.F. Brigham, _Financial Management with Lotus 1-2-3_, Chapter 12.

Table 4
Analysis of Capital Structure Effects under Different Economic Conditions

		Bad Conditions	Normal Conditions	Good Conditions
Units sold		117,000	150,000	183,000
Price per unit	0.074	$0.074	$0.074	$0.074
Revenues		$8,658	$11,100	$13,542
Fixed operating costs		$4,500	$4,500	$4,500
Variable operating costs		3,510	4,500	5,490
Total operating costs		$8,010	$9,000	$9,990
Operating income		$648	$2,100	$3,552
LEVERAGE: 40% DEBT, 60% COMMON				
Less: Interest (10%)		400	400	400
Taxable income		$248	$1,700	$3,152
Less: Taxes (46%)		114.08	782	1449.92
Net income		$134	$918	$1,702
Earnings per share (6,000 sh)		$0.22	$1.53	$2.84
Interest coverage		1.62 X	5.25 X	8.88 X
LEVERAGE: 60% DEBT, 40% COMMON				
Less: Interest (12%)		720	720	720
Taxable income		($72)	$1,380	$2,832
Less: Taxes (46%)		(33)	635	1,303
Net income		($39)	$745	$1,529
Earnings per share (4,000 sh)		($0.10)	$1.86	$3.82
Interest coverage		0.90 X	2.92 X	4.93 X

where operating income is developed, is not affected by the firm's capital structure.[7] If an industrial company's sales fall, it cannot normally raise its prices and thus force its remaining customers to cover its fixed costs. However, a utility company can, in theory, do just that. Indeed, under "perfect" regulation, if demand falls below the projected level, sales prices would be adjusted so as to keep the earned rate of return equal to the cost of equity.

Obviously, "perfect" regulation is a myth. If a utility's demand fell below expectations, an attempt to raise prices might simply reduce demand further--this has happened to the gas companies, and it could happen to the utilities and telcos. Further, even if demand were inelastic enough to permit the price increases necessary to enable the company to earn its cost of capital, excess capacity might call forth the question of prudence: Was it prudent for the company to build so much capacity in the first place?

With all this in mind, we attempted to analyze the effects of various types of shocks on utilities with different capital structures. However, problems with such an exercise became immediately apparent. It is easy enough to see that shocks would have adverse effects on operating income, unless offset by rate increases, and on rates if offsets were imposed, but we have no way of knowing how shocks would be handled in the regulatory

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[7]This assumption is commonly made, and it is generally true provided the unregulated firm's capital structure remains within reasonable bounds. See E. F. Brigham and L. C. Gapenski, Intermediate Financial Management, Chapter 6, for a full discussion.

process. So, whereas we could justify and defend all the assumptions used in the non-shock model runs, we have no way of supporting shock case assumptions. Therefore, no shock case runs are presented in the report.

Capital Structure and Construction Cycles

Theory suggests that the optimal capital structure should be set so as to obtain the maximum tax benefits of debt during "normal" times yet still maintain unused borrowing capacity to draw upon during times of stress. There is an old saying, "If you don't need money, the banks would love to lend to you." The same thing holds in all capital markets--if a company is strong, it can raise funds at a reasonable cost from many different sources, but if it is weak, it cannot get money on reasonable terms without collateral. Therefore, in times of stress companies need access to the first mortgage bond market.

In the minds of most investors, the greatest risks for an electric utility are associated with construction. If a company has all of its generating plants in its rate base and is earning cash returns on them, then it will probably be regarded as a strong company. On the other hand, if it is in the midst of a major construction program, it will be perceived as facing risks. Planning and building a base load generating station generally takes from 8 to 12 years, and much can happen during that time--costs can escalate, load growth can decline, relative fuel prices can change, new technologies can be introduced, environmental problems can surface, and so on. Further, investors know that if things work out as planned or better, the company will be allowed to earn its cost of capital, but no more, while if things do not work out as anticipated, full recovery may not be permitted. So, when a company begins a major new construction program, that very fact will cause it to lose favor in the capital markets.

Now consider Figure 2. The top section shows the long-run construction expenditure forecast for a hypothetical utility. The company projects a smooth, slowly growing level of expenditures for transmission and distribution facilities, and periodically it must build a new generating unit (or refurbish an old unit). The lower graph shows the equity ratio situation. The long-run target ratio depends primarily on basic business risk, which we assume is constant. However, the actual equity ratio would cycle about the target level, rising when construction activities are low, then declining as the company goes into its peak expenditure period, because peak expenditures would be financed primarily by debt.[8]

The pattern shown in Figure 2 is consistent with both finance theory and with what utilities have been doing in recent years, but several questions are suggested by the graphs: (1) At what level should the long-run target capital structure be set? (2) How far above and below the long-run target should the actual equity ratio go? (3) Should the same targets be used by all utilities? (4) For regulatory purposes, should the target or the

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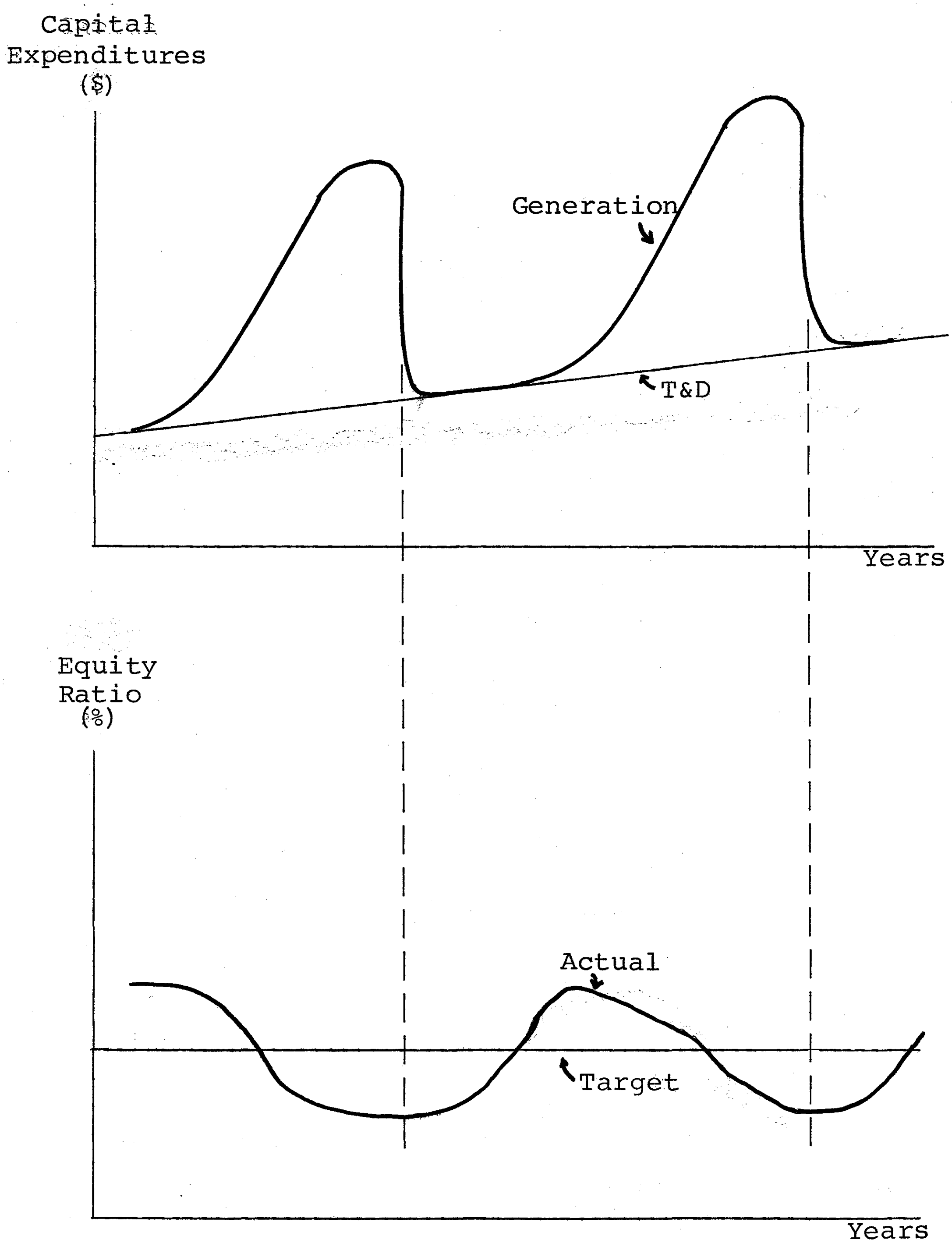
[8]The actual equity ratio would also deviate from the target ratio as a result of varying conditions in the debt and equity markets, bond maturities, refunding opportunities, and the like. Also, as diversification becomes more important, opportunities outside the utility will probably influence holding company decisions with regard to the utility's payment of dividends to the parent, and hence both the utility and the consolidated capital structures.

Figure 2
Relationship between Construction Expenditures and Capital Structure



actual capital structure be used to determine the allowed rate of return? These points are addressed next.

1. The long-run target. It is extremely important for a utility to be able to raise capital under adverse conditions, and investors look to bond ratings as a guide to a company's creditworthiness. Putting those two facts together suggests that the long-run target, under 1986 conditions, should be consistent with the guidelines for an AA bond rating. The debt ratio guideline for AA is 39-46 percent, with a 42.5 percent midpoint. Since the average electric uses 10 percent preferred stock, that implies a common equity ratio of from 44 to 51 percent, with a midpoint of 47.5 percent.

The virtual impossibility of "proving" what the optimal capital structure is, combined with the fact that a company's own circumstances have a bearing on its optimal capital structure, suggests that considerable scope should be allowed for managerial discretion. Still, a long-run target equity ratio of 47.5% ± 3.5% seems reasonable for most electric utilities. On the same basis, the target ratio for the telcos should be within the range 62.5% ± 2.5%. Note, though, that conditions in the telecommunications area are especially volatile, making it important that the capital structure target be reviewed periodically.

2. Deviations about the target. Deviations from the target capital structure will occur because of such random factors as bond maturities and capital market fluctuations, and because of construction cycles. Such deviations are necessarily company

specific--for example, a relatively small electric company would normally experience wider capital structure ranges than a larger company because a new plant would represent a larger percentage of the small company's total capital. Still, it would seem prudent to plan to keep the common equity ratios at least in the A range, which for electrics is from 38 to 46 percent. At the high end, we would question the merits of an electric having an equity ratio above the low 50s on the grounds that it would be giving up substantial tax savings and getting little in return.

3. The regulatory capital structure. Assuming a company is operating within a reasonable range, its actual capital structure (or the one forecasted during the period when rates will be in effect) should be used for ratemaking purposes. This would minimize the long-run cost of capital, because investors have more confidence in the impartiality of regulation when they see actual as opposed to hypothetical data being used.

Proposed Tax Law Changes

Four aspects of the pending tax legislation could affect the relative costs of debt and equity, and hence capital structure decisions: (1) corporate tax rates, (2) personal tax rates, including the differential between capital gains and ordinary income, (3) depreciation rates, and (4) investment tax credits.

Our Lotus 1-2-3 model makes it easy to analyze effects of changes in the corporate rate--we simply change rates and run the model. The Senate has proposed a top corporate rate of 33 percent and the House 36 percent, so we ran our model with a 35 percent rate. Table 3 showed that capital structure under existing tax rates makes little difference to customer bills, and the difference would be even less under the proposed rates. Here are the projected 2001 bills with the higher and lower equity ratios:

	Bill for 1,000 KWH Residential Customer	
	46% Corporate Tax Rate	35% Corporate Tax Rate
New target: 47% equity	$195.70	$187.67
Base case: 42% equity	194.87	187.35
Difference	$ 0.83	$ 0.32

The benefit of debt is its interest tax shelter, and if tax rates decline, so does the value of that shelter. Therefore, whatever the optimal capital structure is under current tax rates, a higher equity ratio will be called for if corporate tax rates are reduced.

The effects of changes in personal tax rates are harder to analyze, but these points are relevant:

1. Under current law, dividends are taxed at a top rate of 50 percent, as is interest. However, capital gains are taxed at a top rate of 20 percent, and that tax can be deferred indefinitely. The capital gains differential reduces the cost of equity relative to debt.

2. Under the proposed law, the rate applied to interest and dividends would decline, but that would not affect the relative costs of debt and equity. However, the proposals would eliminate or at least reduce the capital gains differential, and that action would, other things held constant, reduce the tax advantage of stock vis-a-vis debt and raise the relative cost of equity. For example, if the differential cost of equity over debt were currently 5 percentage points (for example, 14 percent for equity versus 9 percent for debt), the differential might fall to 4.75 percentage points. Really though, we have no way of quantifying this effect.

The bottom line is that if the capital gains differential is eliminated or drastically reduced, the cost of equity will probably rise relative to debt, but we do not know by how much.

It is also hard to estimate the effects of the proposed changes in depreciation allowances and tax credits. Since utilities are capital intensive, those changes--which would reduce depreciation allowances and eliminate investment tax credits--would reduce cash flows and raise revenue requirements. However, they would have no obvious effects on the relative costs of debt and equity, and hence no obvious effects on the optimal capital structure.[9] One might argue that the reduced cash flows under the proposed changes would force companies to rely more heavily on external capital to finance construction programs, and that as a result they should build up somewhat more equity between major construction programs. However, our study provides no information on this point.

On balance, the proposed tax changes might increase slightly the optimal equity ratio, but at this time we see no reason to alter our recommended capital structure ranges.

Conclusions

Our purposes in this study were (1) to examine the effects of capital structure on the cost of equity and (2) to consider the proper range of capital structures for Florida's utilities.

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[9] The depreciation/tax credit changes would raise utilities' effective tax rates, but those rates are not the ones that should be built into a capital structure/cost of capital analysis. The relevant rate is the marginal tax rate, and that (currently) is 46 percent for most utilities, even if their average (or effective) rate is much lower, say 20 percent.

We examined past theoretical and empirical studies bearing on these issues, we performed some empirical studies of our own, and we developed a computer model which permitted us to study the effects of alternative capital structures on revenue requirements and customers' bills.

Our primary conclusion is that capital structure decisions, within the range over which most utilities operate, have only minor effects of revenue requirements. Operating decisions, on the other hand, can and do have a major effect on revenue requirements. This suggests that capital structure decisions should be focused primarily on insuring that financial constraints do not hinder operations.

Although each company's own operating conditions influence its optimal capital structure, certain generalizations can still be drawn from our study. First, the electric utilities should establish long-run target common equity ratios within the range of 44 to 51 percent, with a midpoint of 47.5 percent. This is the guideline range for an AA bond rating, assuming the company also uses about 10 percent preferred stock, and it would provide reasonable assurance that the company could raise capital on favorable terms under most conditions. The target equity ratio range for the Group III telephone companies should be from 60 to 65 percent equity, with a midpoint of 62.5 percent. These targets would, of course, change if economic conditions changed.

The electric utilities go through major construction cycles, and their actual capital structures should vary around their long-run targets depending on where they are in the construction cycle. When a major plant is completed and placed in the rate base, internally generated cash flows exceed construction expenditures, and the equity ratio should be built up and allowed to peak just before the start of the next major construction program. During construction, the company should finance heavily with debt, resulting in a debt ratio peak just as the construction program is completed.

We found that the cost of equity for an electric company changes by an average of 12 basis points per percentage point change in the common equity ratio, assuming the company is within the 40 to 50 percent equity ratio range. The basis point change is smaller in the high end of the equity ratio range, so an increase in equity from 49 to 50 percent would only lower the cost of equity by about 7 basis points, but an increase in the ratio from 40 to 41 percent would lower the cost of equity by about 15 basis points. Both theory and the available evidence suggests that the same general situation would also exist for the telcos, but within a higher equity ratio range.

Finally, we considered the effects of pending tax legislation. The direct effect of the proposed changes would be to reduce the benefits of debt and therefore increase the optimal equity ratio. However, indirect effects which cannot yet be measured would offset at least some of the direct effects. On balance, our analysis suggests that the tax law changes, whatever they turn out to be, will not have much of an effect on the target capital structure.

APPENDIX A
THE CHANGING BUSINESS RISK ENVIRONMENT

As we began our study, it became obvious almost immediately that the effects of financial leverage on both the cost of equity and on the optimal capital structure are dependent upon business risk, defined as the uncertainty inherent in projections of a firm's future operating income.[1] The greater its business risk, the greater the impact of a given change in financial leverage on the cost of equity, and the greater the business risk, the higher the equity ratio should be. Thus, we must address the issue of business risk. Ideally we could develop an index of each company's business risk over time. Then, we could compare different companies and also see how a given company's business risk has changed over time.

Unfortunately, we were unable to develop any type of business risk index. The problem is that we need some measure of future uncertainty. Normally, one would use a standard deviation or a similar statistic for this purpose, but the very nature of business risk makes it impossible to use statistics for measurement purposes. For example, how could one measure the effect of the AT&T breakup on the telephone companies' operating incomes before the full effects of the breakup are known?

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[1]For example, see E.F. Brigham and L.C. Gapenski, Intermediate Financial Management (Hinsdale, Ill.: Dryden Press, 1985), Chapter 6.

Even though we cannot quantify and measure business risk, it still exists, and we can still form judgments about how it varies across companies and over time. This appendix presents some thoughts on that subject.

Background

During the 1950s and early to mid-1960s, utilities were viewed as being significantly less risky than most unregulated companies. However, during the 1970s all electric, gas, and telephone utilities were hit by high inflation and regulatory lag. The electric and gas companies faced additional uncertainties about future demand, fuel cost and availability, environmental requirements, increased governmental regulations, and nuclear problems. The gas industry was faced with rising energy costs, deregulation, and strong competition from fuel oil. The telephone industry was exposed to ever increasing competition, hit with by-pass resulting from regulators' failure to realize that a competitive industry cannot subsidize any large class of customers (residential), and faced with the prospects of having to writeoff assets that had been depreciated too slowly.

Many parties suffered from these events. Electric customers saw their rates soar, while stockholders saw stock values eroded by 50 percent or more, and by far more in real terms. Bondholders suffered similar losses, and a number of utility managers and regulators were forced into early retirement when problems got out of hand. The situation was similar in the gas and telecommunications industries.

Of course, the ride has not been all downhill. Since the early 1980s conditions have improved for all the utilities, including stockholders, managers, regulators, and customers.

Where do we go from here? Have utilities returned to the safe, stable companies that they were in the 1960s and earlier, or is their recent improvement simply a reflection of favorable conditions in the economy as a whole? And what effect does the answer to this question have on the type of capital structures the utilities should move toward, or perhaps maintain? We explore those questions in this appendix.

Electric Industry

As compared to most unregulated companies, electric utilities have extremely long investment time horizons. It takes 8 to 10 years to plan and then to build a major coal plant, and the plant will normally have an operating life of about 30 years. Thus, the total planning and operating horizon is about 40 years for a coal plant, and even longer for a nuclear plant.

In a dynamic, changing economy, it is extremely difficult to predict where people and industry will locate, how much power they will require, absolute and relative fuel costs, technological developments, environmental requirements, and the like. Although both industrial and utility companies face similar uncertainties on a year-to-year basis, the electric utilities are hostage to future events over a much longer period than the industrials, and it is obviously easier to forecast events for 5 to 10 years than over a 35- to 40-year horizon.

Demand Uncertainties

Electricity has traditionally been considered a necessity, hence demand for it has been relatively stable. However, both conservation and increased costs have led to higher elasticity of demand for electric utility services and, consequently, increased the electrics' difficulties in forecasting future demand.

In the past, plants could be built in only a few years, so companies could wait until demand was reasonably assured before starting construction of a new plant. Now construction times have lengthened, annual growth is slower, and greater uncertainty exists about future demand. Moreover, a company that builds a plant which subsequently turns out to be not fully needed when it is completed faces risks of disallowances or other penalties. So, all things considered, utilities face far greater risks when they embark on a major construction program than they did in the past.

Fears of fuel shortages and uncertainty about fuel prices are also problems. The current oil pricing questions, recurring strikes or threats of strikes in the coal industry, and general (and continuing) questions about the availability and/or costs of natural gas, nuclear fuel, and coal suggest that this uncertainty will continue. All of this compounds the forecasting problem by introducing a risk that the wrong kind, as well as the wrong size, of plant will be built.

Pollution Control Requirements

Fears about the ultimate impact of the evolving pollution control requirements have increased the electrics' risks and uncertainties even more. Both the installation and the operation of pollution abatement equipment are expensive. Moreover, an electric utility may install equipment that meets existing standards only to be required to retrofit such equipment a few years later because the standards have been changed. Because of acid rain problems and the emerging concern over ozone depletion in the upper atmosphere, there is even a chance that some coal fired plants may have to be retired prior to expiration of their useful lives. Indeed, who can say today what the impact of environmental problems may be on the utility industry 10 years from now, or who will have to bear the costs if massive writeoffs or retro-fits are required?

Earnings Quality

The quality of electric utilities' reported earnings has also deteriorated to some extent. In essence, quality involves both predictability and liquidity. Predictability encompasses both volatility over time and the chance of a permanent erosion of earnings power, while liquidity refers to cash available for current use. Most electric companies' earnings have become more volatile in recent years, and electric utilities are also exposed to the risk of long-run earnings declines.

Earnings quality reflects a number of different factors. First is the matter of financial leverage--how much debt and preferred stock has claim to the company's income ahead of the common stockholders? If a great deal of debt and preferred is at the head of the line, then even a small decline in operating income can cause low or even negative earnings for the common stockholders. The second quality factor relates to the source of the earnings, whether from operations or from the accountant's pen. Electric utilities get income (1) by producing electricity and (2) by multiplying an allowed AFUDC rate times that portion of the Company's construction work in progress which is not included in the rate base:

$$\begin{array}{c}\text{Addition to reported income,}\\ \text{called Allowance for Funds Used}\\ \text{during Construction (AFUDC)}\end{array} = (\text{AFUDC rate})(\text{CWIP}).$$

AFUDC income is not cash, so it cannot be used to pay interest or dividends.

The best way of measuring earnings quality, as well as the exact impact of earnings quality on the cost of capital, has been hotly debated. However, there is no question about the facts that earnings quality does indeed have a significant impact on the cost of capital, and that the electric utility industry has been negatively impacted by periodic high ratios of AFUDC to net income.

Earnings quality fluctuates over time--while a company is building a major generating plant, its AFUDC is likely to be high and its earnings quality correspondingly low, but earnings quality generally increases after the plant goes on line. The exception is where phase-ins are required. Today, earnings quality is relatively high for the average electric company because construction programs on average are down. However, investors learned during the 1970s that earnings quality erodes when construction activity is high, so if it appears likely that construction will pick up--either for capacity to meet growing demand or for pollution abatement--then fears regarding earnings quality will be rekindled.

The quality of earnings issue is especially important for those companies that have non-earning assets, because the accounting profession is currently discussing changes in the rules governing the treatment of such assets (FASB #71). These changes could cause major reductions in both reported earnings and book equity for a number of companies.

Operating Leverage

Business risk also depends on operating leverage, which is defined as the extent to which costs are fixed. The electric utility industry is more capital intensive than any other major industry, even the telecommunications industry, so more of its costs are fixed than is true of other industries. Therefore, if demand falls, profits are squeezed to a greater extent than is true in other industries. As a result, operating leverage tends to raise the electric utilities' risks, hence their costs of capital, vis-à-vis those of unregulated companies.

If an electric utility's load growth forecasts are incorrect, and it builds either too much, too little, or the wrong type of plant, then it could face problems in the marketplace. Even if its regulators were willing to allow it to pass all costs on to consumers, the market might simply not be willing to buy sufficient quantities at the required prices for the company to recover its costs. The electrics' high degree of operating leverage magnifies the problems associated with incorrect forecasts.

Nuclear Construction and Operating Risks

The Three Mile Island and Chernobyl accidents; the Zimmer, Shoreham, and Marble Hill situations; problems with other operating plants; questions about nuclear waste disposal; and referendums advocating the closing of nuclear plants have all heightened investors' awareness of the potential risks related to nuclear plants. New plants may not be licensed; existing plants may be closed either permanently or for prolonged modifications; and future decommissioning costs may end up exceeding currently estimated costs. Because of these factors, electrics with large investments in nuclear plants are regarded by investors as having especially high risks, hence high capital costs. Investors recognize, especially since the Three Mile Island accident, that any nuclear utility could be devastated by a similar accident. Even a less serious accident, or a required modification unrelated to any accident, could raise an electric's required investment and/or force it to purchase power that is far more expensive than the nuclear power being replaced, and full recovery of either of these two types of expenditures is uncertain.

Telecommunications Industry

Throughout most of its history, the telephone industry conducted business as a regulated monopoly. The Bell System, the largest segment of the industry, functioned in a coordinated fashion. The operating telcos would forecast demand for their services and report this to AT&T, which, through Bell Labs and Western Electric, would design, manufacture, and install the equipment needed to meet the forecasted demand. Because competition was absent, the demand forecasts were relatively accurate--there was not much danger of missing the forecast badly and consequently ending up either with a great deal of excess capacity or with a major shortage of capacity. Investment in installed plant could be recovered through depreciation charges built into service rates over the life of the relevant plant. Plant lives were based on physical depreciation and technological obsolescence. Physical depreciation was relatively easy to measure, and technological obsolescence was controllable. Therefore, the telcos did not have to worry about having to retire from service plant with costs that had not been fully recovered through depreciation, and regulatory commissions permitted the telcos to charge rates which provided a fair rate of return on invested capital.

National policy, which also had the blessings of the state regulatory commissions, called for universal telephone service. Moreover, value-of-service pricing concepts (as opposed to strict cost-of-service pricing) were used to help meet this goal. Under those pricing policies, the Bell System and other telcos (1) allocated an especially high percentage of common costs to long distance service, (2) charged business users relatively high rates, and (3) earned relatively high profits on terminal equipment sold to business users. All of these practices were designed to hold down the costs to local residential customers; in effect, business subscribers and long distance users were subsidizing local residential subscribers.

That system began to break down in the 1960s. Technological developments in long distance transmission and switching changed the cost structure so that competition in long distance became feasible. Further, non-Bell manufacturers were able and willing to offer terminal equipment that (under the FCC's registration program) was compatible with the telephone network. Thus, it became technically feasible, without a substantial cost penalty, to permit competition into major segments of the telephone industry. Gradually, the substitution of competition for regulation became a national telecommunications policy goal, and competition was indeed introduced, in stages, beginning in the late 1960s.

<u>Mandatory Investment</u>

The telephone utilities' plant and equipment investment is mandatory. Telephone utilities are required to provide a reasonable level of basic telephone service to all new and existing customers in their service areas. Both industrial firms and the non-franchised segments of the telephone industry, however, have no obligation to expand--they can defer expansion, abandon unprofitable products or markets, and, in general, gear their operations to internal and external conditions. Moreover, if these unregulated companies are uncertain about the long-run situation, they can simply wait to see whether a given spurt in demand is permanent or temporary and, thereby, reduce the risk of building excess capacity. Perhaps even more important, if an unregulated company takes a chance, invests heavily in an uncertain market, and turns out to be correct, it can earn returns which far exceed its cost of capital. The chance for high profits thus offsets the chances of loss if demand turns out to be low.

To meet mandatory service requirements, the telephone utilities must go forward with their construction programs, investing large amounts of money in needed equipment. This capital investment must be made even in times when current returns are below the cost of capital. Further, unlike the situation with unregulated companies, it is difficult for a telephone company or other regulated utility to make up in good times return shortfalls experienced during bad times. Of course, a telephone utility could not, in the long run, fulfill its obligation to serve its customers unless regulators allowed it the earnings and cash flow necessary to fulfill that obligation, but shortfalls can and do occur in the short run, and the "short run" could, under certain circumstances, last for 20 or more years.

Competition

The introduction of competition in the telecommunications industry has had, and will continue to have, many benefits to the economy, but it also has brought about major changes which have a direct bearing on the risks faced by investors and telephone companies. Under competition, there are two elements of uncertainty in demand forecasts--size of the total market and market share. Formerly, a telco could forecast the total market in its geographical area and then build to meet that demand. Now it must also forecast its market share, which can be extremely difficult. In the past, prices were set on a cost-plus-profit basis, with the profit being designed to provide a fair rate of return on invested capital. Today, and certainly in the relatively near-term future, prices will to a large extent be set by competition.

Those segments of the telecommunications business which under regulation earned the highest returns--long distance and terminal equipment--are the segments which are being released from regulation. Therefore, returns in these areas are being driven down to "normal" levels by competition, so relatively high profits here will no longer be available to subsidize local residential customers. This means, of course, that local residential telephone rates will have to be increased by enough to offset both the erstwhile subsidies and the continuing inflation-induced cost increases.

Depreciation

The effects of deregulation on depreciation charges are also important. Previously, when Bell Labs, Western Electric, and the telephone companies operated in a coordinated manner, new technology could be introduced in a planned, controlled manner that was also coordinated with depreciation schedules on the embedded plant. Thus, a particular switch might have been depreciated over a 30-year life, with the cost of the switch being recovered from customers through service rates over the same 30-year period. There was not much danger that the switch would be retired before the end of its projected life, hence little danger that the cost of the switch would not be fully recovered. However, with the introduction of competition, the danger of early retirement and less than full recovery has become much more of a threat.

Technological Advances

Now consider the joint effects of technological change and competition. If new technology which cuts costs and/or improves service is developed, then in theory telcos can either install it or not. However, if they do not, then their competitors most certainly will, and the competitors will then be able to provide better, lower cost service. Therefore, if a telco wants to maintain its market, competition will force it to use the new technology when it becomes available. But what about the telco's old, technologically obsolete embedded plant? Part of the cost of that plant has not been recovered through rates. Can the telco continue either to build a depreciation charge on that old equipment into rates or to write it off and simultaneously bill current customers for the writeoff? Not under competition. If under competition a telco attempted to raise rates to recover a shortfall of past depreciation charges, its customers would simply switch to one of its competitors, whose rates would not be burdened with writeoffs on old equipment.

Firms in industries that have always been competitive have long recognized that technological advances, as well as physical wear and tear, limit the useful lives of their equipment, and they have built this into their depreciation schedules. Consequently, the book assets of most industrial firms reflect replacement costs and market values with a fair degree of accuracy. Unfortunately, the same thing does not hold true for the telcos. Because regulators have had to approve their depreciation schedules, because faster writeoffs would raise current service rates, and because regulators have historically sought to hold down rate increases, the changing economic environment has not been adequately reflected in depreciation rates on telephone plant.

This situation was made dramatically clear during the AT&T breakup, as questions arose regarding which entities were to receive what specific items of equipment. Obviously, neither the new AT&T nor the spun-off operating companies wanted to receive more than a "fair share" of under-depreciated equipment. In December 1983, just before the breakup was finalized, AT&T wrote off over $5 billion of the assets it had received, so obviously its executives believed that it possessed some over-valued assets. Many investors are concerned that other telcos may face a similar problem, and that they may have difficulty obtaining timely rate increases to deal with this factor. Even more important is the question of what will happen in the future. Will the telcos be permitted to writeoff new and existing equipment over realistic lives? From an investor's standpoint, this is a very serious risk, and the greater the degree of competition, the greater the risk.

By-pass

Telephone companies face yet another potentially serious problem, that of by-pass, the term used to describe the situation in which a customer leaves the telephone network for a major portion of its telecommunications services. As noted earlier, historically other classes of customers have been required to pay rates which subsidized local residential users. This presented no problem in the past, when the industry was a monopoly. The "overcharged" customers could complain, but they could not leave the system--they needed telephone service, and they could get it only from their franchised telephone company. That situation changed with regard to long distance and terminal equipment in the 1970s, and it will continue to change in other segments of the business in the years ahead.

The business market is especially vulnerable to by-pass. Increasingly, banks, insurance companies, retail chains, manufacturers, and the like are installing their own networks for internal communications, including the rapidly expanding data transmission business. Thus, they are by-passing the existing telephone network for a major part of their telecommunications needs.

As developments in new technology continue, by-pass may well accelerate. However, the rate at which by-pass increases will depend on the telcos' rate structures. If their business rates continue to be set well above residential rates in an attempt to provide subsidies for local subscribers, this will accelerate by-pass. Moreover, if high-volume, high-profit users left the system, the remaining customers will have to pay still higher rates to cover the system's fixed costs. This, in turn, will lead to still more by-pass, resulting in a spiral that could become absolutely unmanageable.

To the extent that by-pass occurs in the future, it will have a direct effect on a telco and/or on its remaining customers, the revenues that are lost must either be made up by other customers or else profits and the earned rate of return will be reduced. By-pass also has a secondary effect--the greater the degree of actual or potential by-pass, the more serious will be the effects of inadequate depreciation rates as discussed in the preceding section. For example, suppose an asset with a cost of $2,000 is installed, and it is set up with a 20-year depreciable life, or $100 per year. Five years later, it is recognized that the 20-year expected life was too long--the actual usable life will be only 10 years. Accordingly, the $1,500 undepreciated balance must be depreciated over 5 years, so depreciation expenses, and hence the depreciation component of customers' bills, should rise from $100 to $300 per year. Suppose now that certain classes of customers had the potential for by-passing the system previously, but it was marginally unprofitable for them to do so. However, following the rate increase resulting from the depreciation increase, by-pass for these customers might become profitable. This would obviously add to the telcos' problem. Thus, we see that inadequate depreciation rates and potential by-pass in a competitive environment have a combined effect that is worse than the effects of each problem taken separately.

Political Considerations

From an investment viewpoint, the telcos today face yet another problem. When terms of the Modified Consent Decree that controlled the AT&T breakup were being negotiated, many state regulators and consumer groups lobbied to help operating telephone companies obtain permission to engage in certain unregulated competitive activities. Control of the Yellow Pages is a prime example. The expressed purpose of these efforts was to help the telcos earn additional revenues which could then be used to subsidize local residential customers. Therefore, if the telcos should invest capital in some unregulated activity, and if that investment should earn a high rate of return, it might be expected that regulators would seek ways to lower the rate of return authorized on regulated assets.

Note, however, that in the competitive, unregulated sectors of the economy, some ventures generate very high returns (30 percent or more) while others result in losses. Diversified corporations, or even individual investors who hold portfolios of diversified stocks, can expect to have both "winners" and "losers," and on average to earn a relatively high rate of return on their invested capital. But what about a telco? If it is diversified, and if its non-regulated assets "hit," the profits can be siphoned off and used to subsidize customers. However, if the diversified investments "miss" and thus incur losses, commissions are unlikely to let the company pass those losses on to its telephone subscribers. Thus, an investor has reason to fear that the telcos will end up in a game of "heads I win, tails you lose."

All of the factors discussed above--mandatory investment, political considerations, competition, by-pass, inadequate depreciation, and so on--are very important issues, and these factors have heightened uncertainties in recent years about the telephone utilities' future performance. Put another way, they have increased the industry's business risk.

Natural Gas Industry

The situation facing natural gas distribution companies is generally similar to that facing the electric and telephone companies. For gas companies, the key uncertainties relate to the long-run supply of and cost of gas vis-à-vis competitive fuels, especially fuel oil. Our national gas policy is in a state of flux. At this point, we do not know who will be allowed to charge what for gas, what the long-run availability of gas will be, or, consequently, what the supply and cost of gas to gas utilities' customers will be. This uncertainty obviously concerns both users and investors, and it increases the gas utilities' business risk.

For many years, natural gas had a significant cost advantage over fuel oil. However, the recent weakness in oil prices has changed this situation and has led to increased competition between gas and oil. This has increased both the short-run volatility and the long-run potential for loss of market share faced by gas companies, and hence has increased their business risks.

Conclusions

For the reasons set forth above, it is clear that the electric, gas, and telephone companies are all exposed to more business risk today than they were in the 1960s and earlier.

Although times are currently good for most utilities, that does not mean that their business risk is down--it just means that things have gone well recently.

Finance theory, as well as common sense, suggest that the higher a company's business risk, the higher its optimal equity ratio. Thus, the utilities should have stronger capital structures than they did in the past. Exactly how strong will be explored elsewhere in the report.

APPENDIX B
CAPITAL STRUCTURE THEORIES

Finance theory can provide insights into the determinants of an appropriate capital structure, but the theory cannot tell us precisely what a firm's capital structure should be. A quotation from Professor Stewart Myers' 1983 Presidential Address to the American Finance Association summarizes the situation:

> We know very little about capital structure. We do not know how firms choose the debt, equity, or hybrid securities they issue.... There has been little if any research to test whether or not the relationships between financial leverage and investors' required return is what theory would predict. In general, we have an inadequate understanding of corporate financing behavior, and of how that behavior affects security returns.
>
> I do not want to sound too pessimistic or discouraged. We have accumulated many helpful insights into capital structure choice.... We have thought long and hard about what these insights imply for optimal financial structure. Many of us have translated these theories, or stories, of optimal capital structure into more or less definite advice to managers. Yet our theories don't seem to explain actual financing behavior, and it seems presumptuous to advise firms on optimal capital structure when we are so far from explaining actual decisions.[1]

Myers' statement is absolutely true--finance theory can provide useful insights regarding an appropriate capital structure, but one cannot use finance theory to specify an optimal capital structure. Put another way, capital structure decisions must be

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[1]See Stewart C. Myers, "The Capital Structure Puzzle," Journal of Finance, July 1984, 575-592.

made on the basis of informed judgment rather than by mathematical formulas, but finance theory can provide helpful insights for judgmental decisions. In this appendix, we discuss various capital structure theories and their application to energy and telephone utilities.

Introduction to Capital Structure Theory

Capital structure theory has been developed along two major lines:

1. Tradeoff of Tax Savings Benefits versus Costs of Financial Distress. The tradeoff theory is associated with Nobel Prize winner Franco Modigliani and Merton Miller (MM), and it postulates that the optimal capital structure for a firm can be established by examining the benefits of leverage resulting from our tax laws versus the drawbacks of leverage associated with various aspects of financial distress.
2. Signalling, or Asymmetric Information, Theory. This theory postulates (1) that managers and investors have different information about firms and their prospects, and (2) that investors generally view an equity offering as a sign that the issuing firm's prospects are not bright, and hence (3) investors mark down the price of its stock and consequently raise its cost of capital when a firm announces a new stock offering. From this it follows that firms should use less debt than they potentially could during "normal" times so as to build a "reserve borrowing capacity" which can be used in lieu of equity at times when more funds are needed than can

be raised from internal sources plus normal debt financing. In public utility terminology, this would be called "maintaining financial integrity."

Both theories have merit, and both should be taken into account when establishing capital structure policy.

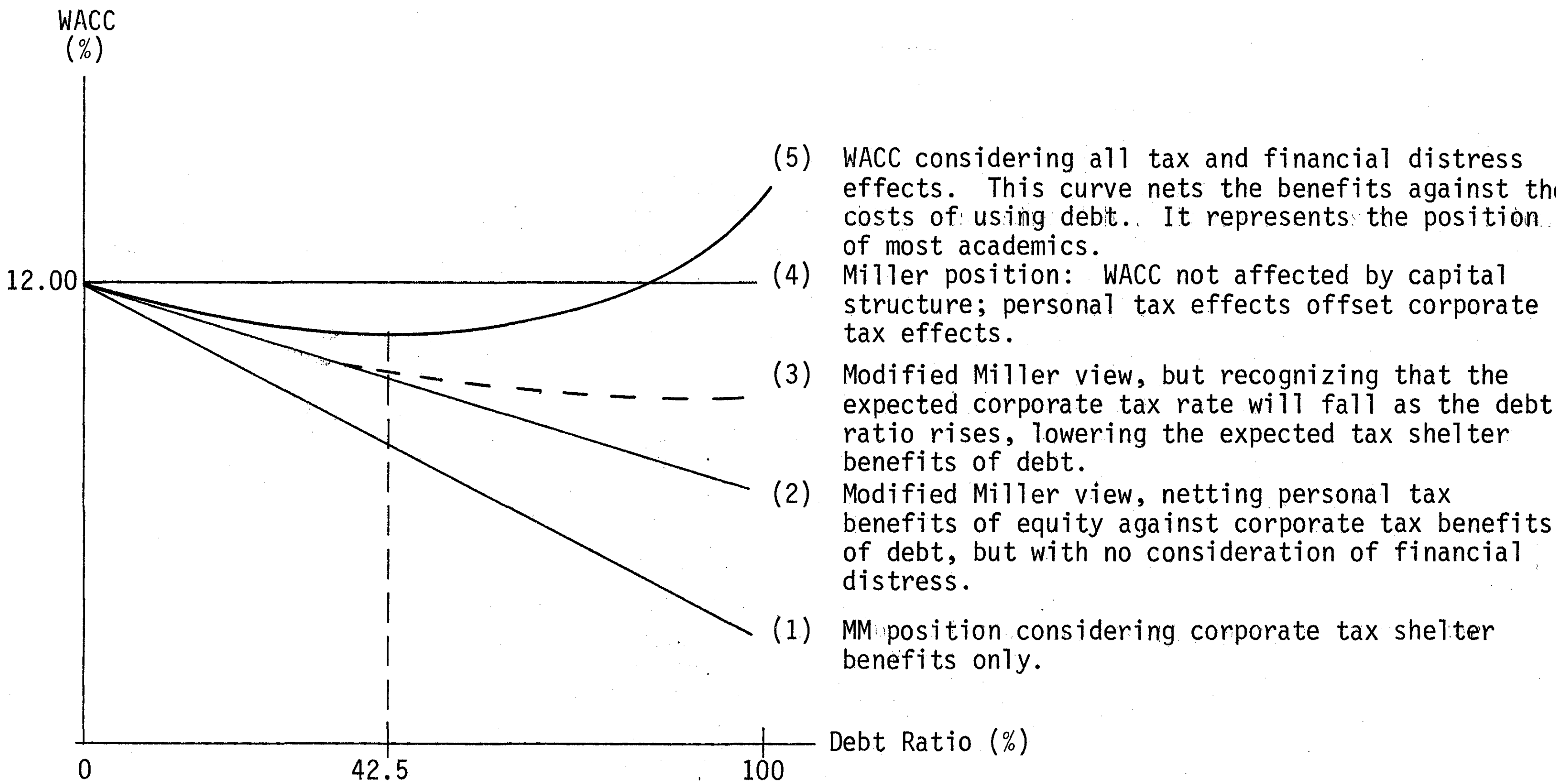
Tax Savings Tradeoff Theory

The tradeoff theory leads to the conclusion that there is an optimal capital structure for each firm, and that this optimum is established at the point where the positive tax benefits associated with debt financing are exactly offset by the negative costs associated with the possibility of financial distress. This theory dates back to 1958, when the first MM paper was published, although substantial modifications have been made by MM and others during the past 28 years.

Figure B-1 gives a graphic view of the tradeoff theory as it has evolved since MM first introduced it. The vertical axis indicates the weighted average, or overall, cost of capital. We assume that the illustrative firm would have a 12 percent cost of equity if it used no debt and hence had a debt ratio of zero. At a zero debt ratio, all capital would be equity, and hence the weighted average cost of capital (WACC) would be 12 percent:

$$\begin{aligned}
\text{WACC} &= \begin{matrix}\text{Fraction}\\ \text{of debt}\end{matrix} \times \begin{matrix}\text{Cost}\\ \text{of debt}\end{matrix} + \begin{matrix}\text{Fraction}\\ \text{of equity}\end{matrix} \times \begin{matrix}\text{Cost}\\ \text{of equity}\end{matrix} \\
&= 0(\text{Cost of debt}) + 1.0(12\%) \\
&= 0\% + 12\% \\
&= 12\%.
\end{aligned}$$

Figure B-1
Illustrative Graph of the Tax Savings
versus Financial Distress Tradeoff Theory



As the firm uses more and more debt, its riskiness increases, driving up the cost of equity. (MM assumed that the risk of financial leverage fell entirely on the equity, so under their theory the cost of debt remained constant. Others relaxed that assumption, but MM never did.) Under their model the cost of equity increases at a rate which forces the WACC to remain constant regardless of capital structure changes. Thus, their major conclusion in 1958 was that capital structure simply does not matter--one capital structure is as good as any other. Line 4 in Figure B-1 shows MM's 1958 position.

The MM 1963 Model

In a 1963 extension of their 1958 paper, MM argued that when the tax deductibility of interest is considered, debt becomes less costly on a risk-adjusted basis than equity, so the more debt a company uses, the lower its weighted average cost of capital. MM's 1963 theory suggests that the cost of equity rises as leverage increases, but that the tax saving from the use of debt (which increases as debt usage rises) more than offsets the increasing cost of equity. Line 1, the lowest line in Figure B-1, graphs MM's 1963 view of the WACC. We see that their 1963 theory led to the conclusion that firms should use virtually 100 percent debt.

The Miller Model

The MM models were based on some obviously unrealistic assumptions, and their 1963 conclusion that firms should use 100 percent debt was easy to criticize. Therefore, work to modify that model began almost as soon as it was published. The Miller half of the MM team concluded, in his 1977 Presidential Address to the American Finance Association, that when personal as well as corporate taxes are brought into the analysis, capital structure has no effect whatever on the WACC. Miller's position is represented by the horizontal line, Line 4, in Figure B-1. In essence, Miller argued that corporations' gains from the tax advantage of leverage are exactly offset by investors' personal taxes. His argument went like this. First, interest is fully taxable to taxpaying bondholders, whereas a large part of the income derived from stocks escapes taxation. Because of this differential tax treatment, investors are willing to invest in stocks with a lower pre-personal-tax, risk-adjusted rate of return than on debt. Thus, corporations will save corporate taxes if they use more debt, but the lower pre-tax, risk-adjusted cost of equity resulting from the personal tax advantages of equity offsets the deductibility of debt.

Miller's explanation of the personal tax advantages of equity included these factors: (1) Much of stockholders' income is capital gains, which can be deferred indefinitely, and when gains are finally taxed, they are taxed at low rates. (2) Dividend income is taxed at a maximum rate of 6.9 percent to corporate investors versus 46 percent for interest income. (3) Some dividend income can be excluded by individual investors. (4) Margin debt strategies can be used to purchase stock, with interest payments offsetting dividend income and the net result being only capital gains, which are subject to low and deferred taxes. The result of all this, according to Miller, is Line 4 in Figure B-1.

The Modified Miller Model

Miller's position as set forth above depends on the existence of a precise relationship between the corporate tax rate, the tax on income from stocks (an average of the taxes on dividends and capital gains), and the tax on income from debt (interest). A number of researchers have argued that the various tax rates are such that personal taxes offset some, but not all, of the corporate tax benefits of debt, with the net result being Line 2 in Figure B-1, labeled the modified Miller view.

Corporate Tax Rate Effects

In both the 1963 MM paper and Miller's own work it was assumed that the corporate tax rate is a constant regardless of how much debt a firm uses. Others have observed that the more debt and hence the more interest cost a firm has, the lower its earnings before taxes as a percentage of revenues, and consequently the lower its expected future average tax rate. Since investors know this, they build in a lower tax rate when projecting the future cash flows for a heavily leveraged firm. Since, under all versions of the tradeoff theory, the only benefit from debt is attributable to tax effects, and since expected tax benefits are proportional to the expected future tax rate, the effect of this situation is to reduce somewhat the benefits of leverage as debt increases. Line 3 in Figure B-1 adds the declining expected corporate tax rate effect to the modified Miller position.

The Costs of Financial Distress

All of the points expressed above ignore the effects of potential financial distress. Specifically, MM assumed that corporate debt is riskless, hence that the interest rate a firm pays is independent of its capital structure. This implies that the cost of debt to a firm if it had a 90 percent debt ratio would be the same as if it had a 10 percent debt ratio. MM also ignored the possibility that a highly leveraged firm like Eastern Airlines might lose business to stronger firms such as Delta and American Airlines, or that a strong company like IBM might be able to take advantage of (or to create) business opportunities that a financially weaker firm would have to pass up. Similarly, MM did not take account of the fact that a company with a strong balance sheet might be able to ride out a temporary storm, using new debt that could be issued because of its strong position, while a company with a weaker balance sheet might have to sell stock (or even assets) at distressed prices simply because it had no reserve borrowing capacity. It is impossible to quantify or even to list all of the potential adverse operating effects of a weak balance sheet, but they are certainly real, and they are now recognized by most financial executives and academicians as having material, but unmeasurable, effects on capital costs. The effect of potential financial distress is to raise the WACC, and to raise it at an increasing rate as the debt ratio increases. In other words, the effect of potential financial distress is small at low or moderate debt levels, but it rises rapidly once the debt ratio exceeds some critical level.

When all of the effects discussed above are considered together, the net result is Line 5 in Figure B-1, which nets the personal and corporate tax effects against the costs of potential financial distress. At low debt ratios, financial distress is not very likely and hence the tax benefits effect dominates. As a result, a firm with a low debt ratio can increase its use of debt and thereby reduce its WACC. However, as the debt ratio increases, the threat of potential financial distress increases at an increasing rate, and the expected future corporate tax rate also declines. Both of these factors reduce the advantage of debt. At some point the two negative factors more than offset the advantages of increasing debt, and beyond that point a higher debt ratio results in a higher WACC.

Line 5 in Figure B-1 is the critical one: It considers all tax and financial distress effects, and it is the view accepted by most academicians and financial executives. The minimum point on the line indicates the firm's optimal debt ratio: our illustrative company has an optimal, or cost-minimizing, debt ratio of 42.5 percent.

While most academicians (and financial executives) accept the general relationship set forth in Line 5, disagreements arise as soon as one attempts to quantify the relationship. We do not know what the average investor expects the firm's effective corporate tax rate to be in the future. We do not know what personal tax rates to apply to future interest, dividend, and capital gains income. We have no way of quantifying the consequences of potential future financial distress. Thus, we cannot quantify the relationship between the weighted average cost of capital (WACC) and capital structure. A graph like that shown in Figure B-1 is useful for illustrative purposes, and such graphs appear in most corporate finance textbooks, but the data used to plot them are always hypothetical, because there is simply no way to obtain the required data for real companies.

Even though we cannot obtain the actual data necessary to specify the curves in Figure B-1, we can use a range of judgmental inputs to see what the curves would look like under different assumptions. Most such work that we have seen concludes that the WACC (Line 5) is relatively flat over most of its range, which implies that for all practical purposes, the WACC is not materially affected by leverage over a fairly wide range of debt ratios. For example, it would not be at all unusual to examine a company's situation and conclude that its optimal capital structure lies within the equity ratio range of 35 to 55 percent, but that it makes little difference where within that range the actual capital structure is set.

If the true relationship between cost of capital and leverage were such that the WACC is essentially flat over a broad range of capital structures, and if most firms in a given industry operate within this capital structure range, then statistical studies would show low correlations between capital structure and capital costs. Empirical tests, including the ones discussed in Appendix C, indicate that this situation does indeed exist.

Empirical studies have also shown that firms within industries have widely differing capital structures. For example, Table B-1 presents the means and standard deviations of the common equity ratios for 12 unregulated, non-financial industries. The industry means range from a low of 36.5 percent to a high of 80.9 percent, and the standard deviations range from 11.2 percent to 21.4 percent. Consider the last industry listed, retail grocery stores. The industry average equity ratio is 58.9%, and the standard deviation is 11.2%. This indicates that 68% of the grocery chains have equity ratios within the range 58.9% ± 11.2%, or from 47.7% to 70.1%. Thus, even for the industrial group with the lowest standard deviation, individual firms still exhibit wide variations in capital structures.

Table B-1
Industry Common Equity Ratios

Industry	Number of Companies	Average Equity Ratio	Standard Deviation
Air Transportation	23	36.5%	21.4%
Blast Furnaces and Steel Works	28	63.0	19.7
Electronic Components	24	68.9	19.3
General Industrial Machine and Equipment	28	71.5	15.0
Miscellaneous Plastic Products	20	71.8	18.1
Motor Vehicle Parts and Accessories	22	68.1	15.8
Natural Gas Transmission and Distribution	18	53.6	13.2
Natural Gas Transmission	19	47.0	12.4
Paper and Allied Products	24	59.3	15.0
Pharmaceuticals	16	80.9	14.4
Restaurants	20	63.2	21.0
Retail Grocery Stores	20	58.9	11.2

The differences in the industry averages probably reflect business risk differentials among industries, while the differences between individual firms in each industry probably reflect both managements' inability to measure exactly the optimal capital structure and also the fact that the WACC is relatively flat across a fairly wide range of capital structures.

Now recognize that standard economic theory suggests that if there were a precise optimal capital structure, and if capital structure had an important effect on capital costs, then competitive pressures and/or the quest for higher profits and stock prices would drive firms within each industry toward that industry's optimal capital structure. The fact that firms within industries employ quite different capital structures is strong support for the position that a precise optimal capital structure cannot be identified, and hence that for practical purposes it is better to think in terms of a fairly broad optimal capital structure range rather than an optimal capital structure point.

<u>Signalling, or Asymmetric Information, Theory</u>

In 1961, Professor Gordon Donaldson of Harvard published the results of an in-depth study of a number of large businesses which sought to determine how they actually established their capital structures. Donaldson found that firms use internally generated funds, principally retained earnings, as their first choice, then debt, and that they sold new common stock only as a last resort when they needed to finance exceptionally profitable investment opportunities or to obtain funds for operations when times were extremely bad and constraints precluded further borrowings.

Donaldson's work lay dormant for many years, perhaps because it was inconsistent with the tradeoff theory made popular by MM and their followers. MM's tradeoff theory was specific and yielded testable hypotheses, characteristics that academicians find highly desirable. Donaldson, on the other hand, had provided no rationale for firms' preference for retained earnings and for their strong reluctance to issue new common stock, and without a rationale, it was difficult for academicians to develop tests which would confirm or deny his results.

Recently, though, Professor Stewart Myers provided the missing rationale for Donaldson's results. Myers' argument goes like this: Managers are interested in maximizing the value of their firms' stocks, subject to various legal constraints. This being the case, if some especially good investment opportunities arise, management will want to keep these benefits for <u>current</u> stockholders (including the managers themselves) rather than share them with <u>new</u> stockholders. For various reasons, outside investors often have less information than managers, so a firm's stock price will not reflect highly profitable but unanticipated investment opportunities--it will sell below what management regards as the "proper" price. Thus, if the firm sells stock to finance profitable new projects, then when these projects go on line and begin generating income, the firm's stock price will rise, and the new investors will enjoy an unexpected windfall. The original investors (including the managers) will also benefit, but by less than if the firm had not sold stock before the price rose. This line of reasoning suggests that firms should maintain some "reserve borrowing capacity" in normal times so as to avoid having to sell stock to finance exceptionally good projects. (Of course, all this applies with much more force to a mature, established firm than to a small venture capital type business, especially a company that is going public for the first time.)

Consider also a different situation, where managers see dark clouds on the horizon but investors do not, and as a result the firm's stock sells at a price above the level that management thinks is justified. Under these circumstances, management may elect to issue new stock now, while the price is high, so as to be in a better position if and when the storm does strike. Then, if things do go bad, new stockholders will bear some of the losses and thus dilute the adverse effects on the original stockholders.

Any reasonable investor would expect managers to operate as described in the two cases above--to issue the types of securities that best serve the interests of the existing stockholders, not those of new investors. This, in turn, suggests the following scenario:

1. When a mature firm announces a new stock offering, this could signal either (a) that there are exceptionally good opportunities that can be financed only by issuing stock or (b) that management thinks things look bad, and that the company should go ahead and raise equity before the price

falls. Studies of stock price behavior around the time of stock offerings by mature companies invariably indicate that stock prices tend to decline when new offerings are announced. This applies to all types of companies, regulated and unregulated alike. <u>Thus, investors do interpret the announcement of new stock offerings as signalling bad news.</u>

2. Since stock prices generally decline after a mature company announces a stock offering, this means that equity raised by selling stock is more expensive than retained earnings. Therefore, good financial policy calls for establishing a dividend policy at a level that will provide enough retained earnings to supply all the equity needed to support operations under "normal" conditions.

3. Its target capital structure should include less debt than the amount called for by the tradeoff theory. This "unused borrowing capacity" is, in effect, held as a reserve for use in exceptional times, so as to minimize the probability of having to issue stock.

4. Points 2 and 3 suggest that dividend policy and capital structure policy are interrelated--both should be designed to minimize the need for new equity offerings. Further, if a company has a high payout policy, then its debt ratio should be adjusted downward, and vice versa.

5. Each firm's optimal capital structure (and dividend policy) depends on its own situation, including its probable capital expenditure program and its management's judgment regarding the likelihood of events that would require the raising of

above-normal amounts of capital. The greater the level of expected future capital expenditures, and the greater the uncertainty regarding future operating conditions, the greater the reserve borrowing capacity should be. It should be noted that MM's capital structure theory assumes that corporate capital expenditure programs, capital structure policies, and dividend policies are made independently of one another, not in a coordinated manner. This is fundamentally different from signalling theory, which postulates that these decisions are interrelated.

Both capital structure theories are at least partially correct, so both concepts should be recognized when one attempts either to explain why capital structures are what they are or to recommend a specific target capital structure. Any rational policy must recognize the tax benefits/financial distress tradeoff, but such a policy must also recognize the importance of maintaining reserve borrowing capacity designed to help avoid having to issue stock at inopportune times.

Is Finance Theory Applicable to Utilities?

Because of differences between regulated utilities and unregulated corporations, one might argue that the theories set forth above are not applicable to utilities. Consider first the tax benefits tradeoff theory. One could argue that the tax benefits of debt flow through to consumers, that utility investors need have no fear of financial distress because all costs can be passed on to consumers, and hence that the tax benefits versus financial distress tradeoff theory simply does not apply to utilities. People who hold this view might reason that utilities have little incentive to use debt, because customers rather than stockholders get the benefits, so the companies would tend to use "too much" equity. On the other hand, one could also argue that the companies have no reason not to use very high debt ratios, because they need have no fear of financial distress.

Perhaps there was some truth in either or both of these arguments in the distant past, but they are certainly not valid today. First, note that all utilities face strong competition in major segments of their businesses (by-pass for telephone companies, cogeneration and alternative energy sources for electrics, and both fuel oil and electricity for gas companies). Competition leads to price elasticity, and price elasticity in combination with high fixed costs gives the utilities strong economic incentives to keep all costs as low as possible, including the cost of capital. Thus, utilities have strong economic motives for seeking to find and then operate within the optimal capital structure range.

The argument that utility investors need not fear the effects of financial distress, and hence can use essentially unlimited amounts of debt, is equally hollow. One need only review recent financial history, including stock and bond price performance during the 1970s, to see that financial distress is a very real consideration for utilities. So, utilities' optimal capital structures certainly ought to be influenced by the tradeoff between tax savings and financial distress.

With regard to the signalling theory, industrial companies should maintain reserve borrowing capacity both to avoid having to sell common stock to finance exceptionally profitable projects and also to avoid having to sell stock during difficult times. Utilities, on the other hand, have no opportunities for extraordinarily profitable projects due to rate of return limitations (except for their unregulated subsidiaries). Further, investors have come to expect utilities engaged in major construction programs to issue stock, and to at least some extent investors may still expect regulators to assist companies during troubled times. Therefore, while the announcement of a stock offering should and empirically does generally have a negative effect on a utility, this effect is not as great as the effect of a similar announcement by an industrial company. (Studies of announcement effects confirm this--stock sale announcements put more pressure on industrial stocks than on utility stocks.) As a result, signalling theory suggests that a utility's unused borrowing capacity should, other things held constant, be less than that of an industrial company, and hence utilities' debt ratios should be higher than those of industrial companies with similar business risks.

Summary

In this appendix we discussed two major theories of capital structure, one based on the tradeoff between the benefits of tax savings and the costs of actual or potential financial distress, and the other based on the negative signals investors receive when a company announces plans to issue more common stock. Both theories are logical, and both provide insights into the determinants of an optimal capital structure. Unfortunately, neither theory can, in and of itself, tell us what the optimal capital structure is for any given company.

We also questioned whether or not the theories are really applicable to regulated utilities, and we concluded that they are. While the tax benefits of debt flow through to consumers, the actual and potential competition most utilities face makes it necessary for them to operate as efficiently as possible so as to keep costs at the lowest possible level. Thus, utilities cannot afford to disregard the benefits of debt on the grounds that these benefits accrue to customers, because competition simply will not permit such behavior. Similarly, utilities cannot afford to take on excessive debt on the grounds that regulators will "bail them out" if they get into trouble, and hence that it is safe to disregard the costs of potential financial distress.

Finance theory leads to the conclusion that optimal debt ratios are primarily dependent on business risk and uncertainty about the amount of capital that will be required in the future. These factors are not static over time--they change, and that is especially true of the utilities. The evidence discussed in Appendix A suggests (1) that the business risk faced by most utilities increased during the 1970s, (2) that it is probably lower today than in the recent past for many electric companies, but it is still higher than it was prior to the 1970s, and (3) that business risk is at an all-time high for the telephone companies and perhaps for the gas companies. This suggests that the utilities ought to employ more equity in their capital structures than they did in the 1960s and earlier. Unfortunately, theory only provides insights, not prescriptions. For prescriptions, we need empirical data and simulated results under different scenarios, as we discuss in the following appendices.

APPENDIX C
PRIOR EMPIRICAL STUDIES OF THE EFFECTS OF LEVERAGE ON THE COST OF EQUITY

The theoretical studies discussed in Appendix B led to hypotheses regarding the effect of leverage on the cost of common equity, and these hypotheses have been tested empirically. Because of changing conditions and sample size problems, the empirical studies have not focused on telephone or gas companies, but many of them have analyzed the electrics. This appendix summarizes the most relevant theoretical hypotheses and past empirical studies of results for the electric industry.

Theoretical Hypotheses

The theoretical hypotheses can be divided into three broad classifications: (1) the classic Modigliani-Miller (MM) work, (2) extensions of MM, and (3) adaptations designed to account for regulation. The hypotheses are discussed in that order.

The Modigliani-Miller Model

The theoretical relationships between a firm's use of financial leverage (debt and preferred stock) and its equity costs have evolved from the classic articles by Modigliani and Miller (1958 and 1963). MM began with a set of relatively restrictive assumptions, under which they proved that a levered firm's cost of common equity, k_s, is related to financial leverage in the following way:[1]

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[1]Equation 1 is the final result of the MM work when corporate taxes are considered. MM's first article (1958) focused on a zero-tax world.

$$k_s = k_u + (k_u - k_{RF})(1 - T)(\frac{D}{S}), \tag{1}$$

where

k_u = cost of common equity to an unlevered firm with the same business risk as the levered firm,

k_{RF} = cost of risk-free debt to the levered firm,

T = tax rate of the levered firm,

D = market value of the levered firm's debt, and

S = market value of the levered firm's common equity.

In their original work, MM assumed that corporate debt is risk free. However, Stiglitz (1969) and Rubinstein (1973) showed that the introduction of risky corporate debt does not alter the basic MM relationship, which can be rewritten as

$$k_s = k_u + (k_u - k_d)(1 - T)(\frac{D}{S}),$$

where k_d is the incremental cost of risky debt to an unlevered firm. When the levered firm uses preferred stock financing, the relationship expands to

$$k_s = k_u + (k_u - k_p)\frac{P}{S} + (k_u - k_d)(1 - T)\frac{D}{S}, \tag{2}$$

where

k_p = incremental cost of preferred stock to an unlevered firm, and

P = market value of the levered firm's preferred equity.

Equation 2 postulates that the cost of common equity increases with the use of financial leverage, which can take the form of either debt or preferred stock. Further, the relationship is linear when leverage is measured by the ratio of preferred stock or debt to common equity. Note that the values for debt, preferred stock, and common stock must be expressed in terms of market values, not book values. However, if utility commissions attempt to set the allowed rates of return equal to the cost of equity, then over time utilities will on average sell at their book values, so for utilities either book values or market values may be used.

Extensions to the Classics

Financial theorists, including Miller himself, have argued that the basic MM model does not hold when the restrictive assumptions are relaxed. The two most important assumptions in this regard are (1) the absence of personal taxes and (2) the absence of costs associated with financial distress. Miller (1977) and DeAngelo and Masulis (1980) argued that the addition of personal taxes raises the cost of common equity to a level higher than that given by Equation 2. Under the Miller model, the addition of personal taxes results in this relationship:

$$k_s = k_u + (k_u - k_p)\frac{P}{S} + (k_u - (1 - T)k_d)\frac{D}{S}. \qquad (3)$$

Note that the relationship between common equity costs and leverage remains linear when leverage is expressed in terms of market value preferred-to-common stock and debt-to-common stock ratios, but the slope coefficient of the debt leverage term in Equation 3 is larger by the amount Tk_U.

An even bigger criticism of both the MM and Miller models stems from a failure to consider the costs of potential financial distress, which amounts to assuming that such costs are zero. In the event of bankruptcy, or even if the threat of bankruptcy arises, the direct costs of fees paid to trustees, lawyers, accountants, appraisers, and so on, reduce the value of the firm's assets and hence the funds available for distribution to bondholders and stockholders. In addition to these direct costs, firms in financial distress often suffer such indirect costs as lost customers, managerial inefficiency due to preoccupation with financial problems, higher wage demands, and so on. Altman (1984) estimated both direct and indirect bankruptcy costs for a sample of firms and found that these combined costs averaged about 15 percent of total firm value, which means about 30 percent of the value of the equity. Thus, the evidence suggests that expected financial distress costs are sufficiently high to exert a significant influence on the relationship between the cost of common equity and financial leverage. Thus, the MM and Miller models are clearly incomplete.

In addition to bankruptcy costs, Jensen and Meckling (1976) and Barnea, Haugen, and Senbet (1981) argued that the use of leverage imposes costs associated with both the restrictive covenants in debt agreements and the monitoring actions that creditors must take to protect themselves against unfavorable managerial actions. These costs are called "agency costs," and like the costs of financial distress, they increase as leverage increases.

It has been demonstrated (see Chen and Kim (1979) and Kim (1982)) that both financial distress and agency costs invalidate the theoretical relationships developed by MM and by Miller. With these costs added, the relationship becomes much more complex, too complex for theory to lead to any definite conclusions as to the exact relationship between leverage and equity costs.

The Impact of Regulation

It has long been recognized that the process of regulation could affect the theoretical relationships between common equity costs and financial leverage. MM and Miller, in deriving Equations 2 and 3, assumed that earnings before interest and taxes (EBIT) is independent of financial leverage, but others have demonstrated that the regulatory process invalidates this assumption. If operating income were independent of leverage, the effect would be to pass on any tax savings from leverage to stockholders. Gordon (1967) and Gordon and McCallum (1972) argued that if the benefits of debt accrue to customers rather than stockholders, as they generally do in the case of utilities, then earnings before interest but after taxes, rather than EBIT, is the cash flow variable that is independent of leverage. Under this assumption, they argued that, under the remaining MM assumptions, the correct relationship between common equity costs and financial leverage for regulated firms is that prescribed by MM in a zero-tax world:

$$k_s = k_u + (k_u - k_p)\frac{P}{S} + (k_u - k_d)\frac{D}{S}. \tag{4}$$

Elton and Gruber (1971) made the same cash flow independency argument as Gordon and McCallum, but they reached different conclusions. According to Elton and Gruber, the proper leverage relationship for regulated firms is the same as for unregulated firms, given the MM assumptions:

$$k_s = k_u + (k_u - k_p)\frac{P}{S} + (k_u - k_d)(1 - T)\frac{D}{S}. \tag{2}$$

Elton and Gruber (1972) then showed that either Equation 2 or Equation 4 can be correct, depending upon what further assumptions are made about regulatory behavior. Equation 4 is correct if the allowed rate of return, once set, is always earned. On the other hand, Equation 2 is correct if the allowed rate of return is fixed but the earned rate of return is a random variable.

Finally, Jaffe and Mandelker (1976) showed that both the Gordon and McCallum and the Elton and Gruber hypotheses also require specific assumptions regarding the relationship between demand and variability of demand. They argued that an increase in financial leverage will result in tax savings which, under regulation, are passed on to the firm's customers. This results in lower prices and a corresponding increase in demand. For Equation 4 to hold, they argued that the resulting increase in demand variability must be proportionately greater than the resulting increase in demand. For Equation 2 to hold, the level of demand and the variability of demand must increase proportionately. They further argued that traditional economic models assume constant variability of demand, and under this condition, or if the variability increase is less than proportional, then the cost of equity rises less with leverage than indicated by Equation 2.

In summary, finance theory provides many different hypotheses regarding the relationship between equity costs and leverage. The exact specification of the relationship depends on the underlying assumptions. However, we have no way of knowing which set of assumptions is most correct, or indeed if any set of the assumptions is good enough to form the basis for practical decisions.

Empirical Studies

Since the theoretical studies do not agree on the relationship between leverage and the cost of equity, researchers have turned to empirical studies which attempt to estimate the relationship directly. Numerous such studies have been conducted for electric companies, and even more research has been directed toward unregulated firms. We discuss here only the more prominent of the published works on electric utilities.

Virtually all empirical work has used the following specification:

$$k_s = b_0 + b_1(\text{Leverage}) + b_2F_2 + \dots b_nF_n + e.$$

Here the firm's cost of common equity, k_s, is the dependent variable, leverage is one of the independent variables, and other independent variables, F_i, are included to account for other cross-sectional factors that influence k_s. All studies of this nature have encountered major problems: (1) It is very difficult to estimate the dependent variable, k_s, and hence the early studies often used a proxy such as dividend yield in place of the cost of common equity. (2) The specification must include all other risk factors that are correlated with financial leverage to avoid a bias in the leverage coefficient.[2] (3) All of the variables in the specification should be measured in terms of investors' expectations, yet we generally have available only historical data or limited projected data.

The first major study which incorporated modern financial and statistical concepts was conducted by Brigham and Gordon (1968). They used the following model:

$$\text{Dividend yield} = b_0 + b_1(\text{Growth rate}) + b_2(\text{Book value debt/equity ratio}) + b_3(\text{Earnings instability}) + b_4(\text{Corporate size}) + b_5(\text{Proportion of sales from electricity}) + e.$$

Their sample consisted of 69 electric utilities during the years 1958 to 1962. They found, on average, that a unitary increase in the book debt-to-equity ratio would raise the cost of common equity by about 0.33 percentage points.[3]

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[2] If all of the factors affecting common equity costs were statistically independent, then the omission of independent variables would lower the R^2 of the regression but would not bias the coefficients. However, if variables that are correlated with leverage are omitted, this would result in a leverage coefficient that is either too large or too small, and a standard error that is too small.

[3] A unitary change in the book debt-to-equity ratio is when the ratio changes by $\pm$ 1.0. For example, a change from 0.5 to 1.5 is a unitary change, and such a change would increase common equity costs by 0.33 percentage points. Also, 0.33 is the average

Gordon (1974) expanded both the model and the sample used in his study with Brigham. Here is Gordon's 1974 model:

Dividend yield = b_0 + b_1(Market value debt/equity ratio) + b_2(Growth rate) + b_3(Proportion of sales from electricity) + b_4(Earnings quality) + e.

He found that over the 1958-1968 period, the coefficient of the leverage variable averaged about 0.5 when leverage was measured by the market value debt-to-equity ratio.[4]

Robichek, Higgins, and Kinsman (1973) conducted a study over the 1962-1969 period, using the following model:

k_s = b_0 + b_1((Debt + preferred)/equity ratio) + b_2(Flow-through dummy) + e.

They estimated k_s using several different discounted cash flow (DCF) models, and they used both book and market value leverage ratios. Robichek et al. found that the effect of leverage on common equity costs was about 0.9 percentage points for each unit change in leverage as measured by the book value debt-to-equity ratio. Their results using market value debt-to-equity ratios were inconclusive.

Mehta et al. (1980) studied 55 electrics during the 1968-1972 period using the following model:

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coefficient over the five years of the study. Brigham and Gordon argued that since market/book ratios were about 2 to 2.5 over the period, the coefficient for the leverage variable measured in market value terms would be approximately 0.8.

[4]The coefficient values ranged from 0.4 to 0.7, and were statistically significant in only 5 of the 11 years. The values of the market value debt-to-equity ratio ranged from 0.59 to 0.88.

$$\text{Dividend yield} = b_0 + b_1(\text{Growth rate}) + b_2(\text{Book value preferred/market value common equity ratio}) + b_3(\text{Book value debt/market value common equity ratio}) + e.$$

They found that k_s changed on average by about 1.01 percentage points for a unitary change in the preferred stock leverage variable, and by about 1.74 percentage points for a unitary change in the debt variable. Mehta et al. also reached these conclusions: (1) The effect of preferred stock leverage on common equity costs is the same as the effect of debt leverage, except for the tax deductibility of interest expense. (2) If the leverage variable is defined as preferred leverage plus debt leverage multiplied by (1 - Tax rate), then a unitary increase in this combined leverage variable increases common equity costs by about 1.25 percentage points. If the combined leverage variable is measured merely by preferred leverage plus debt leverage, the effect of a unitary change is a 0.75 percentage point change in equity costs.

Finally, Patterson (1984) used a quadratic relationship between the cost of common equity and leverage, based on an assumed quadratic function for the value/leverage relationship. While his study, which used a sample of 114 utilities for the years 1975 to 1979, focused on the relationship between financial leverage and the value of the firm, he did conclude that the relationship between leverage (as measured by the market value debt/equity ratio) and the cost of common equity is a nonlinear function whose slope rises as leverage increases. However, he did not attempt to attach numerical significance to the relationship.

Summary

The empirical work is consistent with the hypothesis that k_s increases with leverage. However, the magnitude of the effect varies considerably both from year to year and between studies. Further, it is impossible to state that one of the studies is "more correct" than any other. Therefore, we decided to perform our own empirical study, which is described in Appendix D.

APPENDIX D
THE PURC REGRESSION STUDY

As we noted in Appendix C, prior empirical studies have yielded inconsistent results. Further, most of the studies are quite old, and they are based on data during a time when both business risks and capital costs were different than they are today. For both these reasons, we decided that a new empirical study was in order. Louis C. Gapenski undertook that study as his Ph.D. dissertation at Florida, and this appendix summarizes the relevant parts of his work.

A firm's cost of equity can be expressed as follows:

$$k_s = a_0 + \sum_{i=1}^{n} a_i F_i + \sum_{i=1}^{n-1} \sum_{j=i+1}^{n} a_{ij} F_i F_j. \quad (1)$$

Here

k_s = cost of common equity,

a_0 = intercept term,

F_i = n risk factors,

F_{ij} = interaction and second order terms, and

a_i and a_{ij} = regression coefficients, or factor weights.

Similar equations were set up to analyze the costs of debt and preferred stock.

Electric Utility Risk Factors

In addition to financial leverage, seven factors are often cited by security analysts as having an influence on an electric utility's cost of capital: (1) its regulatory environment, (2) its electric/gas sales mix, (3) its fuel mix, (4) the size of its construction program in relation to operating assets, (5) its nuclear construction program, (6) its reserve margin situation, and (7) its dividend policy. More factors could, of course, be added to the list, but a review of prior studies, the general literature, and utility analysts' reports suggests that the ones listed are the most important.[1]

Regulatory Environment

Regulatory agencies have an important influence over both the level and the riskiness of firms' earnings.[2] First, regulators influence the level of earnings by setting allowed rates of return and authorized rate bases. Second, regulators influence the riskiness of the earnings by affecting the allocation of risk between investors and ratepayers. Finally, inconsistent,

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[1]There should perhaps also be variables which measure a company's costs relative to other companies in its region on the grounds that a high-cost company is more exposed to load loss from cogeneration and/or industrial plant relocations, and also a variable that measures a company's operating efficiency on the grounds that operating inefficiencies will lead to high costs, hence to possible load loss and/or regulatory penalties. However, neither we nor anyone else has, thus far, been able to develop quantitative measures for these variables, and hence they are not included in the regression models. To the extent that they (1) are important and (2) are not already captured in the included variables, their omission will result in larger error terms and lower R^2 values. However, their omission will not affect the leverage variable's coefficient unless cost and efficiency, on a company-by-company basis, are correlated with leverage.

[2]The term "regulatory environment" encompasses public service commission actions, legislative actions, and court ations. We use the terms "regulators" and "regulatory agencies" to include all of these bodies, not just commissions.

arbitrary, uncertain, or "unfair" regulatory actions can affect a firm's riskiness.

Over 20 securities firms now review past and potential future actions of regulatory bodies and then rank utility companies' regulatory climate on the basis of regulators' impacts on the level, quality, and variability of earnings. Several recent studies have been conducted to determine the effect of regulatory rankings on capital costs. For example, Trout (1979), Archer (1981), and Dubin and Navarro (1983) all concluded that lower regulatory rankings increase capital costs, as did Fanara and Gorman (1986), who also found that the effect was considerably stronger in the early 1970s than in 1980.

Gas/Electric Sales Mix

Many utilities (the combination companies) provide both gas and electric services, and there is some evidence which suggests that gas operations might be riskier than electric operations. For example, Joskow (1972) found that the New York State Public Service Commission typically allowed a higher rate of return on equity for gas operations than for electric operations, presumably to account for greater risk. On the other hand, Dubin and Navarro (1983) concluded that there is no risk differential between gas and electric operations. Further, Brigham, Vinson, and Shome (1983) and Brigham, Tapley, and Aberwald (1984) presented some empirical evidence which indicated (1) that gas operations were (in 1983) slightly riskier than electric operations, (2) that the differential riskiness of gas versus electric varies over time depending on the price of gas relative to fuel oil and on perceptions of the long-run availability of gas supplies, and (3) that differences across companies also depend on the load mix of gas customers (residential versus industrial) and the company's situation on the electric side, especially its nuclear construction status.

Fuel Mix

Little work has been done which attempts to relate the mix of fuels it uses to generate electricity to a utility's risk. However, a firm's fuel mix affects (1) its operating leverage, (2) its input price uncertainty, (3) its risk of accidents or other operating problems, and (4) its environmental impact risk. Thus, there is a basis for postulating that the five basic types of generation--nuclear, coal, oil, gas, and hydro--have different inherent riskiness.

However, the inherent contribution of fuel mix to business risk may not be stable over time--for example, oil, coal, and nuclear fuels have all been "popular" with investors at certain times and "unpopular" at other times. Further, all the risks associated with fuel mix are not necessarily borne by the security holders, and hence they do not necessarily affect security costs. Specifically, some or all of this risk can be allocated by regulatory agencies to ratepayers through fuel adjustment clauses or other risk transfer mechanisms. However, different commissions utilize different procedures, and hence allocate fuel mix risk differently. All of this complicates and perhaps obscures the relationship between fuel mix and the riskiness of the utility's securities.

Construction Program

Risks associated with new construction programs could affect investors' required rates of return. First, after a period of inflation new plant is generally more costly than old plant. When a new plant is completed, it must go into the rate base if costs are to be recovered and a return is to be earned on the company's investment. If there is a delay in getting the new plant into the rate base, then the earned rate of return will suffer, and if any part of the costs are disallowed, then investors will incur a permanent loss. Further, because new plant typically has a much higher cost per unit of capacity than old plant (due both to inflation and to increasing environmental costs), "rate shock" may occur when new plant is added to the rate base. The greater the rate shock, the higher the probability of delays in getting new plant into the rate base, the higher the probability of load loss among industrial customers, and the higher the probability of disallowances and/or phase-in plans which delay cash flows. Also, large construction programs require massive new financing, and if new stock must be issued at less than book value, the current stockholders' positions will be diluted. Finally, there is always the risk that a plant under construction will be canceled and that stockholders will have to bear some or all of the costs incurred to date.

Nuclear Construction Program

The impact of nuclear construction programs on security risk is similar to but generally more severe than that of nonnuclear programs. Nuclear plants under construction carry more risk than conventional plants for at least four reasons: (1) the cost of nuclear plant has escalated more rapidly than conventional plant in recent years, (2) rate shock is generally greater when new nuclear plants go into the rate base, (3) completion times are more uncertain for nuclear plants, and (4) there is a higher probability that unfinished nuclear plants will be canceled and their costs written off. All of these factors have been compounded recently by uncertainty over the accounting treatment of costs whose recovery is uncertain or subject to long delays.

Reserve Margin

A high reserve margin tends to reduce the need for new construction, and in this sense it might be considered positive from an investor's viewpoint. Also, a high reserve margin reduces the risk of outages or hookup delays, both of which can lead to consumer complaints, to resistance to rate increases, and to a loss of regulatory goodwill. Conversely, a high reserve margin could indicate excess capacity, higher-than-necessary costs, and the possibility of load loss and/or regulatory penalties. A high reserve margin is especially troublesome for a company with a large construction program, for many of the problems associated with construction are exacerbated if new plant is not really needed.

Note, though, that it is often difficult to interpret reserve margins, and they are not necessarily similar across companies. For example, a reserve margin of 60 percent might not be bad at all if most of the off-line plant consists of old, inefficient, high-operating-cost equipment which has been largely depreciated, while a 40 percent margin could be quite bad if the excess plant has a high cost and is no less efficient than the plant that is being used to generate power.

Dividend Policy

One of the most debated issues in finance is whether a firm's dividend policy affects its cost of equity. Miller and Modigliani (1961) argued that in a world without personal taxes the cost of common equity would be unaffected by dividend policy. Conversely, Gordon (1959) took the position that dividends are cash in the hand while capital gains are uncertain future cash flows in the bush, and hence that investors require a higher return on low dividend payout stocks to account for their increased riskiness. However, this position has been disputed by Brennan (1971) and others. In addition, Farrar and Selwyn (1967) and Brennan (1970) argued that differential tax rates on dividends and capital gains results in investors requiring a higher rate of return on high payout stocks. Thus, three major, but conflicting, theories regarding the relationship between dividend policy and equity costs have been set forth in the finance literature.

The empirical evidence on this issue is as contradictory as the theories. Black and Scholes (1974) presented evidence which supports MM's dividend irrelevance hypothesis, but Litzenberger and Ramaswamy (1979) found a positive relationship between dividend yield and required rate of return which supports Farrar and Selwyn, and Brennan. With no theoretical or empirical consensus, it is difficult to postulate what effect, if any, dividend policy might have on the cost of equity to electric utilities.[3]

Methodology

We used Equation 1 as a multiple regression model to analyze the effects of financial leverage on debt and equity costs. The following sections describe the way the variables discussed in the preceding section were measured for use in the regression analysis.

Component Cost Measures

Equity. We measured the cost of equity in two ways, by a direct DCF estimate and indirectly by an analysis of market/book (M/B) ratios. In the direct DCF model,

$$k_s = \frac{D_1}{P_0} + g,$$

the dividend yield was found by dividing D_1, next year's expected dividend reported by Value Line, by P_0, the end-of-year stock price. The growth rate, g, is the 5-year median expected growth rate in earnings reported by Institutional Brokers Estimate System (IBES). The second method recognizes that M/B ratios are functionally related to equity capital costs, and hence that the

[3]The tax bill now (June 1986) being debated in Congress may have an additional effect on the dividend situation. If the Senate bill passes intact, it will essentially equalize the tax rate on dividends and capital gains. This would increase the attractiveness of dividends vis-a-vis capital gains. Gains will still have an advantage though, because they can be deferred by continuing to hold the stock.

M/B ratio can serve as a proxy for the cost of equity. The DCF k_s, although a direct measure of equity costs, probably has significant measurement error. Conversely, the M/B ratio has less measurement error, but as a proxy for k_s it may introduce specification error.

Debt. We also used two measures for the cost of debt, k_d. First, we used the S&P bond rating as the dependent variable and thus as a proxy for k_d. S&P translates its letter ratings into a numerical rating system with 2 = AAA, 4 = AA+, 5 = AA, 6 = AA-, 7 = A+, and so on (there is no number 1 or 3), and our approach recognizes that a direct relationship exists between a company's bond rating and its cost of new debt. In our second method, we converted the reported bond ratings to their matching S&P yields. However, since S&P only reports yields on the primary rating groups, that is, on the group without modifiers, all bonds rated AA+, AA, and AA- were assigned the yield reported for AA bonds, and so on. The first method, which uses bond ratings as a proxy for k_d, provides more detailed information, but (1) its regression coefficients measure the impact on rating rather than on k_d and (2) it assumes that at the analysis date the yield differentials between each rating category are equal (for example, that the yield differential between AA and AA- is equal to that between A- and BBB+), a condition that may not hold.

Risk Factor Measures

Regulatory environment. Regulatory environment was measured by the Salomon Brothers' rating of each utility's regulatory climate. These ratings, which can range from A+ to E-, where A+

is the most favorable climate and E- is the least favorable, were converted into a numerical scale as follows:[4]

Ranking	REGRANK
A+ to A-	1
B+ to B-	2
C+ to C-	3
D+ to D-	4
E+ to E-	5

Leverage. Five different measures of leverage were used: (1) BVDE is the book value debt-to-equity ratio, where equity is common equity only; (2) BVDPE is the book value debt-plus-preferred-to-common-equity ratio; (3) MVDE is the market value debt-to-common-equity ratio; (4) MVDPE is the market value debt-plus-preferred-to-common-equity ratio; and (5) EBVDPE is the expected future book value debt-plus-preferred-to-common-equity ratio as estimated by Value Line.[5]

Gas/electric sales mix. PCTGASREV is gas revenues as a percentage of total gas plus electric revenues.

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[4]Various combinations of dummy variables were also used to specify regulatory environment. The results were similar, so the dummy variable specification was dropped.

[5]Value Line estimates the average common equity ratio during a future three-year period. For example, in 1986, it reports the expected average equity ratio during the years 1988-1990. Thus, for all intents and purposes, the Value Line forecast represents the equity ratio expected three years into the future. Also, the market value of a firm's securities was estimated as follows: (1) Book value was used for short-term debt. (2) The market value of long-term debt was estimated based on embedded interest payments and the yield required on similarly rated bonds, assuming an average maturity of 20 years. (3) Book value was used for preferred stock. (4) The common stock's market value was based on the end-of-year stock price times the number of shares outstanding.

Fuel mix. Only these variables were used to measure fuel mix: PCTNUC, the percentage of nuclear generating capacity to total capacity; PCTCOAL, the percentage of coal generating capacity to total capacity; and PCTOIL, the percentage of oil generating capacity to total capacity.

Construction program. PCTCONST is Salomon Brothers' forecast of the percentage of total construction expenditures forecasted for the next three years to total current gross plant.

Nuclear construction program. NUCCONST is the company's total dollar investment in nuclear plants under construction expressed as a percentage of current gross plant. This variable was also obtained from Salomon Brothers, and the amount of investment includes both costs incurred to date and estimated completion costs.

Reserve margin. RESMAR is the percentage of unused generating capacity to total peak requirement based on the higher of summer and winter peaks. It was developed from S&P data.

Payout ratio. PAYOUT is Value Line's forecasted percentage payout ratio for the current year.

Data Sample

The data set consists of those electric utilities that are followed by Value Line, Salomon Brothers, and Standard & Poor's. However, we excluded companies which have lowered or omitted their common dividends on the grounds that those firms clearly violate the constant growth assumption. We had available two years of cross-sectional data, 1983 and 1984.[6] After applying data restrictions, the sample consisted of 70 companies for 1983 and 66 for 1984.

Statistical Procedures

We used two measures of the cost of equity with three measures of leverage, which result in 3 X 2 = 6 potential regression equations. Further, we used two measures of debt cost coupled with three measures of leverage for another six regression equations. Here is a summary:

Cost of Equity Models:

$$\begin{matrix}\text{DCF } k_s \text{ or} \\ \text{B/M Ratio}\end{matrix} = \text{INTERCEPT} + \text{REGRANK} + \begin{matrix}\text{BVDPE or} \\ \text{MVDPE or} \\ \text{EBVDPE}\end{matrix} + \text{PCTGASREV} + \text{PCTNUC}$$

$$+ \text{PCTCOAL} + \text{PCTOIL} + \text{PCTCONST} + \text{NUCCONST} + \text{RESMAR} + \text{PAYOUT}.$$

Note that rather than use the ratio of market price to book value for the M/B ratio, we used that ratio's reciprocal, the B/M ratio. This was done to facilitate an interpretation of the coefficients. For example, we expect companies with higher leverage to have higher equity costs, other things held constant, so the regression coefficient between k_s and leverage should be positive. However, we expect leverage to be inversely correlated with the M/B ratio--the higher the company's leverage, the lower its M/B ratio. To make the signs of the leverage variable consistent in the k_s and M/B models, we simply inverted the M/B ratio and used B/M.

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[6]The limiting data element is dollar value of incomplete nuclear plant, which was first reported by Salomon Brothers in usable form in 1983.

Cost of Debt Models:

$$\begin{array}{l} \text{S\&P } k_d \text{ or} \\ \text{Bond Rating} \end{array} = \text{INTERCEPT} + \text{REGRANK} + \begin{array}{l} \text{BVDE or} \\ \text{MVDE or} \\ \text{EBVDPE} \end{array} + \text{PCTGASREV} + \text{PCTNUC}$$

$$+ \text{PCTCOAL} + \text{PCTOIL} + \text{PCTCONST} + \text{NUCCONST} + \text{RESMAR} + \text{PAYOUT}.$$

Since we analyzed data over two years, and since we have six debt and six equity cost models for each year, a total of 24 regression runs were made. The SAS software package was used for the regressions, and procedures were automatically used to correct for heteroscedasticity, even though early tests did not indicate that the error terms would exhibit nonconstant variance.

A Priori Expectations about Coefficient Signs

Table D-1 contains the a priori estimates of the coefficients' signs based on the previous empirical and theoretical studies discussed earlier. Regulatory environment, both regular and nuclear construction, and all of the leverage variables should have positive coefficients, indicating that an increase in the variable's value raises k_s and k_d. However, there are no strong logical arguments to what the signs should be for the sales mix, fuel mix, reserve margin, or payout ratio variables.

Table D-1
A Priori Coefficient Estimates

Factor	Measure	Estimated Coefficient Sign
Regulatory environment	REGRANK (1 = best, 5 = worst)	+
Gas/electric sales mix	PCTGASREV	?
Fuel mix	PCTNUC	?
	PCTCOAL	?
	PCTOIL	?
Construction program	PCTCONST	+
Nuclear construction program	NUCCONST	+
Reserve margin	RESMAR	?
Financial leverage	BVDE	+
	BVDPE	+
	MVDE	+
	MVDPE	+
	EBVDPE	+
Dividend policy	PAYOUT	?

Summary of the Input Data

Table D-2 contains a summary of the input data. For the most part, the table is self-explanatory, but two points deserve clarification. First, the S&P bond ratings range from 4 = AA+ to 12 = BBB-, and the means for 1983 and 1984 indicate that the average company has an A rating. Second, the reserve margin, RESMAR, is negative for some utilities because they purchase a significant amount of the power they sell from other utilities. Note too that the means reflect unweighted rather than weighted averages.

Table D-2
Input Data Summary

Variable	1983 Minimum Value	1983 Maximum Value	1983 Mean	1984 Minimum Value	1984 Maximum Value	1984 Mean
k_s	12.8%	19.0%	15.8%	12.9%	17.3%	14.8%
B/M Ratio	0.61	1.35	1.04	0.60	1.44	0.98
k_d	12.6%	13.6%	13.0%	12.1%	12.9%	12.5%
Bond Rating	5	12	7.9	4	12	7.5
REGRANK	2	4	2.8	2	5	2.8
BVDE	0.68	1.86	1.27	0.62	1.83	1.22
BVDPE	0.86	2.11	1.54	0.78	2.15	1.48
MVDE	0.44	1.91	0.96	0.36	2.02	0.94
MVDPE	0.60	2.26	1.25	0.45	2.33	1.18
EBVDPE	0.77	1.70	1.29	0.83	1.94	1.24
PCTGASREV	0.0%	53.9%	13.7%	0.0%	66.2%	13.4%
PCTNUC	0.0%	83.0%	13.3%	0.0%	68.6%	13.6%
PCTCOAL	0.0%	100.0%	65.4%	0.0%	100.0%	63.6%
PCTOIL	0.0%	100.0%	9.1%	0.0%	100.0%	7.9%
PCTCONST	9.0%	175.0%	36.5%	10.0%	161.0%	33.5%
NUCCONST	0.0%	99.8%	17.9%	0.0%	94.8%	14.6%
RESMAR	-68.0%	54.5%	18.3%	-51.5%	56.2%	18.8%
PAYOUT	57.7%	94.7%	73.3%	52.9%	94.6%	72.0%

Correlation between Dependent Variables

Both logic and prior studies suggest that the cost of debt and the cost of equity for companies should be positively correlated, and we expected our two measures of debt and equity costs to be correlated with one another. Table D-3, which shows the correlation coefficients between the dependent variables, confirms that these conditions do hold. Three major points should be noted: (1) A look across the top row of Table D-3 will show that the correlations between the DCF k and the other dependent variables were stronger in 1983 than in 1984. Correlations among the other variables were not materially stronger in one year than the other. This could mean that the

DCF k variables in 1984 contain larger measurement errors than in 1983, but we really cannot explain why the differences occur. (2) As expected, there is generally a high correlation between equity cost and debt cost, regardless of the measures used. (3) As we also expected, there are extremely high correlations between the two cost of debt measures, Bond Rating and S&P k_d. These data suggest that one measure of debt cost is as good as the other, hence that it is not absolutely necessary to include both measures in the regression runs. However, the two equity cost measures are sufficiently different to warrant regression runs with each.

Table D-3
Dependent Variable Correlation Coefficients

	DCF k	B/M Ratio	S&P k_d	Bond Rating
DCF k	1.00/1.00	0.74/0.58	0.59/0.47	0.64/0.49
B/M Ratio		1.00/1.00	0.58/0.61	0.63/0.69
S&P k_d			1.00/1.00	0.94/0.95
Bond Rating				1.00/1.00

Note: The correlation coefficients for 1983 appear before the slash (/) and the coefficients for 1984 after it.

Multicollinearity

Multicollinearity can cause serious problems in multiple regression analyses, so at an early stage we examined correlations among the independent variables. These data are shown in Table D-4. To save space, only one leverage variable is listed, EBVDPE, because all the leverage variables are extremely highly correlated. Similarly, all the correlations with the fuel mix variables were low, and hence they too are omitted. For the remaining variables, only the correlation between PCTCONST and NUCCONST is high enough to cause concern, and, since neither of those variables is highly correlated with leverage, that collinearity is not a problem for our studies.[7]

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Table D-4
Independent Variable Correlation Coefficients

	REGRANK	EBVDPE	PCTGASREV	PCTCONST	NUCCONST	RESMAR	PAYOUT
REGRANK	1.00/1.00	0.34/0.29	-0.01/0.08	-0.10/-0.14	0.04/0.03	-0.06/0.05	0.24/0.31
EBVDPE		1.00/1.00	-0.34/-0.19	0.23/0.29	0.41/0.29	-0.07/-0.27	0.21/0.25
PCTGASREV			1.00/1.00	-0.14/-0.22	-0.22/-0.21	-0.07/0.21	0.00/0.01
PCTCONST				1.00/1.00	0.71/0.81	-0.07/-0.04	-0.27/-0.23
NUCCONST					1.00/1.00	0.09/0.07	-0.02/0.02
RESMAR						1.00/1.00	-0.07/0.05
PAYOUT							1.00/1.00

Note: The correlation coefficients for 1983 appear before the slash (/), the coefficients for 1984 after.

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Cost of Equity Results

Tables D-5 and D-6 contain summaries of the results of the equity and debt regressions. The reported R^2 values in Table D-5 are the adjusted R^2 for the runs which use MVDPE as the leverage measure. Note that the R^2 values are quite a bit higher when B/M is used as the dependent variable. However, there is probably spurious correlation between MVDPE, and that probably explains the higher R^2 values for the B/M models.

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[7]We actually ran several other types of statistical analyses designed to test for the effects of multicollinearity. They all indicated that multicollinearity simply does not present a problem.

In general, the regression results are about what one would expect, based on an analysis of past studies. The R^2 values are in line with, but somewhat higher than, those reported in most past studies. The t-statistics are as high or higher than in most earlier studies. The leverage variables are generally statistically significant, especially those in the debt cost models.

Table D-5
Equity Regression Results:
Coefficients and t-Statistics of the
Statistically Significant Variables

	1983				1984			
Basic Risk	DCF k		B/M Ratio		DCF k		B/M Ratio	
Factor	Coef.	t	Coef.	t	Coef.	t	Coef.	t
INTERCEPT	12.1	(8.95)	0.63	(4.82)	13.8	(11.86)	0.61	(5.16)
EBVDPE	1.29	(1.94)	0.14	(1.80)	1.53	(2.41)	0.20	(2.59)
BVDPE	0.86	(1.67)	0.07	(1.16)	1.07	(2.33)	0.12	(2.04)
MVDPE	1.52	(3.79)	0.25	(6.35)	1.30	(3.28)	0.26	(6.48)
NUCCONST	0.02	(2.43)	0.002	(2.94)	0.01	(1.04)	0.002	(1.97)
RESMAR	-0.01	(2.05)	-0.002	(2.85)	-0.01	(2.26)	-0.0008	(1.25)
PCTGASREV	0.005	(0.71)	0.001	(1.78)	0.008	(1.21)	0.002	(3.04)
PCTNUC	-0.005	(0.74)	0.002	(2.52)	0.002	(0.33)	0.001	(1.02)
R^2	0.58		0.71		0.45		0.69	

Note: The critical values of t for 60 degrees of freedom are as follows:

Significance Level	Two-Tailed	One-Tailed
5%	2.00	1.67
1	2.66	2.39

Table D-6
Debt Regression Results:
Coefficients and t-Statistics of the
Statistically Significant Variables

Basic Risk Factor	1983 Bond Yield Coef.	t	1983 Bond Rating Coef.	t	1984 Bond Yield Coef.	t	1984 Bond Rating Coef.	t
INTERCEPT	11.6	(24.0)	-3.76	(1.54)	11.2	(38.3)	-3.94	(2.01)
REGRANK	0.04	(0.53)	0.43	(1.26)	0.09	(2.13)	1.03	(3.53)
BVDE	0.83	(4.65)	4.94	(5.45)	0.55	(4.99)	3.94	(4.80)
EBVDPE	0.76	(3.54)	3.71	(3.23)	0.54	(3.42)	4.27	(4.12)
MVDE	0.84	(5.34)	4.51	(5.45)	0.51	(4.51)	4.06	(5.53)
NUCCONST	0.008	(3.39)	0.06	(4.76)	0.007	(2.97)	0.06	(3.46)
RESMAR	-0.006	(2.95)	-0.03	(3.52)	-0.005	(3.51)	-0.04	(3.58)
PAYOUT	0.002	(0.40)	0.05	(1.95)	0.004	(1.24)	0.05	(2.12)
R^2	0.50		0.65		0.62		0.70	

Note: The critical values of t for 60 degrees of freedom are as follows:

Significance Level	Two-Tailed	One-Tailed
5%	2.00	1.67
1	2.66	2.39

Table D-7 shows estimated financial risk premiums at various leverage ratios based on the 0.97 average coefficient for BVDPE in the DCF k runs, while Table D-8 contains the same risk premiums based on the average EBVDPE coefficient of 1.41. In each case, the book value debt-plus-preferred to common equity (BVDPE) ratio was converted to a book value debt to total capital ratio assuming that the capital structure contains 10 percent preferred stock. Changes in the expectational leverage measure, EBVDPE, have more impact on k_s than changes in current leverage. One might conclude from this that equity investors weigh expected capital structure more heavily than current capital structure in assessing equity risk, since current structure may not reflect the firm's target capital structure and likely average future financial risk.

Table D-7
Effects of BVDPE Ratio on Equity Costs

Book Value Debt to Total Assets (D/A) (1)	BVDPE Ratio (2)	Financial Risk Premium: Levered Firm over Unlevered Firm (3)
30%	0.67	0.65 percentage points
40	1.00	0.97
50	1.50	1.46
60	2.33	2.26

Notes:

1. Column 2 simply converts debt/assets ratios to (Debt + Preferred)/Common equity ratios, assuming that peferred is 10 percent of total capital. For example, if D/A = 30% and Preferred/Assets = 10% (which we assume), then E/A = 60% and (Debt + Preferred)/Equity = (30 + 10)/60 = 0.67 as shown at the top of Column 2. Other values in Column 2 were obtained similarly.

2. Note also that the average regression coefficient from Table D-5 for BVDPE over 1983 and 1984 was 0.97. This coefficient is multiplied by the value of BVDPE to obtain the effect of leverage on k_s. If BVDPE were zero, then there would be no leverage effect. If BVDPE were 0.67, then k_s would be increased over the zero debt level by 0.67 X 0.97 = 0.65 percentage points. That value is shown at the top of Column 3. Other values were obtained similarly.

3. Note that the financial risk premium increases linearly with BVDPE, but nonlinearly with D/A. Thus, a 10 percentage point increase in D/A from 30% to 40% produces a 32 basis point increase in k_s, but a 10 percentage point increase in D/A from 50% to 60% produces an 80 basis point increase in k_s.

Table D-8
Effects of EBVDPE Ratio on Equity Costs

Expected Book Value Debt to Total Assets (D/A) (1)	EBVDPE Ratio (2)	Financial Risk Premium: k_s over k_u (3)
30%	0.67	0.96
40	1.00	1.44
50	1.50	2.16
60	2.33	3.36

Note: See notes to Table D-7.

The leverage results can also be compared to previous studies. The average coefficient for BVDPE for the two years was 0.97. This means that a unitary increase in BVDPE is estimated to increase equity costs by 0.97 percentage points. Brigham and Gordon (1968) reported 0.33 percentage points, Gordon (1974) reported 0.5 percentage points, Robichek, Higgins, and Kinsman (1973) reported 0.9 percentage points, and Mehta et al. (1980) reported 0.75 percentage points. Of course, there are minor definitional differences among the studies, so the results are not entirely consistent. Also, capital costs have generally increased over the period of these studies, so one would expect our 1983 and 1984 coefficients to be larger because of the higher cost of capital in those years.

There is no indication that the relationship between equity costs and leverage, when measured by leverage-to-equity ratios, is nonlinear over the range of observation. Also, there is no consistent statistical evidence supporting interactions among the equity risk factors.

Effects of Leverage on the Cost of Debt

Table D-6 shows that the leverage coefficient is insensitive with regard to the particular leverage measure used--the coefficients in each of the two years were highly consistent. However, the impact of leverage on debt costs was greater in 1983 than in 1984. Table D-9 shows the estimated effects of financial leverage on debt costs based on the regression analysis. There is no strong evidence of interactions or second order terms in the debt models.

Table D-9
Effects of BVDE Ratio on Debt Costs

Book Value Debt to Total Assets	BVDE Ratio	Financial Risk Premium: Levered Firm over Unlevered Firm
30%	0.50	0.37
40	0.80	0.60
50	1.25	0.93
60	2.00	1.49

Use of Regression Results in the Lotus 1-2-3 Model

The Lotus 1-2-3 model which we use to analyze the effects of changes in capital structure on revenue requirements, customer bills, coverages, and the weighted average cost of capital requires as inputs the relationship between capital structure and the cost rates of debt and equity. Indeed, the primary purpose of our regression analysis was to develop inputs for the 1-2-3 model. Our thought was to use the data in Tables D-7, D-8, and D-9 to produce inputs for the 1-2-3 model. However, direct usage of the regression results would not be appropriate because of statistical problems associated with measurement errors in the independent variables.

Regression analysis is based on a number of assumptions, one of which is that all variables are measured without error. With some types of data, this assumption poses no problem--for example, in studies of the effects of rainfall on the output of wheat per acre, both rainfall and bushels per acre can be measured with little or no error. However, in cost of capital studies, where the variables reflect investors' expectations, measurement errors cannot be avoided. Thus, we might measure Company X's cost of equity as seen by the marginal investor at year-end 1984 to be 15 percent, but that 15 percent estimate almost certainly differs from the "true" but unobservable cost of equity. Similarly, in our regression analysis we want a leverage variable that reflects the average investor's expectations about the company's leverage condition over some future time horizon, yet we have no way of knowing for sure either the length of investors' time horizons or what they think the firm's capital structure will be over that horizon. Further, we do not know if investors in the market focus on market value capital structures as academicians generally assume or on book value structures as companies, regulators, rating agencies, and analysts seem to do. So, the only thing we can be absolutely sure of, when we measure leverage by year-end BVDE, MVDE, MVDPE, or BVDPE, or by Value Line's expected measure, EBVDPE, is that there is at least some difference between our estimate and that of investors at the margin. The same thing could be said about each of the other independent variables.

What are the effects of measurement errors? With regard to an independent variable, a measurement error causes a downward bias in the variable's regression coefficient, with the degree of bias depending on the degree of error. For example, the coefficient for the BVDPE leverage variable as determined in the equity regression analyses was 0.97, but if the values used in the regression for BVDPE differ randomly from company to company from what the average investor expects the future debt ratio to be, then the 0.97 coefficient will understate the true relationship, and the effects of leverage on k_s shown in Table D-7 will be similarly understated.

In Appendix E we present the bond rating guideline method for estimating the relationships between leverage and capital costs. This method gives a better estimate of the leverage/debt cost relationship than does our regression study, primarily because of the measurement error problem discussed above. We used the results of the bond rating guidelines method to estimate the impact of measurement error on the regression results, and found that the BVDPE coefficient is approximately 2.4 after correcting for measurement error. With this correction, an increase in the BVDPE ratio from 40 to 50 percent would increase the cost of equity by about 120 basis points. We believe that this estimate, which is adjusted for measurement error, is much closer to the true relationship than the 49 basis points indicated in Table D-7. The exact procedure used to estimate the adjustment for measurement error is discussed in Appendix E.

Summary

This appendix sets forth the results of our regression studies of the effects of leverage on the costs of both debt and equity. We used a linear multiple regression model, fitted with data on the electric utilities followed by Value Line, Salomon Brothers, and IBES. The cost of equity was estimated in two ways, one based on the constant growth DCF model and the other on the market/book ratio. Leverage was measured in both book value and market value terms, with preferred stock both included and excluded, and with the ratios based on both year-end and projected levels. The statistical results were slightly stronger when Value Line's projected capital structure data as opposed to current year data were used, indicating that investors give more weight to the projected capital structure than to its current level.

While our results were as good as or better than those of prior studies in terms of statistical significance, we still cannot place great confidence in those results with regard to specifying the effect of leverage on the cost of either debt or equity. Therefore, we decided to explore other approaches to estimating this effect, as we discuss in Appendix E.

APPENDIX E
USING BOND RATING GUIDELINES TO ESTIMATE
THE EFFECTS OF LEVERAGE ON THE COST OF CAPITAL

If we have reason to believe that a given change in capital structure will have a specific effect on a company's bond rating, and if we can ascertain the effect of a rating change on the cost of debt or equity, then we can use this relationship to measure the effect of a change in capital structure on the cost of capital. For example, if an increase in the debt ratio from 42.5 percent to 48 percent would cause a utility's bonds to be downgraded from Aa to A, and if that downgrading would cause the company's bond yield to increase from 10.5 to 11.0 percent, then we could state that a one percentage point change in the debt ratio was associated with a (11.0 - 10.5)/(48.0 - 42.5) = 0.0909 percentage point change in the cost of debt. Such a procedure, applied to both debt and equity, is discussed in this appendix.

Bond Yield Spreads

To apply the method, we need to know the effect of a rating change on a company's bond yield, or cost of new debt, k_d. Table E-1 provides some information on that point. Note that yields to maturity on both seasoned bonds and new issues are reported in the table; the two sets of data are highly correlated, but substantial differences may be observed in certain years. For example, outstanding A-rated bonds were reported to yield 14.43 percent in 1982 versus 12.48 percent for new issues. Such differences are caused by a number of different factors, including differences in call features, different coupon rates (which have tax implications), different maturities, and the like. Also, relatively few new bonds of a given rating are issued in any one month, so the new issue data tend to reflect random variation caused by small sample size.

Table E-1
Bond Yields, 1976-1985

	Yields on Outstanding Public Utility Bonds				Yields on New Issues of Public Utility Bonds			
	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa
Dec 1985	10.24%	10.57%	10.97%	11.48%	n.a	10.62%	10.84%	11.65%
Dec 1984	12.49	12.76	13.11	13.46	n.a	12.45	12.48	13.13
Dec 1983	13.00	13.14	13.52	14.23	n.a	12.58	13.16	13.59
Dec 1982	12.32	12.76	14.43	14.69	11.70%	12.04	12.48	13.23
Dec 1981	14.52	15.23	16.29	17.02	15.91	15.85	16.01	18.14
Dec 1980	13.62	14.37	14.63	15.29	12.94	12.88	14.42	14.67
Dec 1979	10.96	11.47	11.79	12.51	10.93	12.00	12.49	13.08
Dec 1978	9.34	9.56	9.70	10.08	9.37	9.85	9.95	10.15
Dec 1977	8.34	8.55	8.64	9.08	8.27	8.40	8.56	9.15
Dec 1976	8.15	8.45	8.62	9.21	7.90	8.22	8.41	8.61
Average	11.30%	11.69%	12.17%	12.71%	11.00%	11.49%	11.88%	12.54%

Source: Yields on outstanding bonds were obtained from Moody's Bond Record, while yields on new issues were obtained from Moody's Bond Survey. December data were taken from January issues. In the case of new issues, there were occasions where no issues in a particular category occurred during December. In those instances, we used the month closest to December in which issues occurred in all rating categories.

Note: There were no new issues by Aaa utilities during the months we examined in 1983-1985. Therefore, the Aaa average does not reflect data from these three years.

The 1982 differences are far greater than most, but a question still exists: For our purposes, which set of data would be better? To answer that question, we need to consider the data sets themselves, and the underlying causes of the differences. First, we determined that the yield index for outstanding bonds is based on 10 bonds with maturities averaging about 20 years. All of these bonds were issued in the past, and their coupon rates vary depending on interest rate levels at the time they were issued. Utility bonds generally have five years of call protection, so some of the outstanding bonds are probably callable, and the individual bonds could be selling above or below par, depending on their coupons, relative to market yields and remaining call protection. Perhaps the biggest problem with using yields on outstanding bonds as an indicator of k_d has to do with yield-to-maturity (which is reported) versus yield-to-call. For example, consider a 30-year, 15 percent coupon bond with a 27-year remaining maturity that is callable in 2 years at 112.5 which is being evaluated in a market where k_d is 10 percent. That bond will have a yield to maturity (semiannual basis) of 12.5 percent, but a yield to call of only 10 percent, and the YTC is the yield that knowledgeable investors will expect on the bond. The YTC is thus the best indicator of k_d, even though the bond index would include it at the 12.5 percent YTM. Therefore, one must be suspicious of bond index yields as representations of k_d during periods when interest rates have been declining.

The preceding discussions suggest that it would be better for present purposes to focus on new issues, for the index of new issue yields avoids the YTM versus YTC problem. However, the new issue yield index has a major problem of its own--randomness caused by small sample sizes. In many months, either no bonds of a given rating or only one or two bonds of that rating were issued. If interest rates fluctuated during the month, and one bond of an A1 company was issued at the low point during the month, the new issue yield for that month will be relatively low. If the bond happened to have a 7-year maturity, and if the yield curve is upward sloping, the bond's yield will be lower yet vis-a-vis the k_d we are seeking. This type of thing makes us worry about using the new issue yield index for our purposes.

Yet another problem has to do with the time period analyzed. A quick look at Table E-1 will show that yield spreads, hence the effects of a change in ratings on capital costs, are materially different in different periods.

Finally, there is the matter of which rating agency's index to use, Moody's or S&P's. As noted in the next section, we use the S&P rating guidelines, so consistency would suggest that we should use the S&P index yields. However, based on past work with the two indexes, we are somewhat more comfortable with Moody's data.

In the end, we decided to use both outstanding bonds and new issues over a 10-year period and to base the analysis on Moody's data. We obtained the following averages:

	Aaa		Aa		A		Baa
Yields	11.15%		11.59%		12.02%		12.62%
Differences		0.44%		0.43%		0.60%	

Thus, a reduction of one full rating leads to an increase in the cost of new debt of about 50 basis points, on average, and a reduction from Aaa to Baa would lead to an increase of about 150 basis points. Since these figures reflect the yield to investors, not the cost to a company, and since flotation costs tend to be somewhat lower for higher rated securities, the differences would probably be a little larger on a cost-to-company basis.

Standard and Poor's Guidelines for Telephones

S&P provides explicit guidelines for the leverage ratios associated with its bond ratings; those guidelines for the telephone industry are contained in the top part of Figure E-1. The benchmark for a AAA rating is 35 percent or less; for AA the benchmark is 35 to 40 percent; it is 40 to 50 percent debt for an A rating; it is 50 to 60 percent for BBB; and the guidelines indicate that a company with a debt ratio above 60 percent should be rated Ba.[1]

The middle part of Figure E-1 shows the midpoint debt ratio for each rating category, along with the average bond yields discussed earlier in the appendix. Next, we show the leverage differences and yield differences between the rating midpoints. For example, the average yield differential between AA and A rated telephone bonds is 12.02% - 11.59% = 0.43 percentage points

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[1]S&P notes, in its discussion of guidelines, that a strong (or weak) leverage ratio could be offset by some other factor such as coverage. Also, S&P is very much interested in trends, so a company with a debt ratio of 42 percent, but with a target of 40 percent and downward trend which indicates that it is moving toward the target, might be rated on the basis of the 40 percent target ratio rather than the 42 percent actual figure. Thus, companies' actual ratings will not necessarily be consistent with the published guidelines.

= 43 basis points, while the leverage differential is 45% - 37.5% = 7.5 percentage points.

The bottom line of Figure E-1 shows the percentage point impact on the cost of debt, k_d, resulting from a one percentage point change in the debt ratio. In the 37.5 to 45 percent debt ratio range, a 7.5 percentage point increase in debt usage would result in a 43 basis point increase in debt cost, and this works out to a 5.7 basis point increase in debt cost per percentage point increase in debt. Similarly, an increase in leverage of one percentage point raises debt cost by 6.0 basis points when the change falls within a debt range of 45 to 55 percent.

Figure E-1
S&P Leverage Guidelines for Telephones

Bond Rating	AAA		AA		A		BBB	BB
Debt to Total Capital	35%		40%		50%		60%	
Midpoint of Range		37.5%		45%		55%		
Average Yield for Rating		11.59%		12.02%		12.62%		
Leverage Spread			7.50		10.00			
Yield Spread			0.43		0.60			
Change in k_d per Percentage Point Change in Leverage			0.057		0.060			

Standard and Poor's Guidelines for Electrics

Figure E-2 is identical to Figure E-1 except that it is based on the S&P guidelines for electric utility bond ratings.

For electric utilities, a percentage point increase in debt usage results in either a 0.078 or 0.100 percentage point increase in debt costs, depending on the leverage range in which the move is made.

Figure E-2
S&P Leverage Guidelines for Electrics

Bond Rating	AAA		AA		A		BBB		BB
Debt to Total Capital		40%		45%		51%		57%	
Midpoint of Range			42.5%		48%		54%		
Average Yield for Rating			11.59%		12.02%		12.62%		
Leverage Spread				5.50		6.00			
Yield Spread				0.43		0.60			
Change in k_d per Percentage Point Leverage Change				0.078		0.100			

Effects on the Cost of Equity

One frequently-used procedure for estimating the cost of common equity is the bond-yield-plus-risk-premium method.[2] When this method is used, it is assumed that the same factors that affect the riskiness and consequently the cost of debt also have a similar effect on the riskiness and the cost of equity. However, there is no reason to think that a change in leverage

[2] Brigham and Gapenski, Intermediate Financial Management, pp. 144-145.

would have the same effect on the cost of equity as on the cost of debt; indeed, the effects of leverage changes are likely to be far greater on the cost of equity than on the cost of debt. This point was discussed in Appendix B, where we noted that the original capital structure theories were based on the assumption that capital structure changes had a major effect on equity's cost but no effect whatever on the cost of debt. The logic here had to do with the fact that debt has a fixed claim on income and assets, whereas equity is a residual security. Subsequent theoretical work modified that assumption, but all the theoretical work suggests that the effect of leverage on debt is far less than on equity.

The theoretical arguments are also supported by our regression studies. The coefficient of the leverage variable in the equity cost models was generally about 1.5 to 2 times the size of the coefficient in the debt models. Since the coefficients reflect the effect of a change in capital structure on the costs of debt and equity, the relative size of the coefficients suggest that capital structure has considerably more impact on equity costs than on debt costs. Note that Table D-9 in Appendix D shows that on the basis of our regression study, an increase in leverage from 40 to 50 percent debt results in an increase in debt cost of 33 basis points. However, Figure E-2, based on bond rating guidelines, indicates an 82 percentage point increase in debt costs. Thus, the bond rating guidelines estimate is $82/33 \simeq 2.5$ times greater than the regression estimate. We attribute this difference to measurement error (see

Appendix D), and we believe that the estimated equity relationship developed from the regression study is also downward biased. If we assume that the amount of bias is the same for the debt and equity relationships, then we can adjust the regression equity results by the same 2.5 multiplier. Table D-7 indicates that equity costs would increase by 49 basis points when the debt ratio is increased from 40 to 50 percent. After adjusting for measurement error we estimate the increase in equity cost to be $2.5(49) \simeq 120$ basis points.

Summary

The results of the various studies of the effects of leverage on the cost of equity are mixed. Obviously, we cannot make any precise statements from all this regarding the specific effects of a given change in capital structure on the cost of equity, but we can set forth some judgmental, ball-park figures which can be used to help specify ranges in our Lotus 1-2-3 model. Here are some figures:

	Debt Ratio Range	
	37.5% - 45%	45% - 55%
Telephone:		
Effect of a one percentage point change on k_d	5.7 b.p.	6.0 b.p.
Effect of a one percentage point change on k_s	9.0	11.0

	Debt Ratio Range	
	42.5% - 48%	48% - 54%
Electric:		
Effect of a one percentage point change on k_d	7.8 b.p.	10.0 b.p.
Effect of a one percentage point change on k_s	12.0	14.0

APPENDIX F
DESCRIPTION OF THE PURC CAPITAL STRUCTURE MODEL: ELECTRIC AND GAS COMPANIES

This appendix describes a Lotus 1-2-3 model which analyzes the effects of a change in capital structure on a utility's stock price and financial position.[1] Inputs, including capital structure and component cost rates, are entered, after which the model forecasts the utility's balance sheets and income statements over a 16-year period. (The model has a historic balance sheet for one year and pro forma balance sheets and income statements for 16 years.) The model also forecasts revenue requirements, market/book ratios, the weighted average cost of capital, customers' monthly bills, earnings and dividends per share, coverage ratios, and the estimated stock price for each forecasted year.

Required inputs include estimates of the cost of debt and equity under different capital structures. It should be recognized that no one can measure accurately the cost of equity at a given capital structure, much less tell precisely how equity costs will change if the capital structure is changed. In Appendices D and E we discuss our work on the relationship of the costs of equity and debt to capital structure. Still, judgments must be made on these issues, and one advantage of the Lotus 1-2-3 capital structure model described in this appendix is that

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[1]Appendix F is very similar to Appendix G, except G deals with telephone companies while F is written for electric and gas companies. Someone interested primarily in electric and gas companies should skip G and read F, while people with a primary interest in telephone companies should do the reverse.

one can analyze the effects of different assumptions about the capital structure/cost rate relationship, with the output showing the sensitivity of customers' bills, coverage ratios, and so on to different assumptions. Therefore, the model can give decision makers insights into the effects of alternative courses of action under a variety of assumptions.

Because the project's objective was to examine the different utility industries, including both energy and telecommunications companies, we developed a model that with minor changes can be modified for electric, gas, or telecommunications companies. The model modifications involve inserting terminology peculiar to the industry rather than major financial formula changes. For example, used with an electric company, the model would develop price per 1,000 kilowatt hours for each billing category: residential, industrial, commercial, and other. For a gas company, we would merely substitute MCF for KWH. However, for a telephone company the model would develop the monthly bill for residential customers and break it down into the basic bill and other charges. (The bill for other customers such as large business could be determined as well.) The energy model is discussed in this appendix, while the telecommunications model is discussed in Appendix G. For ease of understanding, it is best to read this appendix sitting in front of a PC with the model on the screen.

Layout of the Energy Model

The model is programmed in Lotus 1-2-3. Its layout is shown in Figure F-1, while Table F-1 shows the file's contents, provides instructions for its use, and gives the cell ranges of the various model sections.

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Table F-1
Contents of Energy Model and Directions for Its Use

I. The following sections are on this file:

Cell Range	Section Number	Description of Section
A1.R73	1	Assumptions and Inputs
A74.R94	2	Balance Sheets, 1985-2001
A95.R150	3	Income Statements, 1986-2001
A151.R179	4	Debt Refunding Schedule
A180.R194	5	Revenue Requirements under Various Model Runs
A195.R210	6	Output Prices under Various Model Runs
A211.R226	7	Costs of Capital under Various Model Runs
A227.R241	8	TIE Ratios under Various Model Runs

II. To position a section on the screen: Press function key F5, the "GoTo" key, then type the first cell shown in the range for the section, and then press the RETURN key.

III. The sections now have illustrative data. You can use the model with a specific company's data simply by entering new data in the highlighted cells in Section 1. When you enter data for a company, Sections 2 through 4 will be completed automatically. Note that all cells except the input data cells in Section 1 have been protected. The input cells which you may change are highlighted. If you need to modify the model formulas, you may disconnect the protect feature with this command: /WGPD. If you attempt to write in a protected cell, you will hear a beep and receive an error message. We recommend that you reprotect the worksheet after making your changes with the command /WGPE. You should not use the Range Erase command to erase the input cells in Section 1. If you do, and if you then press the F9 (CALC) key, zeroes and ERRs will appear throughout the worksheet. Due to the circularity of the model, once error terms appear some of the formulas cannot be recalculated even after the new data have been entered--it is then necessary to edit the individual formulas. Therefore, you should simply replace the existing input values with your own data rather than by deleting our data and then changing blank cells.

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Figure F-1
Capital Structure Model Diagram, Energy Model

MODEL SECTIONS	A1 – A73	Section 1 Assumptions and Inputs	R1 – R73
	A74 – A94	Section 2 Balance Sheets	R74 – R94
	A95 – A150	Section 3 Income Statements	R95 – R150
	A151 – A179	Section 4 Debt Refunding Schedule	R151 – R179
RESULT TABLES	A180 – A194	Section 5 Revenue Requirement Results under Various Model Runs	R180 – R194
	A195 – A210	Section 6 Unit Price Results under Various Model Runs	R195 – R210
	A211 – A226	Section 7 Weighted Average COC Results under Various Model Runs	R211 – R226
	A227 – A241	Section 8 TIE Ratio Results under Various Model Runs	R227 – R241

Basic Assumptions and Input

Certain basic assumptions are programmed into the model. You should be aware of them so that you will understand the model's limitations and also so that you can change our assumptions (by changing certain formulas) if you feel that they do not apply in the situation with which you are working. We combine our discussion of assumptions with a discussion of the input data section, Section 1. The cells in which data can be entered are unprotected and hence show up highlighted, while all other cells have been protected to prevent formulas from being accidentally changed or erased. The entries in this section form the basis for the projected 16-year balance sheets and income statements. Please note that the model presents a base-year balance sheet, forecasted balance sheets for 16 years, and forecasted income statements for 16 years.

1. Model years. We developed the model for a base year (1985) plus a 16-year forecast period (1986-2001). It would be easy to change the years to begin with a different base year.
2. Inflation and tax rate. Base year values for inflation and the tax rate are entered in B15.C16, and the model then copies them into the forecast years. However, if you wish to override the model and enter different values for different forecast years, this could easily be done by first unprotecting the model and then making the necessary changes. In our runs, we assumed a 5 percent inflation rate, and we use the current statutory tax rate of 46

percent. However, we also examined the impacts of the proposed tax law change to a 33 percent tax rate. (We discuss the effect of changes in the statutory rate in the Summary and Overview section of this report.) We do not deal explicitly with either the investment tax credit or depreciation rates.

3. <u>Fixed and variable costs</u>. The base year values for fixed and variable costs appear in Cells C17 and C18, while fixed and variable costs for the forecast period are in Section 3 of the model, in Range C120.R121. A review of several of the Florida utilities' annual reports indicated that variable and fixed costs were roughly equal. Therefore, we used a 50-50 split of costs between variable and fixed, and we also assumed that both fixed and variable costs increased with the asset growth rate, which reflects both inflation and output growth. It is implicitly assumed that construction costs increase by this same rate. Again, these assumptions could easily be changed by modifying the formulas in Range C120.R121.

4. <u>Asset growth rate</u>. We do not input separately an asset growth rate. Rather, we assume that all assets are used at the optimal operating rate, so the reserve margin will not be changed. Therefore, the asset growth rate is a function of both inflation and output growth:

$$\text{Asset growth rate} = \text{Inflation} + \text{Unit growth} + \text{Unit growth} * (\text{Inflation})$$

5. <u>Flotation costs</u>. Many studies of equity flotation costs exist; generally, these studies indicate that such costs

total from 3.5 to 4 percent of the gross proceeds. There have also been studies of market pressure, and of the best way to handle the recovery of equity flotation costs plus pressure effects, but these issues are far more complex and controversial than flotation cost measurement.

In this model we have assumed that flotation costs plus pressure total 3.5 percent. We input a base year value for the percentage flotation cost of an equity issue, and the model then copies the base year value into the forecast period. A major assumption in this model concerns the treatment of equity flotation costs. We assume that in the future such equity flotation costs are consistently expensed, and are therefore built into revenue requirements on an as-incurred basis. On the other hand, and consistent with accepted practices nationwide, we assume that debt and preferred stock flotation costs are amortized and are incorporated into embedded and marginal cost rates.

Equity flotation costs are calculated in Section 3 of the model in cells C128.R128 as follows:

$$\text{Equity flotation cost} = \text{Flotation cost percentage} \times \text{Number of shares repurchased or issued} \times \text{Year-end stock price}$$

Flotation expenses are not tax deductible, so they are subtracted from earnings after taxes have been calculated. The equity flotation cost percentage may be changed in each year by modifying the model in the input section, Section 1. Major model modifications would be required to change the assumption of equity flotation costs being expensed. (The treatment of these costs in practice presents, in our view, a major error in regulatory accounting. Oftentimes, these costs seem to be neither expensed nor capitalized, and the result seems to be nonrecovery unless a company is permitted to earn more than its bare bones cost of capital and to sell at a price above book value. At one point, we attempted to model this treatment of equity flotation costs, but the model became so complex that it obscured the capital structure issue, so we abandoned the effort.)

6. Debt, preferred, and common equity costs. The debt and preferred stock outstanding at the beginning of the analysis has an "embedded" cost. These base year data are entered in cells C25 and C28, respectively. The embedded cost of debt is the average interest cost on the currently outstanding debt. The embedded cost of debt after the base year is calculated as interest paid each year divided by total debt outstanding. The embedded cost of preferred equity is calculated as preferred dividends paid divided by total preferred outstanding. To simplify things, we assume that all financing is done at year end. Therefore, to calculate the embedded cost rates for the year, the beginning of year debt and preferred equity (which in this model are obtained from the prior year's ending balance sheet) are used in the calculation.

New debt and preferred issues (marginal debt and preferred) normally have cost rates which differ from the embedded rates, and these marginal cost rates must be entered for individual years in Section 1 of the model in Ranges B24.R24 and B29.R29, respectively. Also, the cost of common equity capital must be entered in Section 1 of the model for each analysis year (B22.R22). Both the equity cost rate and the marginal costs of debt and preferred should, in general, be higher if more debt is used in the capital structure. However, as all finance textbooks indicate, and as all financial experts know, it is extremely difficult to specify the levels of these values. We discuss the basis for our inputs in Appendices C, D, and E.

One issue that arises is whether the marginal cost rates will jump to the new cost rates as soon as the new target capital structure is announced, or will change gradually, as the actual capital structure changes. We concluded that the cost rates would change abruptly if a weaker target capital structure were announced, even before the new target was achieved. Thus, if a company announced that it planned to increase its debt ratio from 50 to 60 percent, the cost rates on debt, preferred, and common would all rise immediately. We were less sure that the reverse would hold true--an announced plan to strengthen the capital structure might be greeted with skepticism, and investors might wait until the change had actually been made to lower the cost rates. Nevertheless, in our runs we assumed that capital costs would change immediately after any capital structure change announcement. In any event, the user is free to change our assumptions--the model permits any inputted marginal cost rates the user chooses to employ.

7. Earned return on equity. Under "perfect" regulation, the earned rate of return would exceed the cost of equity by 40 to 60 basis points to reflect an adjustment for flotation. In the real world, allowed and earned rates normally vary from that ideal range. Still, in most of our runs, we specify that the company earns a rate of return that is 40 to 60 basis points above the cost of equity, and thus we assume "ideal" regulatory conditions. It is, however, easy enough to specify all manner of regulatory conditions; equity cost rates and the earned rate of return on equity are entered as separate inputs, so a model user can force the company to earn whatever rate of return he or she chooses.

The most interesting, difficult, and controversial issue is the relationship between the cost of equity and the capital structure. Our studies, which are described in Appendices D and E, suggest that a 5 percentage point change in the debt ratio, from its current level of 48 percent, would cause a 50 basis point change in the cost of equity, and we used this specification in our most likely case runs. However, we also changed the specifications to show what would happen if equity costs were either more or less sensitive to capital structure changes, and the model makes it easy for someone to input a wide range of inputs. Again, though, please note that we are prepared to defend our base case values, and others must be prepared to defend theirs.

The earned return on equity is entered in cells C23.R23 and then used in Section 3 of the model for calculating the company's net income in the range C131.R131. In the long run, assuming equity flotation costs are expensed and thus recovered on an as-incurred basis, utilities should have an earned return on equity which equals their cost of equity. In the short run, significant departures from the long-run ideal can occur. For example, if equity flotation costs have not been expensed, then the allowed (and earned) equity return should exceed the bare bones cost of equity. Further, if a utility (or its holding company) has unregulated subsidiaries, they can earn more or less than the cost of capital. Finally, a commission can use incentive rates under which companies deemed to be operating especially efficiently can be allowed to earn a return somewhat above their equity capital cost, while inefficient companies can be penalized.

All of these factors could have a bearing on the way the model is programmed, and on its output. For example, we could specify an equity capital cost and then force the earned equity return to equal that cost. An alternative specification--which we adopted in our model runs--is to specify both an equity cost rate and an earned return on equity, and then to have the model maintain these relationships. Note, though, that it would be a trivial task to force the two rates to be equal--one would merely need to specify one set of rates (say the cost of equity) and then copy those rates into the input range for the other variable.

8. Embedded costs of debt and preferred. Base year embedded costs of debt and preferred equity are entered in C25 and C28 as previously discussed in Item 6. The starting points for the embedded costs of debt and preferred are 9 percent for debt and 8 percent for preferred. For years following the base year, the embedded debt and preferred cost rates depend jointly on the marginal debt and preferred costs and on the amount of debt and preferred raised each year. The embedded cost rates will normally be different from the costs of new debt or preferred issues. However, for our purposes we assumed that the embedded costs would equal marginal costs in the base year. Marginal debt and preferred costs are entered in Ranges B24.R24 and B29.R29, respectively. The base year values used for new debt and preferred--9 and 8 percent, respectively--approximate current new-issue rates. Marginal cost rates following the base year depend on capital structure changes. The relationship of debt costs to capital structure was developed from Standard & Poor's rating guidelines as discussed in Appendix E. We assumed that the marginal cost of preferred would change by the same amount as the cost of debt for a given capital structure change.

All debt is assumed to have a 30-year maturity, but this can be changed by modifying the formulas in Section 4 and in Cells C27.R27 of the input section. To change this assumption, one must change the number 30 wherever it appears in those areas and replace it with the alternative maturity value. A sinking fund provision built into the model requires that one-thirtieth of each vintage of debt be retired in each year. Note that the percentage of debt retired in each year depends on both the maturity of the debt and the amount of debt at that maturity. The amount of debt refunded each year is calculated as the sum of each debt vintage divided by its maturity. The refunded debt is then reissued at the current (marginal) cost of debt for that year. The debt refunding and total debt outstanding schedules are shown in Section 4 (A151.R179). All financing is assumed to be done at the end of the year. The model forces the capital raised to be consistent with the prescribed target capital structure as given in Section 1 of the model, B30.R32.

The embedded debt cost, the embedded preferred cost, and the cost of common equity are used, along with the amounts of each type of capital, to calculate the weighted average cost of capital in C139.R139, in Section 3 of the model.

9. Year currently outstanding debt redeemed. This value, shown in Range C27.R27, is a calculated value based on the current year's value plus the average maturity assumed for the debt. If the average debt maturity assumption were changed, this formula would have to be modified. In this model we assumed that all debt has a 30-year maturity, and the debt has a

sinking fund requirement which necessitates that one-thirtieth of each debt issue be retired each year.

10. Capital structure ratios. A review of the Florida utilities' capital structures indicates that an "average" structure consists of 48 percent debt, 10 percent preferred, and 42 percent equity, so these values were used for the base year. The values for the years that follow depend on whether we are examining a scenario where the target capital structure is changed to include more or less debt. For simplicity, the preferred ratio is assumed to remain constant at the 10 percent level.

Capital structures are specified for each year in the Range B30.R32. The data in B30.B32 are base year values, while planned departures from the base year data are specified in C30.R32. Since our principal concern is to analyze the effects of changes in capital structure, we normally change the capital structure ratios in various ways while holding the operating factors (inflation, demand growth, and so forth) constant. However, always keep in mind the fact that cost rates for new debt and preferred, and for all common equity, will change as the capital structure changes.

11. 1985 stock price. The 1985 stock price is a calculated value rather than an input value; the calculation is based on data in Section 3 (A95.R150) of the model. The calculations in Years 1 to 5 are based on a 5-year nonconstant growth model and on a constant growth DCF model thereafter. The 1985 stock price is calculated as the sum

of the present values of the 1986-1990 dividends plus the 1990 stock prices as determined from the constant growth model.

12. Payout rate. The base year payout rate is inputted into the model in B34 and then copied for the forecast period. The payout rate is used in Section 3 to determine total common dividends and hence dividends per share. One could change the payout on a year-by-year basis by unprotecting the model and making changes to Cells B34.R34. A review of investment advisory reports shows that a typical dividend payout rate for the electric utilities is around 70 percent; therefore, we used a 70 percent payout rate in this model.

13. Post 1990 dividend growth rate. This value is calculated in Cell G35 as follows: g = (1 - Payout rate) X (Earned return on equity). This calculation assumes constant growth. The growth rate is then used in the constant growth part of the stock price model discussed in Item 11.

14. 1985 book value. The 1985 book value is calculated in Cell B36 as the 1985 ending common equity divided by ending 1985 shares outstanding.

15. 1985 total assets, retained earnings, shares outstanding, total units (KWH or MCF) sold, and total unit (KWH or MCF) growth. These values are required inputs for the model (Cells B37.C41). Assets and retained earnings are used in Section 2 to develop the balance sheet, and the 1985 shares are used to calculate 1985 book value, which is used in Section 3 for the market/book ratio calculation. The 1985

shares also serve as a starting point to develop the per share analysis data in Section 3. The base year input data (all of which are in millions) for total assets (8,000), retained earnings (1,000), and shares outstanding (115) are all assumed values for a typical Florida utility. Once these values are entered, the forecast period values are determined by the model. Total assets in each year grow by the asset growth rate, while the amount of retained earnings depends on the utility's earnings (which is dependent on the current ROE and the amount of common equity) and the dividend payout rate. Shares outstanding at the end of the year depend on the number of shares repurchased or issued during the year, which is dependent on earnings, capital structure, and stock price.

Total units (KWH or MCF) sold are used to calculate the average unit price per 1,000 kilowatt hours which is obtained by dividing revenue requirements by total units sold and multiplying by 1,000. Total units (KWH or MCF) sold are assumed to grow at a rate of 2 percent, which is entered in Line 41 of the input section. The growth rate is assumed to be constant, so the base year growth value is entered and the model then copies the initial value into the other forecast years. (This can be easily changed.) In "shock cases," where, for example, load loss to cogeneration occurs, we could change the output growth rate. (See the Summary and Overview section of the report for a discussion of "shock cases.") Our initial output is 50,000 units; this value is arbitrary, but, in conjunction with our starting asset level and earned rate of return, it produces a cost per 1,000 KWHs that is "reasonable" for a Florida company.

16. <u>Percentage breakdown of annual unit usage (C45.R48), annual unit usage (C54.R57), and percentage revenue breakdown by billing category</u> (C63.R66). The percentage annual unit usage and percentage revenue breakdown values are entered manually into their input ranges; there are no formulas in either of these ranges, so the values can be easily changed for different assumptions. Note that each of these ranges contains a check item, Lines 50 and 68, to make sure the percentages entered total 100%. The annual unit usage values in C54.R59 are calculated on the basis of total unit quantity and percentage unit usage. These values are used in Section 3 of the model to develop both the breakdown of revenue by billing category and the price per 1,000 KWHs per billing category. The base year values used in the model are shown below:

Revenues:

	A	B	C	D	E
61					
62	Percentage Revenue Breakdown by Billing Category:				
63	Residential		40.00%		
64	Commercial		25.00%		
65	Industrial		30.00%		
66	Other		5.00%		
67			----------		
68	Total		100.00%		
69					
70					

Percentage unit breakdown:

	A	B	C	D	E
44	Percentage Breakdown of Annual Unit Usage by Billing Category:				
45	Residential		37.00%		
46	Commercial		25.00%		
47	Industrial		34.00%		
48	Other		4.00%		
49			----------		
50	Total		100.00%		
51					
52					
53					

Both dollars of revenue and units of output change over time, but the percentages are held constant in all our base case runs. However, in "shock case" runs, we would vary both the revenues and the unit mix across customer classes. (See the Summary and Overview section of the report for a discussion of "shock cases.")

17. Dividends per share (C141.R141). Since we assume that all financing occurs at year end, dividends per share are calculated by dividing total common dividends paid by the number of shares of stock outstanding at the beginning of the year. The retained earnings for the year are used either to support asset growth or to repurchase common stock.

18. Stock and bond issues/retirements. Depending on its earnings, payout policy, asset growth, and capital structure, the company will have to issue or repurchase stock and sell or refund debt. Debt flotation costs are assumed to be amortized and thus are built into the cost rates assigned to debt, so they are included in the interest expense calculation. The equity flotation cost rate (which

can be varied) is entered in B21.R21 and is assumed to apply to both new issues and repurchases.

Common stock is assumed to be bought or sold at the end-of-year stock price. New common equity needed to maintain the target capital structure is met first from retained earnings and then from sale of stock. If the required amount of common equity declines, or if it increases by less than the retained earnings for the year, then common stock is repurchased. (Note: The company is assumed to receive the end-of-year price. The investment banker would deduct underwriting costs, but the company would, under the model's assumptions, immediately recover those costs through rates, because we assume that they would be expensed.)

Once all input values have been entered, one must press the F9 (CALC) key twice to solve the model. We used /WGRM and set the model for 15 iterations, and pressing the CALC key twice is sufficient to produce stable results. Sections 2 through 4 will automatically be generated in about 45 seconds on a PC AT; the running time is approximately two minutes on a PC or XT.

We should also sound a word of caution here. Due to interdependencies built into the model, one should not use the Range Erase command in combination with the F9 (CALC) key. Instead, it is necessary to replace existing data in Section 1 with your new data. Erasing the input data and then pressing the F9 (CALC) key will cause ERRs to appear throughout the model. Normally, that would cause no problems. However, when a model uses circular equations, an initial value for at least one of the variables involved is needed to get the iterative process started.

Pro Forma Financial Statements

Pro forma balance sheets and income statements for the 16-year forecast period are generated in Sections 2 and 3 (A74.R150) based on the input entered in Section 1 of the model.

Balance Sheets

The balance sheet, which begins in Cell A74, is calculated using inputs from Section 1. Total assets grow at the specified asset growth rate from the beginning base year value. Debt and preferred stock are calculated by multiplying the appropriate capital structure ratios by total assets. Except for the base year, the balance sheet item retained earnings is calculated as the previous retained earnings plus net income minus common dividends. (The base year value for retained earnings is taken from the input section.) Common stock is calculated by multiplying the common equity ratio by the total asset value and then subtracting retained earnings from this product. Line 92 in Section 2 is a check on the resulting calculations: If total claims do not equal total assets, there is an error in the model.

Income Statements

The income statements, which begin in A95, are developed on a bottom-up basis in the sense that net income is calculated first. Net income is calculated by multiplying the assumed earned return on equity by the previous year's ending common equity, which is the current year's beginning common equity. (Because the model assumes that all financing takes place at the end of the year, the current year's beginning common equity is outstanding throughout the entire year, until the new round of financing takes place at year end.) Once net income is determined, the remainder of the income statement is then calculated.

Except for the base year, preferred dividends are calculated as follows: (1) If preferred equity increases or remains the same, then preferred dividends are set equal to the previous year's dividends plus the increase in preferred equity, multiplied by the marginal cost of preferred, but (2) if preferred equity decreases, then preferred dividends are set equal to the previous year's dividends less the decrease in preferred, multiplied by the embedded preferred cost.

Equity flotation expenses are calculated by multiplying the number of shares either repurchased or issued by both the flotation cost percentage and the year-end stock price. Taxes are calculated by multiplying earnings before taxes by the tax rate; however, earnings before taxes (EBT) depend on taxes, because EBT is calculated as the sum of net income, preferred dividends, flotation expenses, and taxes. Thus, the model involves a set of simultaneous equations at this point (in 1-2-3 language, it is "circular"), so iterations are necessary.

Interest is calculated from the debt refunding schedule developed in Section 4. Section 4 layers the debt at each interest level, so interest is simply calculated by taking each debt layer, or vintage, multiplying it by the appropriate debt cost, and then summing these products. Earnings before interest and taxes (EBIT) is calculated by summing EBT and interest. The base year values of fixed and variable costs are taken from the input section, and these base year values are assumed to grow throughout the analysis period by the asset growth rate, which reflects both inflation and output levels. Revenue requirements are then determined by adding EBIT, variable costs, and fixed costs.

The revenue breakdown by customer class is calculated by multiplying total revenue requirements by the percentage revenue breakdown for each billing category. The price per 1,000 KWHs per billing category is then calculated by taking the appropriate revenue amount by billing category and dividing it by the annual unit usage for the billing category and multiplying by 1,000. Total units sold is obtained from the base year value, and the unit growth rate comes from the input section. Finally, the average price per 1,000 KWHs is calculated by dividing total revenue requirements by total units sold and multiplying by 1,000.

The remaining part of the income statement section shows a per share analysis and several ratio performance measures. The base year value for 1986 beginning shares is obtained from the model's input section, Cell B39. The number of shares issued or repurchased depends on several items: retained earnings, capital structure, and ending stock price. If common equity grows by more than the amount of earnings retained, common stock must be issued. The number of shares issued is calculated by the common equity increase less the earnings retained, all of which is divided by the ending stock price. Stock repurchases are obtained in a similar manner.

One further item should be mentioned. With the model on the computer screen, the word CIRC appears at the bottom of the screen. This term denotes circularity, or simultaneity, in the model as a result of the following: The number of shares either repurchased or issued depends on the ending stock price. However, the ending stock price is dependent on dividends per share, which depends on beginning shares, which in turn depends on the number of shares which were repurchased or issued the previous year. Therefore, we have gone full circle. Because of these interactions, the model has circular references, so it must be solved iteratively. We used the /WGR command, set at Manual with 15 iterations. Therefore, after data have been entered, the model will solve when the F9 (CALC) key is pressed.

Key Ratios and Performance Measures

The model calculates several key ratios and other measures of financial performance; they are shown in Range B139.R149, in Section 3. Key output values include the stock price at the end of each year, book value at the end of each year, the market/book ratio, EPS, DPS, the payout ratio, the return on beginning common equity (ROE), and the weighted average cost of capital. Most of these calculations are straightforward, but a few warrant explanation.

First, dividends per share (DPS, in C141.R141) for each year of the forecast period is calculated as total common dividends divided by beginning shares outstanding. Total dividends are equal to the payout ratio times net income. The payout rate comes from the input section, and the return on beginning equity serves as a check figure; it should equal the earned return on equity as entered in the input section. The calculation of the stock price deserves special mention. The model assumes nonconstant growth for the period 1986-1990 and constant growth thereafter. The stock price after 1990 is assumed to grow at the post-1990 growth rate as calculated in Cell G35 in the model's input section. The stock price for the nonconstant period is calculated as the sum of the present value of the dividends for the nonconstant period and the 1990 stock price as determined by the constant growth model. The stock price after 1990 (H144.R144) is obtained by multiplying the previous year's stock price by the post 1990 growth rate (G35).

Debt and Stock Transactions Schedule (A151.R175 and A134.R137)

We assume that all debt has a 30-year maturity, and that one-thirtieth of each vintage of outstanding debt matures and is refunded each year at the marginal interest rate specified for that year (B24.R24). The first part of Section 4 (A153.R164) shows the total amount of debt outstanding at the beginning of each year, and the second part of Section 4 (A165.R175) shows the net amount of debt refunded during each year. These values are then used in the interest calculation formula in the income statement, Section 3 (C124.R124). Stock transactions are determined in A134.R137, as was discussed earlier in this appendix.

Scenario Analysis

We run the model under several different scenarios, assuming different operating conditions, different capital structures, and different capital structure/capital cost relationships. We generally construct graphs to help analyze the results. It is easy to conduct scenario analyses and to use 1-2-3's windows feature to examine simultaneously the key output and the changed inputs. It is more difficult to get hard copy output because of the sheer size of the model. However, one can use the Range Value Copy command (available only in Version 2 of Lotus 1-2-3) to display selected key output results from each scenario in an empty section of the worksheet, then add another set of output to this section each time another scenario is completed, and finally print out the results of all the scenarios. Sections 5 through 8 of the model were constructed in just this manner. Notice that the amount of material in these sections varies depending on the number of scenarios one has analyzed. Note also that these sections do not change when data are changed and the F9 (CALC) key is pressed. To change these sections, one must go through the series of Range Value Copy commands (or a series of File Xtract and Combine commands for those using Lotus Version 1a). An alternative procedure would be to write a macro and then, when data changes occurred, one could invoke the macro to make the changes in Sections 5 through 8.

Summary

This appendix has described the Lotus 1-2-3 model we use to analyze the effects of capital structure changes on electric and gas companies. The model uses as inputs data on the relationship between capital structure and the cost rates on debt and common equity. Selected output from the model is presented in the Summary and Overview section of this report.

It is important to note that the model can be easily changed to reflect assumptions and input data different from the values we used. We believe that our assumptions represent a realistic view of the situation facing most electric and gas companies while still being streamlined enough to facilitate modelling. We also believe that our input data on the relationship between capital cost rates and capital structure are realistic and reasonable. However we recognize that others may wish to examine other inputs and assumptions in order to see how customers would be affected by such changes. We structured the model to make such changes as easy as possible, and we have tried to document the model in this appendix in a way that will facilitate making adjustments to the model.

APPENDIX G
DESCRIPTION OF THE PURC CAPITAL STRUCTURE MODEL: TELECOMMUNICATIONS

This appendix describes a Lotus 1-2-3 model which analyzes the effects of a change in capital structure on a utility's stock price and financial position.[1] Inputs, including capital structure and component cost rates, are entered, after which the model forecasts the utility's balance sheets and income statements over a 16-year period. (The model includes a historic balance sheet for one year and pro forma balance sheets and income statements for 16 years.) The model also forecasts revenue requirements, market/book ratios, the weighted average cost of capital, customers' monthly bills, earnings and dividends per share, coverage ratios, and the estimated stock price for each forecasted year.

Required inputs include estimates of the cost of debt and equity under different capital structures. It should be recognized that no one can measure accurately the cost of equity at a given capital structure, much less tell precisely how equity costs will change if the capital structure is changed. In Appendices D and E we discuss our work on the relationship of the costs of equity and debt to capital structure. Still, judgments

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[1]Appendix G is very similar to Appendix F, except G deals with telephone companies while F is written for electric and gas companies. Someone interested primarily in telephone companies should skip F and read G, while people with a primary interest in energy companies should do the reverse.

must be made on these issues, and one advantage of the Lotus 1-2-3 capital structure model described in this appendix is that one can analyze the effects of different assumptions about the capital structure/cost rate relationship, with the output showing the sensitivity of customers' bills, coverage ratios, and so on to different assumptions. Therefore, the model can give decision makers insights into the effects of alternative courses of action under a variety of assumptions.

Because we wanted to examine different utility industries, we developed a model that with minor changes can be modified for electric, gas, or telecommunications companies. The modifications involve inserting terminology peculiar to each industry rather than major financial formula changes. For example, used with an electric company, the model would develop price per 1,000 kilowatt hours for each billing category: residential, industrial, commercial, and other. For a gas company, we would merely substitute MCF for KWH. However, for a telephone company the model would develop the monthly bill for residential customers and break it down into the basic bill and other charges. (The bill for other customers such as large business could be determined as well.) The telecommunications model is discussed in this appendix, the energy model in Appendix F. For ease of understanding, it is best to read this appendix sitting in front of a PC with the model on the screen.

Layout of the Telecommunications Model

The model is programmed in Lotus 1-2-3. Its layout is shown in Figure G-1, while Table G-1 shows the file's contents, provides instructions for use of the model, and gives the cell ranges of the various model sections.

Table G-1
Contents of Telecommunications Model
and Directions for Its Use

I. The following sections are on this file:

Cell Range	Section Number	Description of Section
A1.R73	1	Assumptions and Inputs
A74.R94	2	Balance Sheets, 1985-2001
A95.R150	3	Income Statements, 1986-2001
A151.R179	4	Debt Refunding Schedule
A180.R194	5	Revenue Requirements under Various Model Runs
A195.R210	6	Output Prices under Various Model Runs
A211.R226	7	Costs of Capital under Various Model Runs
A227.R241	8	TIE Ratios under Various Model Runs

II. To position a section on the screen: Press function key F5, the "GoTo" key, then type the first cell shown in the range for the section, and then press the RETURN key.

III. The sections now have illustrative data. You can use the model with a specific company's data simply by entering new data in the highlighted cells in Section 1. When you enter data for a company, Sections 2 through 4 will be completed automatically. Note that all cells except the input data cells in Section 1 have been protected. The input cells which you may change are highlighted. If you need to modify the model formulas, you may disconnect the protect feature with this command: /WGPD. If you attempt to write in a protected cell, you will hear a beep and receive an error message. We recommend that you reprotect the worksheet after making your changes, using the command /WGPE. You should not use the Range Erase command to erase the input cells in Section 1. If you do, and if you then press the F9 (CALC) key, zeroes and ERRs will appear throughout the worksheet. Due to the circularity of the model, once error terms appear some of the formulas cannot be recalculated even after the new data have been entered--it is then necessary to edit the individual formulas. Therefore, you should simply replace the existing input values with your own data rather than by deleting our data and then changing blank cells.

Figure G-1
Capital Structure Model Diagram, Telecommunications Model

MODEL SECTIONS	A1 – A73	Section 1 Assumptions and Inputs	R1 – R73
	A74 – A94	Section 2 Balance Sheets	R74 – R94
	A95 – A150	Section 3 Income Statements	R95 – R150
	A151 – A179	Section 4 Debt Refunding Schedule	R151 – R179
RESULT TABLES	A180 – A194	Section 5 Revenue Requirement Results under Various Model Runs	R180 – R194
	A195 – A210	Section 6 Monthly Bill Results under Various Model Runs	R195 – R210
	A211 – A226	Section 7 Weighted Average COC Results under Various Model Runs	R211 – R226
	A227 – A241	Section 8 TIE Ratio Results under Various Model Runs	R227 – R241

Basic Assumptions and Input

Certain basic assumptions are programmed into the model. You should be aware of them so that you will understand the model's limitations and also so that you can change our assumptions (by changing certain formulas) if you feel that they do not apply in the situation with which you are working. We combine our discussion of assumptions with a discussion of the input data section, Section 1. The cells in which data can be entered are unprotected and hence show up highlighted, while all other cells have been protected to prevent formulas from being accidentally changed or erased. The entries in Section 1 form the basis for the projected 16-year balance sheets and income statements. Please note that the model presents a base-year balance sheet and then forecasted balance sheets and income statements for 16 years.

1. Model years. We developed the model for a base year (1985) plus a 16-year forecast period (1986-2001). It would be easy to change either the base year or the forecast period.
2. Inflation and tax rate. Base year values for inflation and the tax rate are entered in B15.C16, and the model then copies them into the forecast years. However, if you wish to override the model and enter different values for different forecast years, this could easily be done by first unprotecting the model and then making the necessary changes. In our runs, we assumed a 5 percent inflation rate, and we used the current statutory tax rate of 46 percent. However, we also examined the impact of the

proposed tax law change to a 33 percent tax rate. (We discuss the effect of changes in the statutory rate in the Summary and Overview section of this report.) We do not deal explicitly with either the investment tax credit or depreciation rates.

3. Fixed and variable costs. The base year values for fixed and variable costs appear in Cells C17 and C18, while fixed and variable costs for the forecast period are in Section 3 of the model, in Range C120.R121. We have assumed that base year variable costs (1,000) are one-third the value of base year fixed costs (3,000), and we also assumed that both fixed and variable costs increase with the asset growth rate, which reflects both inflation and output growth. (All values are in millions of dollars.) It is implicitly assumed that construction costs increase by this same rate. Again, these assumptions could easily be changed by modifying the formulas in Range C120.R121.

4. Asset growth rate. We do not input separately an asset growth rate. Rather, we assume that all assets are used at the optimal operating rate. Therefore, the asset growth rate is a function of both inflation and output growth:

$$\begin{matrix}\text{Asset}\\ \text{growth rate}\end{matrix} = \text{Inflation} + \begin{matrix}\text{Unit}\\ \text{growth}\end{matrix} + \begin{matrix}\text{Unit}\\ \text{growth}\end{matrix} * (\text{Inflation})$$

5. Flotation cost. Many studies of equity flotation costs exist; generally, these studies indicate that such costs total from 3.5 to 4 percent of the gross proceeds. There have also been studies of market pressure, and of the best

way to handle the recovery of equity flotation costs plus pressure effects, but these issues are far more complex and controversial than flotation cost measurement.

We have assumed that flotation costs plus pressure total 2 percent. We input a base year value for the percentage flotation cost of an equity issue, and the model then copies the base year value into the forecast period. We assume that in the past equity flotation costs were not expensed, but that in the future they will be expensed as incurred, and hence they will be built into revenue requirements on an as-incurred basis. On the other hand, and consistent with accepted practices nationwide, we assume that debt and preferred stock flotation costs are amortized and are incorporated into embedded and marginal cost rates.

Equity flotation costs are calculated in Section 3 of the model in cells C128.R128 as follows:

$$\text{Equity flotation cost} = \text{Flotation cost percentage} \times \text{Number of shares repurchased or issued} \times \text{Year-end stock price}$$

Flotation expenses are not tax deductible, so they are subtracted from earnings after taxes have been calculated. The equity flotation cost percentage may be changed in each year by modifying the model in the input section, Section 1. Major model modifications would be required to change the assumption of equity flotation costs being expensed. (The treatment of these costs in practice presents, in our view, a major error in regulatory accounting. Oftentimes, these costs seem to be neither expensed nor capitalized, and the result seems to be nonrecovery unless a company is permitted to earn more than its bare bones cost of capital and to sell at a price above book value. At one point, we attempted to model this treatment of equity flotation costs, but the model became so complex that it obscured the capital structure issue, so we abandoned the effort.)

6. Debt, preferred, and common equity costs. The debt and preferred stock outstanding at the beginning of the analysis has an "embedded" cost. These base year data are entered in cells C25 and C28, respectively. The embedded cost of debt is the average interest cost on the currently outstanding debt. The embedded cost of debt after the base year is calculated as interest paid each year divided by total debt outstanding. The embedded cost of preferred equity is calculated as preferred dividends paid divided by total preferred outstanding. To simplify things, we assume that all financing is done at year end. Therefore, to calculate the embedded cost rates for the year, the beginning of year debt and preferred equity (which in this model are obtained from the prior year's ending balance sheet) are used in the calculation.

   New debt and preferred issues (marginal debt and preferred) normally have cost rates which differ from the embedded rates, and these marginal cost rates must be entered for individual years in Section 1 of the model in Ranges B24.R24 and B29.R29, respectively. Also, the cost of common equity capital must be entered in Section 1 of the model for each analysis year (B22.R22). Both the equity cost rate and the marginal costs of debt and preferred should, in general, be higher if more debt is used in the capital structure. However, as all finance textbooks indicate, and as all financial experts know, it is extremely difficult to specify the levels of these values. We discuss the basis for our inputs in Appendices C, D, and E.

One issue that arises is whether the marginal cost rates will jump to the new cost rates as soon as the new target capital structure is announced, or will change gradually, as the actual capital structure changes. We concluded that the cost rates would change abruptly if a weaker target capital structure were announced, even before the new target was achieved. Thus, if a company announced that it planned to increase its debt ratio from 50 to 60 percent, the cost rates on debt, preferred, and common would all rise immediately. We were less sure that the reverse would hold true--an announced plan to strengthen the capital structure might be greeted with skepticism, and investors might wait until the change had actually been made to lower the cost rates. Nevertheless, in our runs we assumed that capital costs would change immediately after any capital structure change announcement. In any event, the user is free to change our assumptions--the model permits any inputted marginal cost rates the user chooses to employ.

7. Earned return on equity. Under "perfect" regulation, the earned rate of return would exceed the cost of equity by 40 to 60 basis points to reflect an adjustment for flotation.

In the real world, allowed and earned rates normally vary from that ideal range. Still, in most of our runs, we specify that the company earns a rate of return that is 40 to 60 basis points above the cost of equity, and thus we assume "ideal" regulatory conditions. It is, however, easy enough to specify all manner of regulatory conditions; equity cost rates and the earned rate of return on equity are entered as separate inputs, so a model user can force the company to earn whatever rate of return he or she chooses.

The most interesting, difficult, and controversial issue is the relationship between the cost of equity and the capital structure. Our studies, which are described in Appendices D and E, suggest that a 2.5 percentage point change in the equity ratio, from its current level of about 57.5 percent, would cause a 20 basis point change in the cost of equity, and we used this specification in our most-likely case runs. However, we also changed the specifications to show what would happen if equity costs were either more or less sensitive to capital structure changes, and the model makes it easy for someone to input a wide range of inputs. Again, though, please note that we are prepared to defend our base case values, and others must be prepared to defend theirs.

The earned return on equity is entered in cells C23.R23 and then used in Section 3 of the model for calculating the company's net income in the range C131.R131. In the long run, assuming equity flotation costs are expensed and thus recovered on an as-incurred basis, utilities should have an earned return on equity which equals their cost of equity. In the short run, significant departures from the long-run ideal can occur. For example, if equity flotation costs have not been expensed, then the allowed (and earned) equity return should exceed the bare bones cost of equity. Further, if a utility (or its holding company) has unregulated subsidiaries, they can earn more or less than the cost of capital. Finally, a commission can use incentive rates under which companies deemed to be operating especially efficiently can be allowed to earn a return somewhat above their equity capital cost, while inefficient companies can be penalized.

All of these factors could have a bearing on the way the model is programmed, and on its output. For example, we could specify an equity capital cost and then force the earned equity return to equal that cost. An alternative specification--which we adopted in our model runs--is to specify both an equity cost rate and an earned return on equity, and then to have the model maintain these relationships. Note, though, that it would be a trivial task to force the two rates to be equal--one would merely need to specify one set of rates (say the cost of equity) and then copy those rates into the input range for the other variable.

8. <u>Embedded costs of debt and preferred</u>. Base year embedded costs of debt and preferred equity are entered in C25 and

C28 as previously discussed in Item 6. The starting points for the embedded costs of debt and preferred are 9 percent for debt and 8 percent for preferred. For years following the base year, the embedded debt and preferred cost rates depend jointly on the marginal debt and preferred costs and on the amount of debt and preferred raised each year. The embedded cost rates will normally be different from the costs of new debt or preferred issues. However, for our purposes we assumed that the embedded costs would equal marginal costs in the base year. Marginal debt and preferred costs are entered in Ranges B24.R24 and B29.R29, respectively. The base year values used for new debt and preferred--9 and 8 percent, respectively--approximate current new-issue rates. Marginal cost rates following the base year depend on capital structure changes. The relationship of debt costs to capital structure was developed from Standard and Poor's guidelines as discussed in Appendix E. We assumed that the marginal cost of preferred would change by the same amount as the cost of debt for a given capital structure change.

All debt is assumed to have a 30-year maturity, but this can be changed by modifying the formulas in Section 4 and in Cells C27.R27 of the input section. To change this assumption, one must change the number 30 wherever it appears in those areas and replace it with the alternative maturity value. A sinking fund provision built into the model requires that one-thirtieth of each debt vintage be retired in each year. Note that the percentage of debt retired in each year depends on both the maturity of the debt and the amount of debt at that maturity. The amount of debt refunded each year is calculated as the sum of each debt vintage divided by its maturity. The refunded debt is then reissued at the current (marginal) cost of debt for that year. The debt refunding and total debt outstanding schedules are shown in Section 4 (A151.R179). All financing is assumed to be done at the end of the year. The model forces the capital raised to be consistent with the prescribed target capital structure as given in Section 1 of the model, B30.R32.

The embedded debt cost, the embedded preferred cost, and the cost of common equity are used, along with the amounts of each type of capital, to calculate the weighted average cost of capital in C139.R139, in Section 3 of the model.

9. Year currently outstanding debt redeemed. This value, shown in Range C27.R27, is a calculated value based on the current year's value plus the average maturity assumed for the debt. If the average debt maturity assumption were changed, this formula would have to be modified. In this model we assumed that all debt has a 30-year maturity, and the debt has a sinking fund requirement which necessitates that one-thirtieth of each debt issue be retired each year.

10. Capital structure ratios. A review of typical telephone utilities' (Bell companies') capital structures indicates that an "average" structure consists of 42.5 percent debt, 0

percent preferred, and 57.5 percent equity, so these values were used for the base year. The values for the years that follow depend on whether we are examining a scenario where the target capital structure is changed to include more or less debt. For simplicity, the preferred ratio is assumed to remain at zero percent.

Capital structures are specified for each year in the Range B30.R32. The data in B30.B32 are base year values, while planned departures from the base year data are specified in C30.R32. Since our principal concern is to analyze the effects of changes in capital structure, we normally change the capital structure ratios in various ways while holding the operating factors (inflation, demand growth, and so forth) constant. However, always keep in mind the fact that cost rates for new debt and preferred, and for all common equity, will change as the capital structure changes.

11. <u>1985 stock price</u>. The 1985 stock price is a calculated value rather than an input value; the calculation is based on data in Section 3 (A95.R150) of the model. The calculations in Years 1 to 5 are based on a 5-year nonconstant growth model and on a constant growth DCF model thereafter. The 1985 stock price is calculated as the sum of the present values of the 1986-1990 dividends plus the 1990 stock price as determined from the constant growth model.

12. <u>Payout rate</u>. The base year payout rate is inputted into the

model in B34 and then copied for the forecast period. The payout rate is used in Section 3 to determine total common dividends and hence dividends per share. One could change the payout on a year-by-year basis by unprotecting the model and making changes to Cells B34.R34. A review of investment advisory reports shows that a typical dividend payout rate for telephone companies is around 60 percent; therefore, we used a 60 percent payout rate in this model.

13. Post 1990 dividend growth rate. This value is calculated in Cell G35 as follows: g = (1 - Payout rate) X (Earned return on equity). This calculation assumed constant growth. The growth rate is then used in the constant growth part of the stock price model discussed in Item 11.

14. 1985 book value. The 1985 book value is calculated in Cell B36 as the 1985 ending common equity divided by ending 1985 shares outstanding.

15. 1985 total assets, retained earnings, shares outstanding, number of access lines, and access line growth. These values are required inputs for the model (Cells B37.C41). Assets and retained earnings are used in Section 2 to develop the balance sheet, and the 1985 shares are used to calculate 1985 book value, which is used in Section 3 for the market/book ratio calculation. The 1985 shares also serve as a starting point to develop the per share analysis data in Section 3. The base year input data (all of which are in millions) for total assets (13,000), retained earnings (1,000) and shares outstanding (78.68) are all assumed values for a typical telephone company. Once these

values are entered, the forecast period values are determined by the model. Total assets in each year grow by the asset growth rate, while the amount of retained earnings depends on the telco's earnings (which is dependent on the earned ROE and the amount of common equity) and the dividend payout rate. Shares outstanding at the end of the year depend on the number of shares repurchased or issued during the year, which is dependent on earnings, capital structure and stock price.

Total access lines are shown in Section 3 (C101.R101) and are assumed to grow at a rate of 1 percent, which is entered in Line 41 of the input section. The growth rate is assumed to be constant, so the base year growth value is entered and the model then copies the initial value into the other forecast years. (This can be easily changed.) In "shock cases," where, for example, loss to bypass occurs, we would change the output growth rate. (See the Summary and Overview section of the report for a discussion of "shock cases.") Our initial output is 8.8196 (in millions) access lines; this value is arbitrary, but in conjunction with our starting asset level and earned rate of return, it produces a monthly bill that is reasonable for a typical telephone company. Total access lines are used to arrive at the access line breakdown by billing category, which is calculated in Section 1 (C66.R68).

16. <u>Percentage revenue breakdown (C46.R50), percentage access line breakdown (C57.R59), and access line breakdown</u>

(C66.R68) by billing category. The percentage access line breakdown and percentage revenue breakdown values are entered manually into their input ranges; there are no formulas in either of these ranges, so the values can be easily changed for different assumptions. Note that each of these ranges contains a check item, Lines 61 and 52, to make sure the percentages entered total 100%. The access line breakdown values, by billing category, in C66.R68 are calculated on the basis of total access lines (C101.R101) and percentage access line breakdown by billing category. The percentage revenue breakdown by billing category is used in Section 3 to arrive at the actual revenue breakdown by billing category (C109.R113).

The base year values used in the model are shown below:

Revenues:

	A	B	C	D	E
44					
45	Percentage Revenue Breakdown by Billing Category:				
46	Large Business			11.55%	
47	Other Business			22.23%	
48	Residential Users			28.60%	
49	Long Distance Companies			26.40%	
50	Other			11.22%	
51				-------	
52	Total			100.00%	
53					

Output in number of access lines:

	A	B	C	D	E
56	Percentage Access Line Breakdown by Billing Category:				
57	Large Business			2.00%	
58	Other Business			29.07%	
59	Residential Users			68.93%	
60				-------	
61	Total			100.00%	
62					

Both dollars of revenue and number of access lines change over time, but the percentages are held constant in all our base case runs. However, in "shock case" runs, we would vary both the revenues and the access line mix across customer classes. (See the Summary and Overview section of the report for a discussion of "shock cases.")

The revenue for each billing category divided by the corresponding access line figure would determine the annual amount billed to large business, other business, and residential customers. In our model, we were primarily interested in residential customers; therefore, we have calculated the annual bill for residential customers in Cells C103.R106. It is important to note that because of the way this model is programmed, the billing amount includes basic service charges as well as other charges. We have assumed a 50-50 breakdown between the two. Any changes to this assumption would require a formula change to the model in Cells C104.R104.

17. <u>Dividends per share (C141.R141)</u>. Since we assume that all financing occurs at year end, dividends per share are calculated by dividing total common dividends paid by the number of shares of stock outstanding at the <u>beginning of the year</u>. The retained earnings for the year are used either to support asset growth or to repurchase common stock.

18. <u>Stock and bond issues/retirements</u>. Depending on its earnings, payout policy, asset growth, and capital

structure, the company will have to issue or repurchase stock and sell or refund debt. Debt flotation costs are assumed to be amortized and thus are built into the cost rates assigned to debt, so they are included in the interest expense calculation. The equity flotation cost rate (which can be varied) is entered in B21.R21 and is assumed to apply to both new issues and repurchases.

Common stock is assumed to be bought or sold at the end-of-year stock price. New common equity needed to maintain the target capital structure is met first from retained earnings and then from sale of stock. If the required amount of common equity declines, or if it increases by less than the retained earnings for the year, then common stock is repurchased. (Note: The company is assumed to receive the end-of-year price. The investment banker would deduct underwriting costs, but the company would, under the model's assumptions, immediately recover those costs through rates, because we assume that they would be expensed.)

Once all input values have been entered, one must press the F9 (CALC) key twice to solve the model. We used /WGRM and set the model for 15 iterations, and pressing the CALC key twice is sufficient to produce stable results. Sections 2 through 4 will automatically be generated in about 45 seconds on a PC AT; the running time is approximately two minutes on a PC or XT.

We should also sound a word of caution here. Due to interdependencies built into the model, one should not use the

Range Erase command in combination with the F9 (CALC) key. Instead, it is necessary to replace existing data in Section 1 with your new data. Erasing the input data and then pressing the F9 (CALC) key will cause ERRs to appear throughout the model. Normally, that would cause no problems. However, when a model uses circular equations, an initial value for at least one of the variables involved is needed to get the iterative process started.

Pro Forma Financial Statements

Pro forma balance sheets and income statements for the 16-year forecast period are generated in Sections 2 and 3 (A74.R150) based on the input entered in Section 1 of the model.

Balance Sheets

The balance sheet, which begins in Cell A74, is calculated using inputs from Section 1. Total assets grow at the specified asset growth rate from the beginning base year value. Debt and preferred stock are calculated by multiplying the appropriate capital structure ratios by total assets. Except for the base year, the balance sheet item retained earnings is calculated as the previous retained earnings plus net income minus common dividends. (The base year value for retained earnings is taken from the input section.) Common stock is calculated by multiplying the common equity ratio by the total asset value and then subtracting retained earnings from this product. Line 92 in Section 2 is a check on the resulting calculations: If total claims do not equal total assets, there is an error in the model.

Income Statements

The income statements, which begin in A95, are developed on a bottom-up basis in the sense that net income is calculated first. Net income is calculated by multiplying the assumed earned return on equity by the previous year's ending common equity, which is the current year's beginning common equity. (Because the model assumes that all financing takes place at the end of the year, the current year's beginning common equity is outstanding throughout the entire year, until the new round of financing takes place at year end.) Once net income is determined, the remainder of the income statement is then calculated.

Except for the base year, preferred dividends are calculated as follows: (1) If preferred equity increases or remains the same, then preferred dividends are set equal to the previous year's dividends plus the increase in preferred equity, multiplied by the marginal cost of preferred, but (2) if preferred equity decreases, then preferred dividends are set equal to the previous year's dividends less the decrease in preferred, multiplied by the embedded preferred cost.

Equity flotation expenses are calculated by multiplying the number of shares either repurchased or issued by both the flotation cost percentage and the year-end stock price. Taxes are calculated by multiplying earnings before taxes by the tax rate; however, earnings before taxes (EBT) depend on taxes, because EBT is calculated as the sum of net income, preferred dividends, flotation expenses, and taxes. Thus, the model involves a set of simultaneous equations at this point (in 1-2-3 language, it is "circular"), so iterations are necessary.

Interest is calculated from the debt refunding schedule developed in Section 4. Section 4 layers the debt at each interest level, so interest is simply calculated by taking each debt layer, or vintage, multiplying it by the appropriate debt cost, and then summing these products. Earnings before interest and taxes (EBIT) is calculated by summing EBT and interest. The base year values of fixed and variable costs are taken from the input section, and these base year values are assumed to grow throughout the analysis period by the asset growth rate, which reflects both inflation and output levels. Revenue requirements are then determined by adding EBIT, variable costs, and fixed costs.

The revenue breakdown by customer class is calculated by multiplying total revenue requirements by the percentage revenue breakdown for each billing category. The revenue breakdown for each billing category divided by the corresponding access line amount (C66.R68) would determine the annual amount billed to large business, other business, or residential customers. In our model, we were primarily interested in effects on residential customers; therefore, we have calculated the annual bill for residential customers (C103.R106). It is important to note that because of the way this model is programmed, the billing amount includes basic service charges as well as other charges. We have assumed a 50-50 breakdown between the two. Any changes in this assumption would require a formula change to the model in Cells C104.R104. Total number of access lines is obtained from the base year value, and the access line growth rate comes from the input section.

The remaining part of the income statement section shows a per share analysis and several ratio performance measures. The base year value for 1986 beginning shares is obtained from the model's input section, Cell B39. The number of shares issued or repurchased depends on several items: retained earnings, capital structure, and ending stock price. If common equity grows by more than the amount of earnings retained, common stock must be issued. The number of shares issued is calculated by the common equity increase less the earnings retained, all of which is divided by the ending stock price. Stock repurchases are obtained in a similar manner.

One further item should be mentioned. With the model on the computer screen, the word CIRC appears at the bottom of the screen. This term denotes circularity, or simultaneity, in the model as a result of the following: The number of shares either repurchased or issued depends on the ending stock price. However, the ending stock price is dependent on dividends per share, which depends on beginning shares, which in turn depends on the number of shares which were repurchased or issued the previous year. Therefore, we have gone full circle. Because of these interactions, the model has circular references, so it must be solved iteratively. We used the /WGR command, set at Manual with 15 iterations. Therefore, after data have been entered, the model will solve when the F9 (CALC) key is pressed.

Key Ratios and Performance Measures

The model calculates several key ratios and other measures of financial performance; they are shown in Range B139.R149, in Section 3. Key output values include the stock price at the end of each year, book value at the end of each year, the market/book ratio, EPS, DPS, the payout ratio, the return on beginning common equity (ROE), and the weighted average cost of capital. Most of these calculations are straightforward, but a few warrant explanation.

First, dividends per share (DPS, in C141.R141) for each year of the forecast period is calculated as total common dividends divided by beginning shares outstanding. Total dividends are equal to the payout ratio times net income. The payout rate comes from the input section, and the return on beginning equity serves as a check figure; it should equal the earned return on equity as entered in the input section. The calculation of the stock price deserves special mention. The model assumes nonconstant growth for the period 1986-1990 and constant growth thereafter. The stock price after 1990 is assumed to grow at the post-1990 growth rate as calculated in Cell G35 in the model's input section. The stock price for the nonconstant period is calculated as the sum of the present value of the dividends for the nonconstant period and the 1990 stock price as determined by the constant growth model. The stock price after 1990 (H144.R144) is obtained by multiplying the previous year's stock price by the post 1990 growth rate (G35).

Debt and Stock Transactions Schedule (A151.R175 and A134.R137)

We assume that all debt has a 30-year maturity, and that one-thirtieth of each vintage of outstanding debt matures and is refunded each year at the marginal interest rate specified for that year (B24.R24). The first part of Section 4 (A153.R164) shows the total amount of debt outstanding at the beginning of each year, and the second part of Section 4 (A165.R175) shows the net amount of debt refunded during each year. These values are then used in the interest calculation formula in the income statement, Section 3 (C124.R124). Stock transactions are determined in A134.R137, as was discussed earlier in this appendix.

Scenario Analysis

We run the model under several different scenarios, assuming different operating conditions, different capital structures, and different capital structure/capital cost relationships. We generally construct graphs to help analyze the results. It is easy to conduct scenario analyses and to use 1-2-3's windows feature to examine simultaneously the key output and the changed inputs. It is more difficult to get hard copy output because of the sheer size of the model. However, one can use the Range Value Copy command (available only in Version 2 of Lotus 1-2-3) to display selected key output results from each scenario in an empty section of the worksheet, then add another set of output to this section each time another scenario is completed, and finally print out the results of all the scenarios. Sections 5 through 8 of the model were constructed in just this manner. Notice that the amount of material in these sections varies depending on the number of scenarios one has analyzed. Note also that these sections do not change when data are changed and the F9 (CALC) key is pressed. To change these sections, one must go through the series of Range Value Copy commands (or a series of File Xtract and Combine commands for those using Lotus Version 1a). An alternative procedure would be to write a macro and then, when data changes occurred, invoke the macro to make the changes in Sections 5 through 8.

Summary

This appendix has described the Lotus 1-2-3 model we use to analyze the effects of capital structure changes on a telephone company. The model uses as inputs data on the relationship between capital structure and the cost rates on debt and common equity. Selected output from the model is presented in the Summary and Overview section of this report.

It is important to note that the model can be easily changed to reflect assumptions and input data different from the values we used. We believe that our assumptions represent a realistic view of the situation facing most telephone companies while still being streamlined enough to facilitate modelling. We also believe that our input data on the relationship between capital cost rates and capital structure are realistic and reasonable. However we recognize that others may wish to examine other inputs and assumptions in order to see how customers would be affected by such changes. We structured the model to make such changes as easy as possible, and we have tried to document the model in this appendix in a way that will facilitate making adjustments to the model.

APPENDIX H
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EDISON ELECTRIC INSTITUTE

The Effect of Debt On the Cost of Equity

In a Regulatory Setting

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I. INTRODUCTON AND SUMMARY

Until recently, the focus of many regulators has been on whether and how to implement restructuring in the electric industry, but regulators are now turning their attention to proceedings in which setting the cost of capital will be an issue. In some jurisdictions, there has not been a fully litigated cost of capital rate case for a number of years. The cost of capital skills of the commission staff as well as those of the commissioners in those jurisdictions may have atrophied from lack of use. Even if the old skills have not decayed, the more recent developments in the art and science of the estimation of the cost of capital are not likely to be well understood if for no other reason than there has simply been no impetus to study them to decide issues in a proceeding.

At the same time, concerns are being raised about whether investment in the infrastructure of the electric industry has kept pace with the growth in demand.[1] One factor affecting the decision to invest in the electric industry is whether the allowed rate of return on investment provides an adequate rate of return compared to alternative investments.[2] As discussed below, failure to provide a return equal to the cost of capital will inevitably lead to under investment in the industry.

Of course, commissions will be faced with conflicting points of view as to exactly how high the cost of capital may be for a regulated company. It is frequently the case that the costs of capital recommendations by intervenor and company expert witnesses diverge widely due to differences in implementation of estimation models, differences in samples, and differences in analysis of the data. One major difference in

1 A number of recent articles have addressed the need for investment, particularly in transmission. For example, Eric Hirst and Brendan Kirby, "Transmission Planning for a Restructuring U.S. Electricity Industry," *Edison Electric Institute Paper*, June 2001, estimate that to maintain transmission adequacy an investment of $56 billion is required during this decade and that twice that is needed for generation. The need for significant transmission investments are confirmed in, for example, Eric Hirst,"Transmission Investment: All Talk and Little Action," *Public Utilities Fortnightly* July 2004 pp. 48-54. The paper notes that the estimates of the required investment range from $27 billion to $100 billion just for transmission. However, *Value Line Investment Survey* July 2, 2004 projects the total increase in net plant for electric utilities in the period 2007-09 to amount to only $57.6 billion. Leonard S. Hyman in "The Next Big Crunch: T&D Capital Expenditure," *Energy Industry Commentary*, January 2004, argues that "The evidence suggests that investor-owned utilities have reduced transmission and distribution spending to bare-bones levels ..."

2 The average allowed rate of return on equity among electric utilities followed by Regulatory Research Associates was 10.6% in 2003 (Regulatory Research Associates, Major Rate Case Decisions - January 2002 - December 2003 Supplemental Study). The allowed returns vary widely from a low of 9.50 percent (New Jersey) to a high of 12.45 percent (South Carolina). Additionally, other utility industries such as a water utility have been awarded rates of return as low as 7 percent. Numerous parties have expressed concerns regarding very low allowed rates of return. For example, Standard & Poor's on August 7, 2003 in "Why Utilities Lack Spark" lowered its recommended weighting for the sector because, among other factors, "[w]e see normally modest growth for regulated operations restricted by an unfavorable regulatory environment and rising" costs. In May 2002 William R Ferara of Standard & Poor's argued that "insufficient regulated authorized returns" contributed to the "downward pressure" in credit quality ("Regulatory Support for U.S. Electric Utility Credit Continues to Disappoint, Standard & Poor's, May 27, 2002). Standard & Poor's in March 2003 issued a report discussing the rating agency's reassessment of Canadian utility regulation as a ratings factor, and noted that the high leverage of the financial profiles of Canadian utilities were a significant contributing factor in the downward trend of the utilities ratings and "[t]the leverage financial profiles of Canadian utilities generally stem from regulatory directives, which essentially dictate the financial profiles of most utilities." (Standard & Poor's, "Canadian Utility Regulation Reassessed as a Ratings Factor," March 6, 2003).

methodology is whether and how to adjust the allowed cost of equity for differences in financial risk between the sample companies and the regulated utilities.

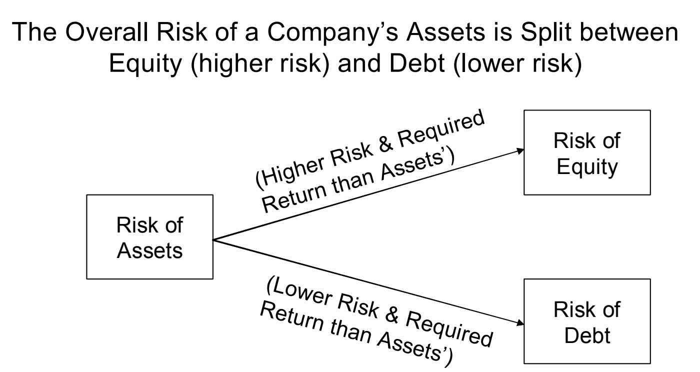
This difference in opinion among cost of capital experts leaves a commission with the difficult problem of determining the cost of capital in a setting with vastly different recommendations; a task made more difficult if the theoretical underpinnings of setting the cost of capital are not well understood.

The main focus of the paper is on the effect of debt on the cost of equity capital, and in particular, the theoretically appropriate way to adjust the cost of equity for differences in capital structure. At the current time, ignoring this issue as some cost of capital experts do, results in a lower estimate of the cost of equity for the regulated company. The remaining portions of the paper discusses the related issues of the deleterious effect on new investment of not providing an adequate rate of return for a regulated company. Finally, the effects of regulatory procedures that result in the inability of the regulated company to earn the allowed rate of return are also discussed.

The following is a summary of the main points:

1. As Figure 1 illustrates, companies raise money for investment by issuing securities. Different securities have different claims on the firm's earnings, and if necessary, on its assets. Debt has a senior claim on a specified portion of the earnings. Common equity, the most junior security, gets what's left after everyone else has been paid. Since equity bears more risk, investors require a higher rate of return on equity than on debt. Except at extreme debt levels, the overall level of risk of the firm does not change materially due to the addition of debt. The various securities just divvy that risk up.

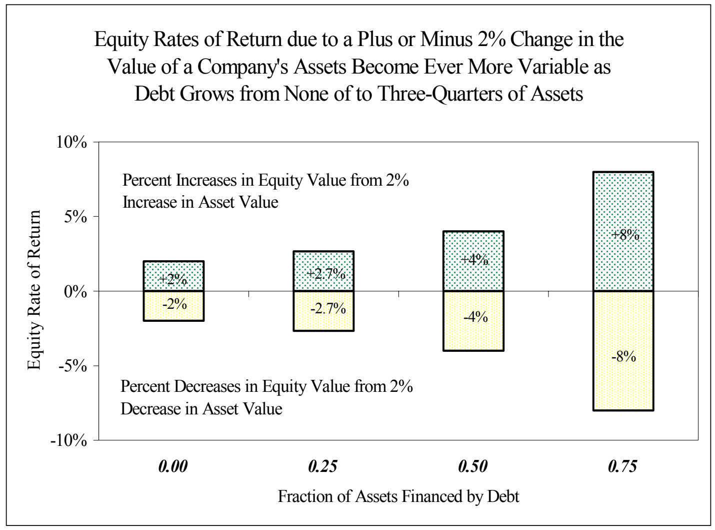
Figure 1



Key Points:
1. Overall firm risk does not change materially with modest levels of debt, it merely is divided among the firm's securities.
2. The higher the risk, the higher the rate of return required to induce investors to bear it.

2. When a company uses modest amounts of debt, the overall risk of the company's assets falls on a fraction of its capital, the equity. The required return per dollar of equity goes up. Suppose a risk produces earnings fluctuations equal to plus or minus ("+/-") 2 percent of the company's assets. At 100 percent equity, this risk produces earnings fluctuations of +/- 2 percent of the company's equity, too. But at a 50-50 debt-equity ratio, the same risk produces earnings fluctuations of +/- 4 percent of the company's equity. At a 75-25 debt-equity ratio, these fluctuations become +/- 8 percent of the company's equity. Figure 2 illustrates this point for debt-equity ratios of 0-100, 25-75, 50-50, and 75-25. Higher risk means a higher required rate of return, *so the cost of equity goes up at an ever increasing rate as a company adds debt, which offsets the cheaper cost of debt*. In short, **there is no magic in financial leverage**.

Figure 2



3. An accurate estimate of the cost of equity for a rate-regulated company needs to consider (1) the levels of financial risk in the sample companies used to estimate the cost of equity and (2) how those levels compare to the level implied by the company's regulatory capital structure. The associated capital structure affects the estimated cost of equity estimate just as a life insurance applicant's age affects the required life insurance premium. An insurance agent wouldn't measure the required insurance premium for one person and charge the same premium to an otherwise identical person who was much older. Neither should a cost of equity analyst measure the cost of equity at one capital structure and apply the same cost of equity to a regulated capital structure with much more (or much less) debt.

4. The sample company's *market-value* capital structure determines the level of risk that a cost of equity analyst measures from market data, because market values determine the level of risk that equity bears due to debt. Example: suppose you buy a home for $50,000 with a mortgage of $40,000. Ten years later your home is worth $100,000 and the mortgage is down to $35,000. Your equity in the home is now $65,000. If home prices then drop by 10 percent, or $10,000, your $65,000 equity falls by that amount, and the resulting rate of return on your equity is -15 percent (= -$10,000/$65,000), versus -10 percent if you had no mortgage. The 15 percent loss would affect the measured risk of your home if it were represented by a publicly traded stock (e.g., the "beta" risk measure).[3] The "discounted cash flow" approach starts from the publicly traded price of your home, too, and that price reflects the level of risk borne in the market. The risk that underlies every cost of

[3] If you kept books on the house, the book equity would be $15,000 (the original $50,000 less the current $35,000 mortgage), or less if you were depreciating your investment. But a publicly traded stock for your house would not fall by $10,000/$15,000, or 67%, if housing prices fell 10 percent.

equity estimate based on market data *automatically* depends on the market-value capital structure of that company.

5. Failure to recognize and adjust for differences in the financial risk of sample companies and the regulated entity can result in material errors in cost of equity estimation. Ignoring such differences results in a disconnect between the cost of capital information provided by the sample and the allowed return for the regulated entity, because the market value capital structure is as important to estimating the cost of equity as an insured age is for life insurance.

6. Investment is a voluntary activity. Investment will only occur if the expected rate of return justifies the risks involved. The plain language of the U.S. Supreme Court's opinions on return standards for utilities is consistent with this principle. These opinions focus on (1) the returns investors could earn if they put their money elsewhere at a comparable level of risk, and (2) the company's financial integrity. Whatever the legal reasons for these standards (which may arise out of the Constitutional prohibition against the uncompensated taking of property), they recognize basic economic reality: **you can't push on a rope**, and you can't force investors to throw good money after bad.[4]

7. Therefore, policies that systematically deny utility investors a fair opportunity to earn the cost of capital achieve a short-run gain for today's customers, but at a material long-run cost to future customers and possibly to the economy of the jurisdiction involved. Once the long-run costs emerge, they cannot be overcome in a hurry. Investors, once burned, will be loath to trust that the regulatory jurisdiction won't repeat the same pattern should it ask for quick investments to shore up a system that the previous policies let decay. The safest way for once-burned investors to avoid inadequate returns on future major investments is to keep the system capital-starved. Research shows that nations around the world that do not protect investor rights have less investment and more costly conditions imposed on the investment that is made, to the detriment of their economies. States that make investment unattractive or unremunerative risk the same fate.

8. The return investors actually expect to earn is what matters. If a regulatory mechanism claims to allow one rate of return but actually allows a lower one, the lower one is what must pass the comparable return standard. For example, if I promise to pay someone $10 to wash my car but s/he has learned I always actually pay 10 percent less than I promise, that person will assume the actual payment will only be $9, and s/he will wash my car only if $9 is enough. The phantom dollar in my stated payment is irrelevant, because *empty promises buy nothing*. (The same problem arises if I pay the $10 most of the time but welsh and pay nothing 10 percent of the time. In that case, the expected payment would again be $9, not $10.)

The remainder of this paper is organized as follows: *Section II* provides a simple example on how to adjust for differences in financial leverage (capital structures) in a regulatory setting. *Section III* discusses the effect of the use of debt (financial leverage) on the cost of equity, points one to four above. *Section IV* reviews these issues in the context of a regulatory proceeding in which setting the cost of equity is an issue. *Section V* addresses the conditions necessary for voluntary investment, points six and seven above. *Section VI* addresses the distinction between the allowed rate of return and the return investors require, point eight above. *Section VII* concludes.

[4] Phrases in boldface in this introduction are titles to later sections.

II. AN EXAMPLE OF ADJUSTING FOR FINANCIAL LEVERAGE

Before discussing the need to adjust for financial leverage in detail, an illustration of the basic principles may be in order. Throughout this paper, financial leverage refers to the use of debt in the capital structure of a company which results in financial risk for the company's equity holders. The cost of equity, or the required rate of return on equity, refers to the market determined cost of equity capital for a company. The cost of debt is the market determined cost of debt, not the embedded cost of debt.

In a regulatory setting, the typical way that differences in financial leverage are ignored occurs when a cost of capital expert applies the standard cost of equity estimation techniques (the risk positioning model or the discounted cash flow model) to a sample of comparable risk companies to estimate the cost of equity. If this cost of equity is applied to the regulated entity without any consideration of differences in capital structure between the sample companies and the regulated entity, the result is a potential mismatch between the financial risk of the sample companies and the regulated company. However, it is frequently the case that when making a recommendation for the return on equity, the expert makes no explicit consideration of the differences between the capital structure of the sample companies and the capital structure of the regulated entity for which the cost of equity is being determined. Note that the cost of equity estimated by the standard techniques is a result of the business *and* financial risk of the sample companies. That is the return on equity estimated by the standard techniques using market data is affected by the market value capital structures of the sample companies.

To make matters more confusing, it is also frequently the case that there is no agreement among cost of capital experts on the proper method to adjust for differences in capital structure when an adjustment is made or whether an adjustment is even necessary. As a result, commissions are faced with a bewildering array of conflicting recommendations all seemingly based upon similar data and estimation methods, but with wildly different results.

To illustrate the problem, assume that an electric utility company, Utility A, is filing a rate case. As a first step in determining the cost of equity for Utility A, the cost of capital analyst selects a sample of companies in the electric utility industry whose business risk is considered to be comparable to Utility A. Then the analyst determines the sample companies' cost of equity using capital market information, which depends upon the market value capital structures of the sample companies.[5] Thus, the measured equity risk level depends on the sample companies' market-value capital structures, not their book-value capital structures.

The capital structures of the sample companies will typically differ among themselves so the level of financial risk will also differ among the sample companies. But even if it were the case that the capital structures of the sample companies were identical, their capital structures are likely to differ from that of the regulated company for which cost of capital is being estimated. This means that the cost of equity estimates from the sample companies would not be consistent in terms of financial risk among themselves or with

[5] Typically, a cost of capital analyst will estimate the sample companies' cost of equity using estimation models such as the Capital Asset Pricing Model ("CAPM") or the Discounted Cash Flow ("DCF") model. Both models rely on market based information.

Utility A. Fortunately, there is a simple way to handle differences in financial risk (capital structure differences) for both the sample companies and Utility A: calculate the overall cost of capital, an approach described next.

A. CALCULATING THE AFTER-TAX WEIGHTED-AVERAGE COST OF CAPITAL

The overall cost of capital is known in business textbooks as the "weighted-average cost of capital" or "WACC," but here a different term is used in order to prevent confusion with a measure of the weighted-average cost of capital that is often used in rate regulation to determine the revenue requirement. (Specifically, the regulatory WACC is a book value weighted-average of the after-tax cost of equity and the *pre-tax* average interest rate on the company's outstanding debt).[6] We will use the term after-tax weighted-average cost of capital ("ATWACC") to denote the after-tax value of all of the components of the WACC.

To determine the ATWACC, the cost of capital analyst must also use the market cost of debt and market value capital structure for each sample company.[7,8] With these values, the ATWACC for each sample company can be calculated. Table 1 on the next page illustrates the calculation using an average sample company.[9]

---

6 The cost of capital portion of the revenue requirement is determined by multiplying the regulatory WACC times the rate base and then combining it with an estimate of the income taxes owed. In the terminology of this paper, the sum of after-tax equity return, income taxes and interest expense is equal to the before-tax weighted-average cost of capital or the "BTWACC". Note that regulatory interest expense is an estimate of embedded cost as opposed to the market cost of debt.

7 While the cost of equity must be estimated using one or more estimation techniques, estimates of the market cost of debt is widely available from indices of utility bond yields for different debt ratings, e.g., the Mergent Bond Record. Book value capital structure information is available from sources such as *Value Line* or Compustat. The market capital value structure can be calculated by substituting the market value of debt and equity for their book values.

8 For simplicity, the example ignores the presence of preferred stock.

9 Currently, the yield on long-term government bonds is unusually low as are the beta-estimates (e.g., risk estimates) of utilities using standard methods. Because the examples in this paper relies on standard estimation methods and makes no attempt to adjust for low interest rates or risk-estimates, the reported cost of equity estimates are also low.

Table 1: Computing After-Tax Weighted-Average Cost of Capital for a Sample Company

	Abbreviation	Numerical Value in Example
Cost of Equity	r_E	9.10%
Market Value Equity (%)	E	53%
Weighted Cost of Equity	**r_E H E**	**4.82%**
Cost of Debt	r_D	6.75%
Market Value Debt (%)	D	47%
Weighted Cost of Debt	r_D H D	3.17%
Marginal Tax Rate	T	35%
After-Tax Weighted Cost of Debt	**r_D H D H (1-T)**	**2.06%**
ATWACC	r_E H E + r_D H D H (1-T)	6.88%

Notes: The cost of equity was assumed for illustration purpose. For the example, we assume that Utility A has a marginal tax rate of 35 percent.[10] The capital structure corresponds to a five-year average for a selected sample of electric utilities, and the market cost of debt corresponds to the June 2004 weighted yield on A and Baa-rated utility bonds as reported by the Mergent Bond Record.[11]

B. ADJUSTING FOR DIFFERENCES IN FINANCIAL RISK

Having determined the cost of capital (the ATWACC) for a sample of comparable companies, the next step is to determine the cost of equity for Utility A that is consistent with the both the sample information and the financial risk (capital structure) in its regulatory filing. To recap the steps up to this point. The cost of capital analyst has selected a sample of regulated electric utilities considered to be comparable in terms of business risk. To insure that any differences in financial risk that results from differences in capital structure are properly recognized, the average ATWACC for the sample companies was calculated. The remaining question is how to calculate the return on equity for Utility A that takes into consideration both the business risk evidence of the sample companies and the financial risk of Utility A. As discussed below, the adjustment for financial risk is based upon the observation that the ATWACC is constant over a broad middle range of capital structures.

[10] The assumption of a 35 percent tax rate corresponds to the statutory Federal tax rate of 35 percent. In reality, the tax rate for a company's rate filing would include a provision for state income taxes and would have to be determined on a case by case basis.

[11] The yield on A-rated utility bonds is weighted by 3/11, and the yield on a Baa-rated utility bonds is weighted by 8/11. These weights correspond to a sample of 11 electric utilities relied upon for illustration purposes.

Continuing with the example, based upon the sample's ATWACC information, Utility A's expected after-tax weighted-average cost of capital is 6.88 percent.[12] In other words, the sample's market value information says that the regulated entity should earn a 6.88 percent ATWACC on its invested capital, i.e., its rate base. Knowing the percentage of debt and equity in the rate base, the cost of equity consistent with both the business risk of the sample and the capital structure of Utility A can be determined as the cost of equity (r_E) that would give rise to an ATWACC of 6.88 percent given Utility A's capital structure, market cost of cost of debt, and marginal tax rate.[13]

For simplicity, assume that Utility A is filing its rate case with a capital structure consisting of 40 percent equity and 60 percent long-term debt. Further, assume Utility A has a Baa-rating from Moody's which has a market yield of 6.84 and an income tax rate of 35 percent. Table 2 below computes the cost of equity for Utility A **given** its regulatory capital structure, cost of debt, and tax rate.

Table 2: Utility A's Cost of Equity at 40 Percent Equity

	Abbreviation	Numerical Value in Example
After-Tax Weighted-Average Cost of Capital	Sample Average ATWACC	6.88%
Utility A's Equity (%)	E	40%
Utility A's Cost of Debt	r_D	6.84%
Utility A's Debt (%)	D	60%
Marginal Tax Rate (%)	T	35%
Utility A's Cost of Equity	$\dfrac{\textbf{ATWACC} - r_D \text{ H } \textbf{D} \text{ H } \textbf{(1-T)}}{\textbf{E}}$	**10.5%**

Notes: the estimated cost of equity corresponds to that of a utility with a rate base with 40 percent equity, a Baa bond rating, a marginal tax rate of 35 percent and business risk comparable to that of the sample companies.

Note the effect of differences in financial risk between the sample's average market value capital structure and the capital structure for Utility A. In the example, the cost of equity for the sample was 9.10 percent for a sample of electric utilities with an average market value capital structure with 53 percent equity. Utility A is filing a rate case in which it has only 40 percent equity, so it has more financial leverage (more financial risk) resulting in a cost of equity of 10.5 percent. Applying the sample's 9.10 percent estimated cost of equity to the regulated entity would ignore the differences in financial risk between the sample companies and the regulated company. Investors require a greater expected return for bearing additional risk, so Utility A requires a higher expected cost of equity than measured in the sample companies. The calculated cost of equity of 10.5 percent for Utility is exactly enough to offset the additional financial risk of Utility A. Note that after the adjustment for financial leverage, the ATWACC for Utility A is remains the same as the

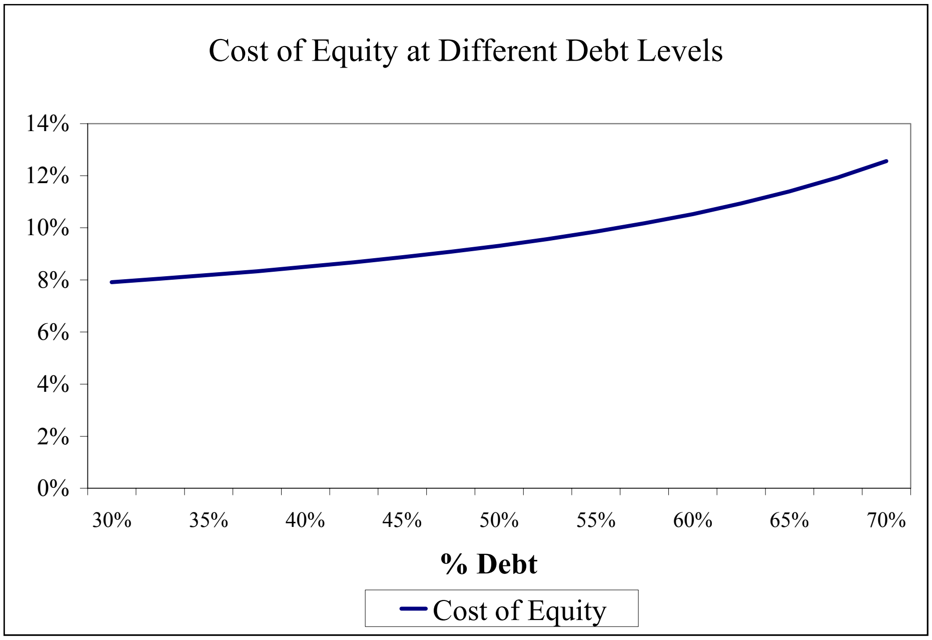
[12] This assumes that the regulatory capital structure is within the broad middle range over which the ATWACC is constant.

[13] Again, financing means other than equity and long-term debt are ignored for simplicity.

ATWACC for the sample. In other words, Utility A would earn the same ATWACC on its rate base as the ATWACC estimated for the sample companies.

The relationship between the cost of equity and the percentage of debt in the capital structure is illustrated in Figure 3 below which displays the cost of equity for debt levels ranging from 30 to 70 percent using the sample ATWACC from Table 1 on page 7.

Figure 3



As can be seen from Figure 3, the cost of equity increases at an increasing rate as more debt is used in the company's capital structure. Figure 3 also shows that for companies with identical business risk, the cost of equity for a company with 40 percent equity is not the same as the cost of equity for a company with 60 percent equity. The slope of the curve in Figure 3 indicates the increase in cost of equity that is required to compensate investors for the additional risk they carry when debt is added to the capital structure.

Having provided a simplified example of how to take differences in financial leverage into account when estimating a utility's cost of equity, the remainder of the paper focuses on the specifics of the adjustment, the financial theory underlying the reason that an adjustment for differences in financial risk is required, and other issues related to the adjustment. The paper concludes with a discussion of the likely effect on new investment of failing to provide an allowed rate of return equal to the cost of capital, and a discussion of the importance of regulatory procedures that provide the regulated company with an opportunity to expect to earn the allowed rate of return.

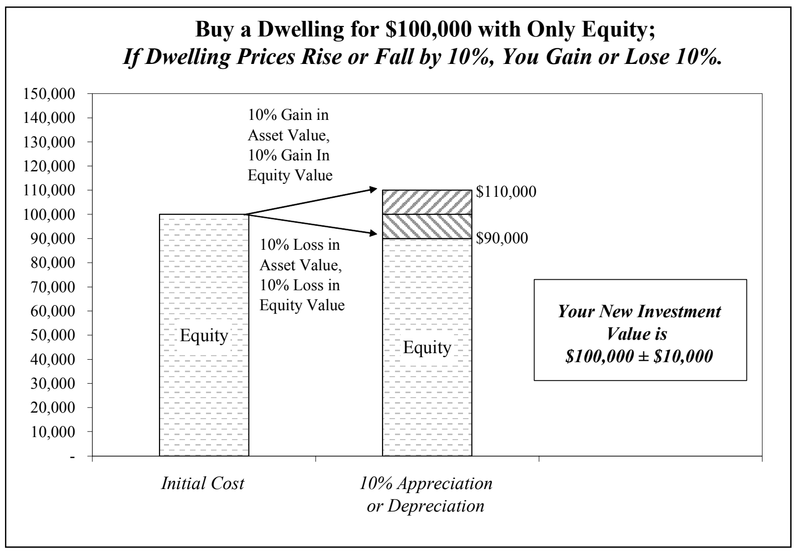
III. "THERE IS NO MAGIC IN FINANCIAL LEVERAGE"

As noted at the outset (Figure 1), when companies use debt the risk of the assets is divided up among the various types of securities in the capital structure. Equity bears the bulk of the risk, so the cost of equity goes up as debt is added to the capital structure.[14] Therefore, to compare validly the costs of equity from a sample of companies and the cost of equity of a regulated company, analysts must consider any differences among the equity risks generated by differences in capital structures. This section explains this issue in more detail, using various examples.

A. EXAMPLE OF WHY DEBT ADDS RISK TO EQUITY

The reason that the risk of equity increases as debt is added to the capital structure is because debt magnifies the variability of the equity return. Consider a simple example.[15] Most people who participate in regulatory hearings do own or will own a home at some point in their lives. Suppose someday you decide to take money out of your savings and buy a dwelling for $100,000. The home's future value is uncertain. If housing prices go up, you win. If housing prices go down, you lose. Figure 4 depicts the outcome of a 10 percent fluctuation in the residence's price.

Figure 4



Now suppose you don't want to take the full $100,000 out of your savings, or you don't have that much saved, so you take out a mortgage for half the money you need to buy the dwelling. Your mortgage lender does not expect to share in the benefits of rising housing prices, nor to bear the pain of falling ones. You owe your lender the $50,000 you borrow either way. That means your equity investment bears the entire risk of changing housing prices. Figure 5 illustrates this effect *(see page 12)*.

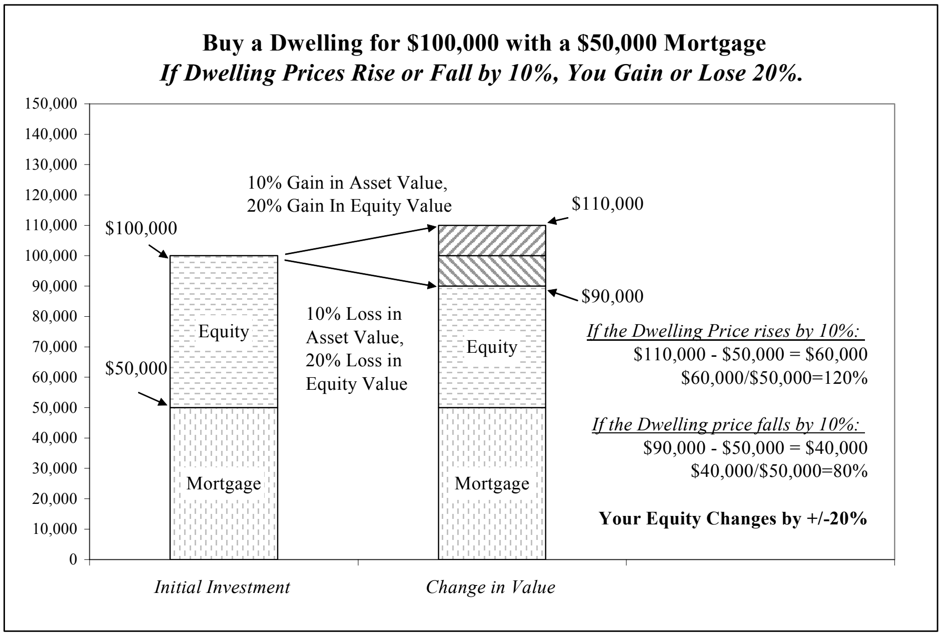
Now the variability of your equity return due to the dwelling's price fluctuations doubles. The entire variability of a 10 percent increase in housing prices now falls on the $50,000 in original equity.

---

[14] Preferred equity acts much like debt in magnifying common equity's risk. However, it simplifies the discussion to focus on debt and common equity alone.

[15] The example ignores the effect of taxes, interest payments and depreciation to keep things simple, but only the details would be affected by including them not the main message.

Figure 5



The rate of return calculations when the entire purchase price is paid using savings are as follows: If the price falls to $90,000, the rate of return on your equity due to the decrease was:

Figure 4: Rate of return on equity = (New Market Value - Old Market Value) / Old Market Value

= ($90,000 - $100,000) / $100,000

= -$10,000 / $100,000 = -10%

But in the Figure 5 case, where you've financed half of the purchase price with a mortgage that you have to pay back regardless of the housing price change, the rate of return on the equity part of the investment is

Figure 5: Rate of return on equity = (New Dwelling Value – Old Dwelling Value) / Old *Equity* Value

= ($90,000 - $100,000) / $50,000

= -$10,000 / $50,000 = -20%

Halving the amount of equity doubles its variability.

The equity return gets ever more variable as the mortgage proportion grows. Figure 6 shows the outcome for mortgages that are 0 percent, 20 percent, 50 percent and 80 percent of the dwelling purchase price.

Figure 6

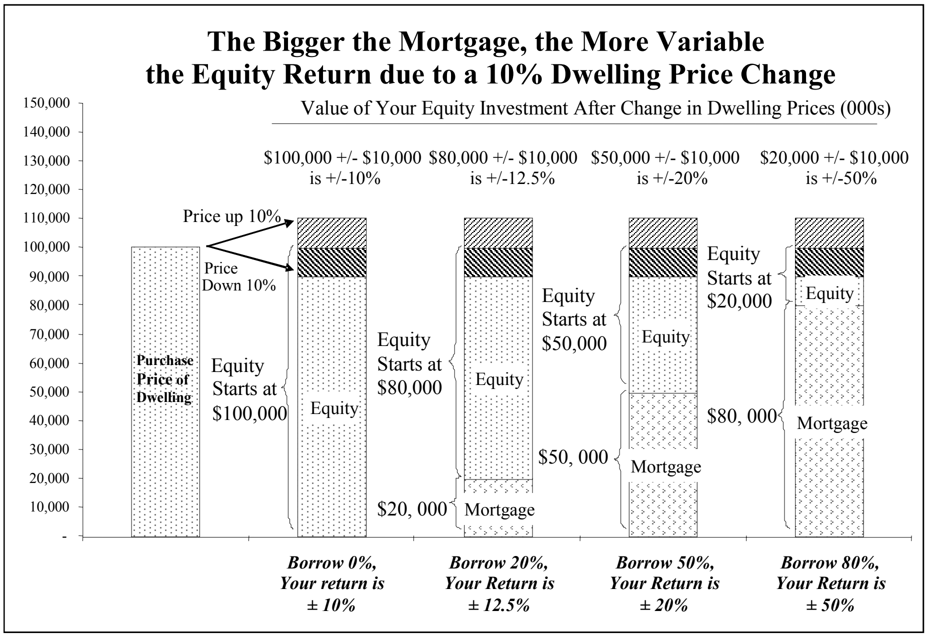
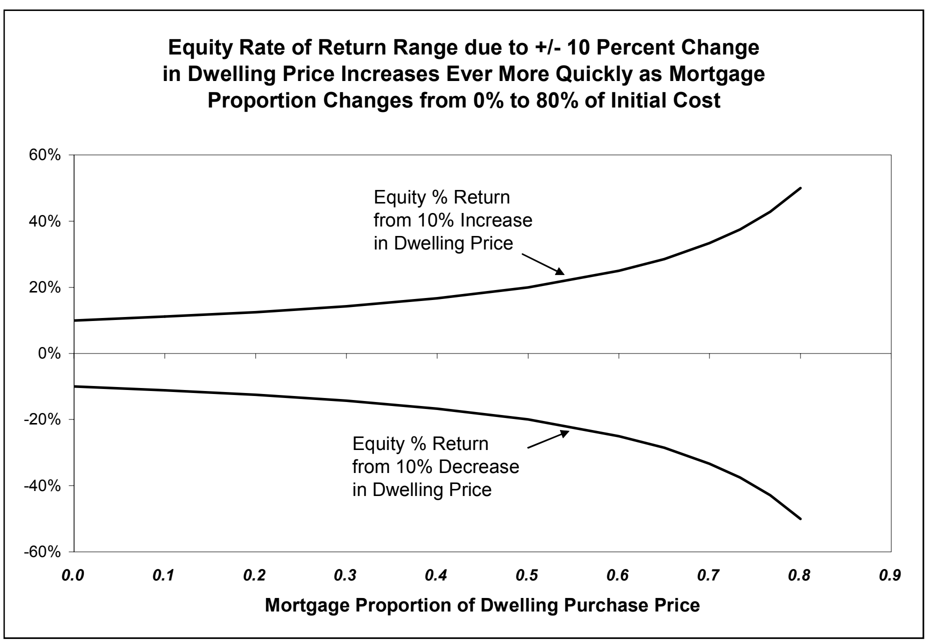


Figure 7 depicts the same point in a different way. It shows the growing variability of the equity return as the mortgage proportion increases for a more nearly continuous set of cases. The basic message is the same either way: a higher mortgage (more debt) means ever more risk for equity. This same effect is present in the equity returns of a company that finances a portion of its assets with debt. The equity returns are more variable as the percentage of debt in a company's capital structure increases.

Figure 7



As illustrated in Section II, the same principle applies to the equity of a regulated utility in general. The equity rate of return on a capital structure with a 60 percent equity component is not the correct rate of return for the identical company with a 40 percent equity component because the financial risk is different. *(see Tables 1 and 2 on pages 7 and 8*). As obvious as this seems, it is frequently the case that commissions as well as some cost of capital experts make recommendations that ignore this fact.

The next section discusses the theory underlying the effect of debt on the required rate of return for equity. Section IV discusses the theoretically correct method to adjust for differences in financial leverage applicable in a regulatory setting.

B. IMPACT OF DEBT ON THE COST OF EQUITY

Investors do not like risk. For the same expected rate of return on equity, rational investors would choose to be on the left edge of Figure 7 (or Figure 3), not somewhere to the right. No risk-adverse investor would choose an investment with an expected return of, say, 10 percent plus or minus 50 percent over one with an expected return of 10 percent plus or minus 5 percent. Investors demand a higher rate of return to bear more risk.

The messages of this example are simple:

1. ***Debt magnifies equity's risk.***
2. Debt magnifies equity's risk ***at an ever increasing rate***. Therefore,
3. ***The required rate of return on equity goes up at an ever increasing rate as you add more and more debt.***

This is not only basic finance theory, it is the everyday experience of anyone who buys a home. The bigger your mortgage, the more percentage risk your equity faces from changes in housing prices. The same principle is applicable to the equity of a regulated electric utility.

Note that although up to now nothing has been said in the mortgage example about the effect of rent, mortgage interest and taxes on the three "messages," *not one word* of these three messages needs be changed to accommodate such factors. Such factors do affect the precise magnitude of the cost of equity and the precise way in which it changes as additional debt is added, but all three messages remain completely correct as stated regardless of these details. This is true not only for the mortgage example but also for the equity of corporations.

There is sometimes confusion, particularly in a regulated setting, on whether it is appropriate to use market-value or book-value capital structures to assess the degree to which financial risk affects the cost of equity. The answer is that it is the market-value capital structure that is the relevant quantity for analyzing the cost of equity evidence, not the book-value capital structure.[16]

[16] See, for example, Richard A. Brealey and Stewart C. Myers, *Principles of Corporate Finance*, New York: McGraw-Hill/Irwin, 7th ed. (2003), at 525-26. Book values may be relevant for some issues, e.g., for covenants on individual bond issues, but as explained in the text, market values are the determinant of the impact of debt on the cost of equity.

The variability of the equity in the housing example depends on the market-value shares of the mortgage and the equity, not the book-value shares. Suppose you bought your home 10 years ago, and you've been renting it out. Suppose depreciation has reduced the original book value from $100,000 to $75,000. Suppose also that you've paid off about 20 percent of the original mortgage, leaving 80 percent still owed. Suppose as well that your original mortgage was for 80 percent of the purchase price, or $80,000. That means your mortgage balance is now ($80,000 x 0.80) = $64,000. On a book value basis, you have $75,000 - $64,000 = $11,000 in equity.

What happens now if housing prices increase or decrease 10 percent? You cannot even start to answer this question unless you also know how housing prices have changed over the last ten years. If the market value of the home is now $200,000, you can calculate a 10 percent change as $20,000. A 10 percent decrease in housing prices is therefore almost twice your book equity of $11,000. Does that mean a 10 percent decrease will wipe you out?

Of course not. Your real equity is the market value equity in your home. Suppose interest rates are unchanged, so the market value of the mortgage equals its remaining unpaid balance. The relevant measure of equity for risk-reward calculations is

$$\text{True Equity in Dwelling} = \text{Market Value of Dwelling} - \text{Market Value of Mortgage}$$

$$= \$200{,}000 - \$64{,}000 = \$136{,}000$$

Therefore, the percentage rate of return on equity due to a 10 percent change in housing values is

$$\text{Rate of return on equity} = \frac{\text{Change in Dwelling Value}}{\text{Starting Equity Value}}$$

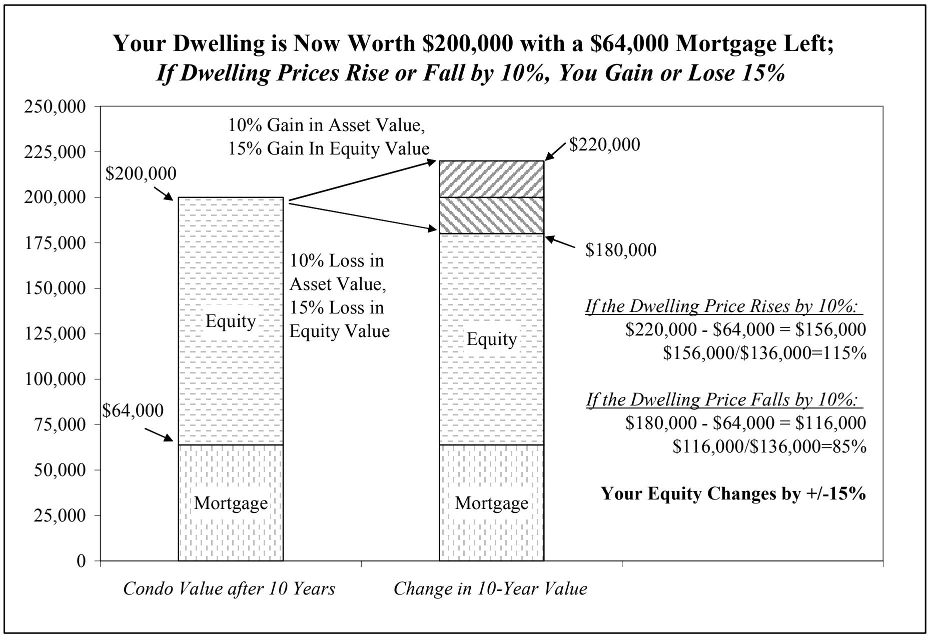
$$= \frac{+/-\ \$20{,}000}{\$136{,}000}$$

$$= +/-\ 15\%$$

Figure 8 *(see page 16)* depicts the actual risk-return tradeoff after 10 years. A 10 percent decline in home prices would be painful, but it wouldn't come close to wiping you out, no matter what the books say. Nor would the 10 percent price decline even show up on the books, despite its still material impact on your actual investment.

No landlord would assess his or her risk due to a mortgage by comparing fluctuating property values to the remaining book value of the property. The risk that debt imposes on the cost of equity is a function of relative market values, not relative book values. This is equally true for the sample companies when estimating the cost of equity using cost of equity estimation models based on market information.

Figure 8:



Suppose that you have refinanced your dwelling. While it still is worth $200,000 ten years after you bought it, your new market-value debt-equity proportions are consistent with the above example's book capital structure. That is, given an undepreciated book value of $75,000 consisting of $11,000 of equity and $64,000 of debt), your post-refinancing capital structure gives you a mortgage of [$200,000 x (64/75)] = $171,667 and equity of [$200,000 x (11/75)] = $29,333. Now a plus or minus 10% swing in housing prices gives you an equity rate of return of:

$$\text{Rate of Return on Equity} = \frac{\text{Change in Dwelling Value}}{\text{Refinanced Starting Equity Value}} = \frac{\pm \$20{,}000}{\$29{,}333} = \pm 68\%$$

Contrast this value with the +/- 15 percent in Figure 7, in the case where the home's market value had gone up the same amount but there was no refinancing. A cost of equity analyst who estimated the "beta" risk measure on a stock like this would get a much higher value than in the earlier example, because the stock would be much more volatile.[17] In short,

> **Market values, not book values, determine the risk impacts of capital structure on the market cost of equity for all companies, even those regulated on a book-value rate base.**

[17] Technical note: debt magnifies the stock's entire variability, diversifiable and non-diversifiable alike. Therefore, the stock's beta (or "betas," if more than one risk factor matters to investors) will in fact be affected by the company's market-value capital structure.

The conclusion of this section is that the risk of equity depends directly on the market-value capital structure of the company or asset in question. It is therefore impossible to compare validly the costs of equity of different companies without taking capital structure into account. Capital structure and the cost of equity are unbreakably linked, and any effort to treat the two as separate and distinct questions violates both everyday experience and basic financial principles. In particular, capital structure differences between sample companies and the regulated company must be properly considered in establishing the cost of capital.

IV. CAPITAL STRUCTURE ISSUES IN A REGULATORY SETTING

This section discusses how the ideas on the effect of capital structure on the cost of equity should be addressed in a regulatory setting. There are two aspects of this problem. First, the standard cost of equity estimation techniques rely upon sample companies which have capital structures that generally differ among themselves. Proper interpretation of the market information provided by the sample companies requires considering the differences in their market value capital structures, because of the effect of financial leverage on the cost of equity. But note, as the discussion above demonstrates, the equity risk level depends on the sample company's market-value capital structure, not its book-value capital structure. Second, even if it were the case that the capital structures of the sample companies were identical, it still remains to consider the capital structure of the regulated entity in comparison to the sample companies. As discussed above, there is a simple way to handle both of these issues: calculate the overall cost of capital or ATWACC. The next section elaborates on this approach.

A. THE AFTER-TAX WEIGHTED AVERAGE COST OF CAPITAL

As discussed above, business textbooks uses the "weighted-average cost of capital" or "WACC," but here a different term is used in order to prevent confusion with a measure of the weighted-average cost of capital that is often used in rate regulation (specifically, the regulatory WACC is a book-value-weighted average of the after-tax cost of equity and the pre-tax average interest rate on the company's outstanding debt).[18] We will call the above textbook formula for the overall cost of capital the "after-tax weighted-average cost of capital," or "ATWACC". The formula for the ATWACC was given in Table 1.

The ATWACC is not a new concept and is routinely used in the business world. The value of a proposed investment project is normally calculated as the Net Present Value ("NPV") of its expected after-tax cash flows discounted at the ATWACC.[19]

The overall costs of capital (the ATWACCs) of different companies or industries depends primarily on the business risk, or the risk the business would have with no debt. Biotech firms have more business risk than automobile manufacturers, which in turn have more risk than gas distribution companies or electric utilities.

Business risk depends on the nature of the variability of the company's operating cash flows, which are the cash flows to all investors including bondholders. Operating cash flows are the net result of uncertain revenues minus uncertain operating costs. All else equal, business risk grows as revenues become more

[18] The regulatory WACC is combined with an estimate of the income taxes owed to determine the return on invested capital for the revenue requirement. In the terminology of this paper, the sum of after-tax equity return, income taxes and interest expense is equal to the before-tax weighted-average cost of capital or the "BTWACC".

[19] "Cash flow" means the change due to the project in the actual amount of money the company has that year **C** dollars you can buy books with. The usual calculation of a project's NPV is the sum of the project's expected after-tax all-equity cash flows (i.e., the expected cash flow if the investment were financed entirely with common equity), discounted at the ATWACC: where the first cash flow occurs right away, at time 0, and need not be discounted. The initial cash flow is usually an investment outlay, i.e., a negative cash flow.

uncertain and more highly correlated with the forces that drive the economy. Business risk also grows, all else equal, and as costs become less uncertain and less correlated with the general economy.

Calculation of the ATWACC captures both the business and financial risk of the company. This makes it easy to compare the cost of capital evidence from sample companies with different capital structures. As discussed below, deriving the cost of equity consistent with different capital structures is also easy with this approach. Table 1 provides an illustration of the calculation.

Before proceeding further, it is worth addressing three objections that are frequently voiced in regulatory proceedings when a cost of capital expert recommends a cost of equity adjusted for differences in financial risk. The three objections are addressed next.

It is sometimes argued that the use of market values to calculate the impact of capital structure on the risk of equity is incompatible with use of a book-value rate base for a regulated company. This is not the case any more than it would be inappropriate to use market-based cost of equity estimation methods (such as the Discounted Cash Flow method or the Capital Asset Pricing Model) with a book value rate base. That is, the cost of capital is the fair rate of return on regulatory assets for investors and customers alike. Most regulatory jurisdictions in North America measure the rate base using the net book value of assets, not current replacement value or historical cost trended for inflation, but the jurisdictions still apply market-derived measures of the cost of equity to that net book value rate base. In essence, the cost of capital expert should strive to determine the market cost of capital for companies of comparable risk to the regulated entity. In this way, the regulated entity will be allowed a market determined cost of capital on its *book value* rate base which is a measure of the amount of unrecovered investment in the company's assets.

The second objection is that any adjustment for differences in financial leverage should be based upon differences in the book value not the market value capital structures of the sample firms. This objection was addressed in Section III above. The market value capital structure is the correct measure of financial risk.

The third objection is based on the assertion that adjusting the cost of capital estimate for differences in financial leverage will result in an ever increasing market value to book value of equity ratio, because the need for an adjustment for differences in financial leverage is the result of the fact that the market to book value ratio for the sample companies is generally greater than one. Adjusting the allowed rate of return on equity for differences in financial risk will not result in an ever increasing market to book ratio, because the adjusted return simply awards the market- determined overall cost of capital to the regulated entity. However, responding to this objection is complicated by the fact that financial theory does not have a complete explanation of market prices even for regulated companies. In the past, a market to book ratio near one was regarded as evidence that the regulated rate of return was being set at appropriate levels, but this measure is no longer considered reliable by most cost of capital experts.[20]

[20] For a further explanation of this issue, see, for example, Stewart C. Myers, "Fuzzy Efficiency," *Institutional Investor*, December 1988.

B. THE EFFECT OF DEBT ON THE OVERALL COST OF CAPITAL

As discussed above, increased use of debt in a company's capital structure increases the cost of equity because equity is bearing an increasing portion of the variability of returns. The question addressed in this section is the effect of debt and the corresponding tax deduction for interest expense on the overall cost of capital. In other words, does the use of debt decrease the overall cost of capital for the firm?

1. THE EFFECT OF TAXES ON THE OVERALL AFTER-TAX COST OF CAPITAL CURVE

This section discusses the effect of taxes on the after-tax weighted-average cost of capital. For most companies, the ATWACC decreases initially as a company financed entirely with equity substitutes debt for equity because of the corporate income tax shield provided by interest payments. At some point, the disadvantages of debt begin to outweigh the benefits so that using more debt actually increases the overall cost of capital. A firm with too much debt begins to suffer from the effects of financial distress so there is generally considered to be a tradeoff between the costs and benefits of debt in the overall cost of capital. There is debate about the precise effects of taxes and the costs of financial distress, but the effect on the cost of equity is basically unchanged. This is *why* the three messages listed above remain true despite such details as the precise impact of taxes or of the possible use of excessive debt.

Repeating the three messages:

> ***The cost of equity of any company or investment increases at an ever increasing rate as you add more and more debt, regardless of the "true" effect of taxes or the "true" shape of the overall after-tax weighted-average cost of capital curve.***

Indeed, debt is known as "leverage" **C** or "gearing" **C** precisely because it amplifies the risk and expected return of equity. The examples above demonstrate the reason, which every property owner who has used a mortgage should be able to confirm by reflecting on his or her own experience. If it were otherwise, the average level of, and the variability of, the rate of return on the equity in your home would be much different. The effect of taxes and other effects on the shape of the ATWACC curve are details that do not affect the message of this paper: the cost of equity is a function of both business and financial risk.

There is no theory to explain definitively how to pick the "best" capital structure for a firm. In fact, the evidence is consistent with the view that the ATWACC is constant over a broad middle range of capital structures for companies in an industry. If it were otherwise, we would see firms in an industry converging on one optimal structure, because of the competitive advantage accruing to a firm with a lower cost of capital. We do not observe such clustering of capital structures around some optimum value and conclude that the ATWACC must be constant within this range. While there are several theories of capital structure, none has emerged as the definitive explanation of capital structure choice. Nonetheless, one very important conclusion is supported by the research:

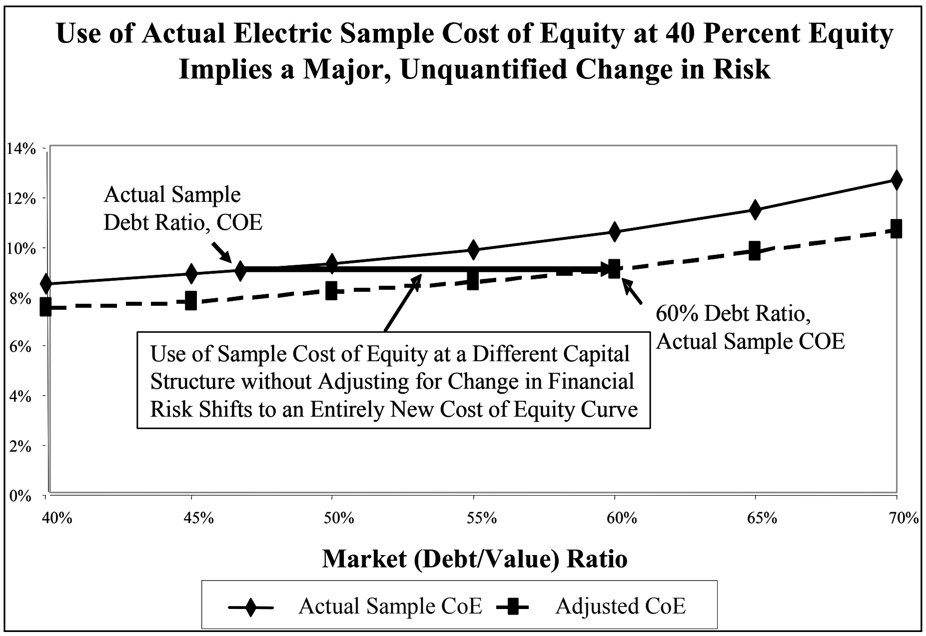
> ***The effect of debt on the cost of equity is material regardless of the "true" shape of the ATWACC curve, i.e., regardless of the true impact of a particular amount of debt on the overall value of the firm.***

2. AN EXAMPLE OF THE EFFECT OF THE FAILURE TO CONSIDER DIFFERENCES IN CAPITAL STRUCTURE

This section discusses the potential magnitude of the misestimation of the cost of equity if capital structure differences between sample companies and the regulated entity are not explicitly considered.

Suppose a commission accepted the implied cost of equity of 9.1 percent at a 53 percent equity, 47 percent debt market-value capital structure for the sample companies, but applied it directly to a regulated entity with a 40 percent equity ratio.[21] The result is depicted in Figure 9.

Figure 9



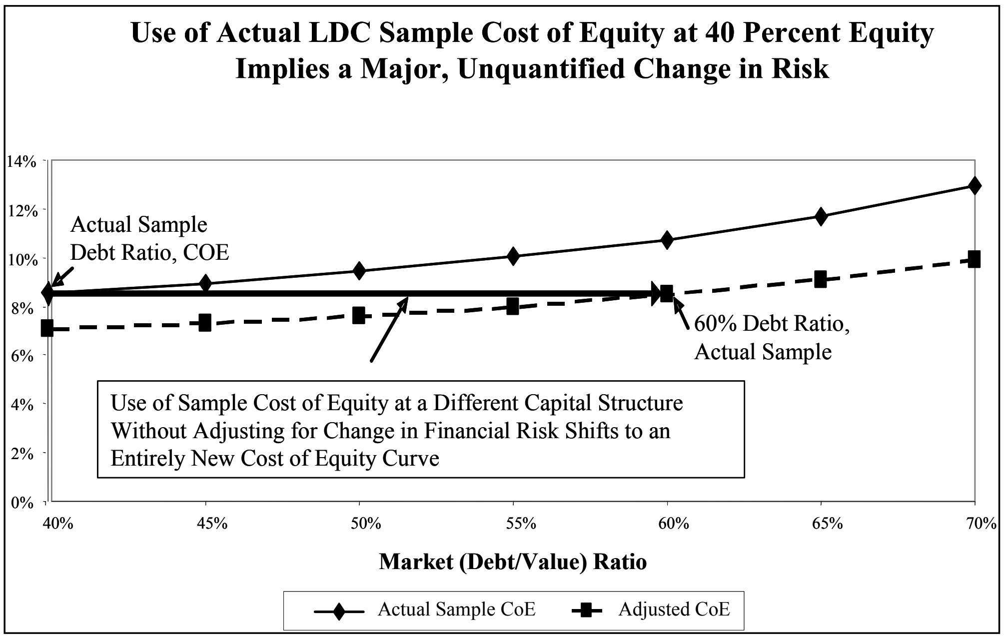
If the cost of capital expert's sample had actually had a market-value debt-equity ratio of 60-40, its true cost of equity would have been higher. Estimation problems aside, it would have been on the order of 10.5 percent, not 9.1 percent, an error of approximately 140 basis points! Alternatively, a company with the risk this procedure attributes to the regulated entity would have a true cost of equity on the order of 8.0 percent at the sample's market value capital structure, not 9.1 percent.

Moving the 9.1 percent sample cost of equity from the actual capital structure to a 60-40 debt-equity ratio shifts to an entirely different cost of equity curve. It effectively throws away all of the information in the sample cost of equity estimation process and uses a number that might as well be picked at random. *The sample cost of equity has no validity at a radically different capital structure from the one at which it was estimated.*

[21] As discussed above, the 9.1 percent at 53 percent equity was obtained using a standard CAPM estimation method. Which estimation method to rely on for cost of capital estimation in the current economic environment is subject to significant debate, but however the sample estimate is obtained, adjustment for differences in financial leverage is still appropriate.

The equivalent graph for a second sample of gas local distribution companies ("gas LDCs) is shown in Figure 10. Here the change is even more extreme. Since the initial sample cost of equity is lower, at 8.5 percent at 43 percent debt, the new cost of equity curve implied by the use of this value at the 60-40 debt-equity ratio is even lower than in Figure 9. The true sample cost of equity at the regulatory capital structure of 40 percent equity would be on the order of 10.7 percent. Alternatively, the true cost of equity of the new curve at a capital structure that matches the second sample's would have been on the order of 7.4 percent, not 8.5 percent. Again, the leap from the actual capital structure to a radically different one simply robs the sample cost of equity of any meaning. The use of that particular cost of equity value for the regulated entity is completely independent of, and is in no way supported by, the current risk and cost of capital evidence for the sample of rate-regulated companies.

Figure 10



These two figures illustrate the magnitude of the potential mismatch between the market value information used to the estimate the cost of capital and the cost of equity for the regulated company when differences in capital structure (financial leverage) between the sample companies and the regulated entity are not considered.

V. "YOU CAN'T PUSH ON A ROPE"

This section discusses what is needed to induce investment by corporations in a market economy. Investment by ordinary (i.e., non-financial) corporations is the process of turning a fungible and very liquid asset **C** money **C** into other assets that have at least as much value, but which are much less fungible and liquid. Examples of such other assets include electric generation and transmission facilities, water treatment plants, automobile factories, and research and development programs that companies hope will produce valuable patents.

Corporations get money to invest by inducing investors to provide it. The inducement comes in the form of an expected return on the investors' money. The level of return investors require depends on the risk involved, which varies from industry to industry *because* some of the assets in which corporations invest are riskier than others.

That is, the expected rate of return investors can get if they keep their money in the bank or money-market funds is predictable and carries little or no risk, but the return is also low. The expected rate of return on the assets corporations build or buy with investors' money is less predictable and carries more risk, and sometimes much more. The expected return is also higher, because investors require a higher expected rate of return to bear more risk. To attract capital, corporations must identify investments with an expected rate of return at least equal to that available to investors on alternative investments of equivalent risk.

In several opinions, the U.S. Supreme Court has established the legal standards for allowed rates of return for rate-regulated companies which appear to be in line with these economic principles. For example,

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public . . . equal to that generally being made…on investments in other business undertakings which are attended by corresponding risks and uncertainties. **Y** The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.[22]
>
> and
>
> From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. [Citation omitted.] By that standard, the return to the equity owner should be commensurate with return on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure

[22] *Bluefield Waterworks & Improvement Co. v. Public Service Commission*, 262 U.S. 668 (1923) at 692-693.

> confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.[23]

These passages suggest a two-part standard. First, the expected rate of return for investors in a rate-regulated company should equal that available in other investments of equivalent risk. Second, the return should be adequate to maintain the financial integrity of the company. Both parts of this standard make good economic sense, since you can't force investors to put their money into a venture. The very fact that such legal standards exist makes good economic sense, too.

The latter is true because there is presently an active corporate finance literature that documents the impact of international differences in enforceable legal rights on the health of a nation's financial markets and the level of investment. Two quotations from that literature summarize some of the relevant findings:

> Recent research reveals that a number of important differences in financial systems among countries are shaped by the extent of legal protection afforded outside investors from expropriation by the controlling shareholders or managers. The findings show that better legal protection of outside shareholders is associated with: (1) more valuable stock markets... ; (2) a higher number of listed firms... ; (3) larger listed firms in terms of their sales or assets... ; (4) higher valuation of listed firms relative to their assets ... ; (5) greater dividend payouts... ; (6) lower concentration of ownership and control... ; (7) lower private benefits of control... ; and (8) higher correlation between investment opportunities and actual investments... . [Omitted citations indicated by ellipses.][24]
>
> Also,
>
> Recent research suggests that the extent of legal protection of investors in a country is an important determinant of the development of its financial markets. Where laws are protective of outside investors and well enforced, investors are willing to finance firms, and financial markets are both broader and more valuable. In contrast, where laws are unprotective of investors, the development of financial markets is stunted. Moreover, systematic differences among countries in the structure of laws and their enforcement, such as the historical origin of their laws, account for the differences in financial development... . [Omitted citations indicated by ellipses.][25]

This literature focuses on the possibility of expropriation by a country's citizens of minority investments made by outsiders, typically foreigners. The issue the Supreme Court addresses is the possibility of uncompensated takings by acts of government. But the key question is whether the investment is or is not at risk of being taken, not who the taker is. Investors are understandably reluctant to commit funds when such takings are possible, leading to less investment and to more costly terms for the investments that are made.

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23 *Federal Power Commission v. Hope Natural Gas*, 320 U.S. 591 ("*Hope*") at 603.

24 Andrei Shleifer and Daniel Wolfenzon, "Investor Protection and Equity Markets," *Journal of Financial Economics* 66: 3-27 (October 2002), pp. 3-4.

25 Rafael La Porta, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, "Investor Protection and Corporate Valuation", *The Journal of Finance* 56: 1147:1170 (June 2002), p. 1147.

To understand what is meant by "takings" in the context of a regulatory proceeding, it is useful to consider a bit of background on how an asset's risk may be allocated among different groups of customers. Investments in industry-specific corporate assets can be hostages to fortune. To sink fungible money into a non-fungible asset with few or no alternative uses, particularly one with a long life, is to accept a great deal of intrinsic risk. Companies sometimes choose to bear all of this risk and sometimes try to lay some or all of it off on other parties.

An example is a commercial building that might be used for office space or as a hotel. (Some buildings have both uses at the same time.) Commercial office space normally is rented out under long-term leases. The owner of the building gets a secure payment from the office space lessee, who thereby removes the owner's risk that the office space might lease at a much different rate in a few years. Hotel space, in contrast, rents night to night. The owner bears the risk of bad times, when more rooms will be empty and those rooms that are rented command lower rates or deeper discounts. The owner hopes to more than make up for such losses in good times, when more rooms are occupied and daily rates are higher.

The owner of a building with both office space and hotel space thus lays off some of his or her risk on office space lessees, but keeps the risk for the hotel space. The rents charged to office space lessees are lower than they would otherwise be precisely because the lessees are bearing this risk. Put differently, the cost of capital for office space is lower than the cost of capital for hotel space, and in a competitive market, the average rates for office and hotel space would reflect this difference.

This is an issue for rate-regulated firms because rate regulation often involves companies with long-lived assets with little or no alternative uses, and it therefore involves a great deal of intrinsic risk. The institutions of rate regulation pass much of this risk through to customers, in exchange for lower prices than they would otherwise have to pay. Investors' risk-bearing under rate regulation normally lies somewhere between the office-space and hotel-space extremes. Regulation denies regulated companies the right make extra-high profits by charging premium prices in good times, and in exchange is supposed to protect the company from having to suffer from extra-low prices in bad times. It also is supposed to assure the investor a fair opportunity to recover all of the money sunk into the company's assets, through depreciation or amortization charges. Yet the company normally retains some risks, too. An example is gains or losses due to variations of sales from forecasted levels, which typically fall on the company between rate hearings, at which time new forecasts can be made.

Rate-regulated companies invest under the expectation that they will earn a return equal to the cost of their capital on average, i.e., that investors will have a fair opportunity to earn exactly the rate of return they could get on alternative investments of equivalent risk. The cost of capital for electric utilities is lower than in most industries precisely because of the constraints imposed by rate regulation. Nonetheless, it is higher than office space lessees command, because rate-regulated companies bear more risk than a building owner does from an office lease.

With that background, the economic (not legal) interpretation of what is meant by "takings" follows. Economically a "taking" of regulatory property, in the sense used above, would occur when the terms of regulation were changed so as systematically to deny to investors a fair opportunity to earn the cost of capital *after* the investors have sunk their money in non-fungible rate-regulated assets.

If it were known in advance that regulators would mark regulated rates down to unremunerative levels right after major investments had been made, for example, investors would invest less than if they believed the returns would be adequate; possibly they would not invest at all. If the policy of unremunerative returns were known in advance, the company's service quality would be lower, and service would be less available and/or more expensive than it would otherwise have to be. Therefore, a change to the terms of regulation to deny a fair opportunity to earn the cost of capital after the fact would get higher service levels without paying for them, and that would constitute a taking from an economic perspective.[26] Whether legal or not, such an act would achieve a short-run benefit for today's customers at a material long-run cost to future customers. The research cited above suggests the long-run cost could be material for the economy of the jurisdiction committing the act, too. Uncertainty of this type may lead to under investment in the electric utility infrastructure of the country.

It is sometimes argued that a commission's need to balance customer and investor interests means that the rate of return on equity should be lowered, especially if overall rates are high due to new investments, but this would violate the standards discussed above if the result is an expected rate of return on equity that is below the cost of capital. The cost of capital is as much a real cost as workers' wages. From an economic perspective, cutting the return on equity because new investment makes costs high is no different from cutting the wages of a utility's workers because costs are high. Workers who were satisfied with the wage before the cut would look for better opportunities after the cut, and some would find such opportunities and quit. The deeper the cut, the larger the proportion of workers who would quit. Investors would have an even easier time finding better opportunities, because the stock market is full of investments that offer an expected rate of return equal to the cost of capital (which varies with the risks of the particular stock). With an allowed rate of return below the cost of capital, managers who act in their shareholders' interests would try to avoid putting any more capital into the now unremunerative line of business, with material long-run consequences. That would not be in the best interest of customers, any more than would a utility's being unable to operate or to maintain its service quality because it could not attract workers at the wages it was allowed to offer.

Another argument sometimes offered is that if the gain is now and the cost is in the long-run, why worry about it? Is not that a problem for the future? The answer is that it is always possible for one generation to live well and leave future generations to pick up the tab, and economists have no particular claim to expertise with the ethical questions generated by such decisions. However, we can try to help make sure the questions are resolved with a complete understanding of the tradeoffs involved.

Rate-regulated companies, like the institutions of regulation themselves, generally have a great deal of inertia. They are like oil supertankers, which take a great deal of time to turn if trouble looms, but which then take at least as much time to get back on the original course.

Regulated companies' managers tend to want to provide service when it's requested, trusting to the regulatory process to perform acceptably for their investors on average. Therefore, they may not react immediately to the full extent possible if the regulatory process stops doing so. They certainly react less quickly than competitive firms to signals that a previously remunerative market no longer is generating an adequate

[26] From an economic perspective, there is little to distinguish between changing the terms on which capital was invested after the fact and notifying the laborers finishing up on a construction project that they weren't going to receive their final paycheck, or that they would get it but at a much lower wage. The cost of capital is as much a real cost as wages.

return.[27] And even after managers do react and slow or stop new investment, the long-lived nature of regulatory assets can mean existing services take a long time to decay. Therefore, the adverse impacts of a regulatory policy that systematically denies investors a fair opportunity to earn the cost of capital are likely to take awhile to become material, which can lead to the mistaken impression that they will not do so.

Once the adverse impacts are manifest, however, they cannot be overcome in a hurry, any more than a supertanker can immediately resume its previous course. Not only would remedial investment take time, but also it would take longer to get started and/or be more expensive. Moreover, investors, once burned, will be loath to trust that the regulatory jurisdiction in question won't repeat the same pattern if regulators subsequently ask for quick investments to shore up a system that the previous policy let decay, or to extend service to new customers. The safest way for investors to avoid inadequate returns on future major investments in such a jurisdiction is to keep the system capital-starved. For example, the company might not invest unless regulators were willing to negotiate *ex ante* terms that assured a fair return on incremental investment, at least. Such negotiations at least take time and cost extra money. They also lead to a higher rate of return and/or to a shift of more risk to customers than could have been achieved by a policy of allowing the company a fair opportunity to earn its cost of capital all along.

Even though rate-regulated companies an obligation to invest to maintain service, there will be incentives for investors to slow the rate of investment if they become convinced that the return will not be remunerative. It is certain that if a rate-regulated company becomes convinced that its returns in a particular jurisdiction will systematically be inadequate in the future, the best thing it can do for its shareholders is to devise an optimal exit strategy from that jurisdiction. Moreover, whatever the legal form of that strategy, and whatever the direct costs to both investors and customers of its execution, it will also constitute a very negative signal to all companies considering investing in that jurisdiction in the future.

Additionally, even if the company in question stops short of an exit strategy, those most likely to pay attention to inadequate returns for one rate-regulated company are investors in and managers of other rate-regulated industries in the jurisdiction. They may grow cautious about new investment, also, even if they have not yet been affected directly. Rate-regulated industries tend to provide basic services, so a reluctance to invest in these industries, whether solely in the one directly affected or in all of them, is very likely to spill over to the rest of the jurisdiction's economy.

Therefore, a decision to take systematically from today's investors to give service below cost to today's customers will create material problems for tomorrow's customers and very probably for the state's or the country's economy. The optimal strategy for investors in such a company is to keep it capital-starved, and possibly even to exit the jurisdiction. You can't force investors to throw good money after bad, any more than you can push on a rope. As time passes, that will lead to less reliable (and less extensive) service. Unfortunately, while systems consisting of long-lived assets take a long time to "break," once "broken" they also take a long time to fix. Moreover, tomorrow's investors will not put up new money to fix such systems

[27] This is one reason that regulated firms can have so much trouble adapting to competition if it appears. See A. Lawrence Kolbe and Richard W. Hodges, "EPRI PRISM Interim Report: Parcel/Message Delivery Services," report prepared for the Electric Power Research Institute, RP-2801-2 (June 1989), reprinted in S. Oren and S. Smith, eds., *Service Opportunities for Electric Utilities: Creating Differentiated Products*. Boston: Kluwer Academic Publishers (1993).

on the old terms. Even after such a system is restored, it will cost tomorrow's customers more than it would have without the initial decision to take from today's investors.

VI. "EMPTY PROMISES BUY NOTHING"

This section addresses the difference between the cost of capital and the allowed rate of return, and in particular, shows why setting the allowed return equal to the cost of capital provides inadequate compensation if the regulated entity can not expect to earn the allowed return on average.

The "opportunity cost of capital," or "cost of capital" for short, is defined as the expected rate of return in capital markets on alternative investments of equivalent risk. The cost of capital is the bare minimum rate of return necessary to attract capital and to compensate investors for a given level of risk, since that is what they could earn elsewhere without bearing any more risk. That is, it is the competitive market price for capital exposed to a given level of risk. To treat both investors and customers fairly, regulatory procedures should operate so the company expects to earn the cost of capital on the assets its investors' money has bought.[28]

The "allowed rate of return" is a regulatory parameter used to determine the revenue requirement. Typically, the allowed rate of return is set equal to regulators' estimate of the cost of capital. The issue for this section is whether the mere setting of the allowed rate of return equal to the cost of capital actually permits investors to expect to earn the cost of capital, even if all parties were to agree that regulators had estimated the cost of capital perfectly.

An allowed rate of return equal to the cost of capital lets the company expect to earn the cost of capital if and only if the company expects to earn the allowed rate of return. If the jurisdiction's regulatory procedures are designed so the company actually expects to earn less than the allowed rate of return, then it expects to earn less than the cost of capital, too.

In this context, the "expected" rate of return or the return the company "expects" to earn refers to the average value. The term "expected" is from statistics, and denotes the mean of the distribution of possible returns or rates of return.[29]

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[28] A potential exception to this rule is "incentive regulation." Under incentive regulation, the company may be able to expect to earn more than the cost of capital for a period of time *if* its managers are able to find innovative ways to cut costs. Customers benefit after this period ends (or sometimes right away, according to a predetermined sharing formula) when costs are lower than they would otherwise have been.

[29] This paper uses "expect" and "expected" only in the statistical sense:

> . . .the idea of expectation of a random variable is closely connected with the origin of statistics in games of chance. Gamblers were interested in how much they could "expect" to win in the long run in a game, and in how much they should wager in certain games if the game was to be "fair." Thus, expected value originally meant the expected long-run winnings (or losings) over repeated play; this term has been retained in mathematical statistics to mean the long-run average value for any random variable over an indefinite number of samples. This holds whether a large number of samples will actually be conducted or whether the situation is a one-trial affair and we consider hypothetical repetitions of the situation. Over a long series of trials, we can "expect" to observe the expected value. At any *single* trial, we in general cannot "expect" the expected value; usually the expected value is not even a possible value of the random variable for any single trial. . . .
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> W. L. Hayes, and R. L. Winkler, *Statistics*, Vol. I , New York: Holt Rinehart & Winston (1970) at 136-137.

In some regulatory jurisdictions, some regulated companies do not earned their allowed rate of return over several years. The specific reasons for these shortfalls would need to be investigated on a case by case basis, but the fact of such shortfalls raises the possibility that investors will not expect to earn the allowed rate of return under some regulatory arrangements. Fair treatment of both investors and customers means that rate-regulated companies should expect to earn the cost of capital on average. If a company does not expect to earn its allowed rate of return, then setting the allowed rate of return equal merely to the cost of capital shortchanges its investors, because the supposed opportunity to earn the allowed rate of return on average is actually an empty promise. Fair treatment of investors in such a case requires either changes to the regulatory mechanism so the company does expect to earn its allowed rate of return on average, or an allowed rate of return set enough above the cost of capital to make up for the expected shortfall between the cost of capital and the rate of return the company actually expects to earn.

VII. CONCLUSIONS

Setting the cost of capital correctly for regulated entities is critical to insuring the adequacy and reliability of service for ratepayers. If the allowed return is set too low, there is likely to be an adverse affect on investment. In addition, merely setting the allowed return equal to the cost of capital does not provide an adequate return if the regulated entity can not expect to earn the allowed rate of return on average. At the same time, setting the allowed return too high means that the rate payers are charged too much for service. Neither outcome is in the best interests of ratepayers or the industry.

Now that the focus of regulation is returning to setting the allowed rate of return, it is important that the latest developments in financial theory be incorporated into the rate setting process so that the cost of capital can be estimated and set as accurately as possible. One area of development in financial theory is the effect of financial leverage (financial risk) on the cost of equity. Just as increased business risk means an increase in the required rate of return on equity, increased financial risk also means an increase in the required rate of return. An allowed return that does not consider both the level of business risk and the level of financial risk is not likely to be an accurate estimate of the cost of capital for the regulated entity.

Unfortunately, the methods used in a regulatory setting frequently ignore differences in financial risk. This paper has described a method that fortunately is very simple that considers both business and financial risk simultaneously so that the allowed return on equity can be set that is consistent with the regulatory capital structure to which the return in applied. This method is to calculate the overall cost of capital (the ATWACC) for all sources of financing in the firm. Using the assumption of a constant overall cost of capital, the analyst can adjust the return on equity to be consistent with both the information provided by the sample companies and with the regulatory capital structure allowed. As demonstrated in the examples in Section V, failure to consider differences in capital structure between the sample and the regulated entity can lead to errors in the estimated cost of equity of 200 basis points or more. Errors of this magnitude make it critical that financial risk be treated appropriately.

LEVERAGE, STOCK RETURNS, TAXES AND INDUSTRY CONCENTRATION

Abstract

We investigate the effect of firm's leverage on stock returns. We start with the explicit valuation model of Modigliani and Miller (1958) and expand. We show that stock returns decline in leverage and that the relation is linear. The Utilities sector is the exception. In this sector, returns increase in leverage. We show that the negative relation between leverage and stock returns holds for tax-paying firms and firms in competitive low-concentration industries.

JEL Code: D21, G11, G32

Keywords: Leverage, stock returns, capital structure, taxes, industry concentration

1. Introduction

We investigate the effect of firm's leverage on stock returns. The empirical results in earlier studies are mixed. Modigliani and Miller (1958, henceforth MM) show that the relation is positive, but more recent work reports a negative relation (George and Hwang, 2009; Korteweg, 2009; Dimitrov and Jain, 2008; and, Penman, Richardson and Tuna, 2007). We show that stock returns decline in leverage and that the relation is linear. The Utilities sector is the exception. In this sector, the returns increase in leverage. The nature of the industry in which the firms operate and the effective tax rates they pay, are important considerations. Stock returns decrease in leverage for tax-paying firms and firms in low-concentration industries. We control for a number of risk factors and conduct the analysis both at the firm level at the portfolio level using factor mimicking portfolios. Our results are robust to other risk factors and levels of analysis.

Theoretical finance has always regarded leverage as one of the basic sources of financial risk. In the real world of finance, capital structure decisions are critical, since a shift in leverage could increase or decrease the financial strains on companies. Traditionalists such as Lintner (1956) and Gordon (1959) argue that there is an optimal leverage ratio that equates the marginal benefits of debt, such as tax shields, to the marginal costs of debt, such as increases in expected bankruptcy costs[1].

MM, in their Proposition II, argue that the value of a firm is independent of its capital structure. The immediate implication of this proposition is that the return on equity capital is an increasing function of leverage. MM conduct their empirical work in two risk classes. Further empirical work uses much larger samples, but the results are mixed. Some authors (Hamada,

[1] In their study on the determinants of capital structure of capital-market-oriented compared to bank-oriented institutions, Antoniou, Guney and Paudyal (2008) find that firms have target ratios, but the speed at which they adjust their capital structure towards the target varies from country to country. See Ozkan, 2003; Lasfer, 2006 for the determinants of capital structure in the UK.

1972; Bhandari, 1988) show that returns increase in leverage; others show that they decrease in leverage (Ball, 1993; Korteweg, 2009; Dimitrov and Jain, 2008; Penman, 2007; and, George and Hwang, 2009). None of these studies takes into account the industry characteristics of the risk class or the effective tax rates firms pay.

The original MM Proposition II assumes zero taxes. However, in 1963, they acknowledge the tax advantage of debt financing and explain that the existence of the tax advantage of debt does not necessarily mean that firms should seek to maximize the amount of debt in their capital structures. We expect the tax-paying firms to have a negative relation between leverage and stock returns. Although interest payments are tax deductible, firms tend to maintain low levels of leverage to retain financial flexibility and to reduce the risks attached to debt. Moreover, when the personal income tax is taken into account, the tax advantage of debt may not be as economical (Modigliani and Miller, 1963; and, Miller 1977). Our results show that tax-paying firms have returns that decrease in leverage.

The product markets in which firms operate are important for understanding the relation between stock returns and leverage (Hou and Robinson, 2006; Mackay and Phillips, 2005; and, Ovtchinnikov, 2009). We use industry classifications to represent different risk classes (Schwartz, 1959). We show that returns increase in leverage in the Utilities sector but decrease in leverage in most other sectors. Industry concentration defines the product market in terms of competition. We expect that firms in low-concentration industries have returns that decline in leverage. These firms are not insulated from distress risk vis-à-vis firms in concentrated industries (Mackay and Phillips, 2005) and leverage proxies for the potential distress risk.

We start our analysis with the same understanding as MM but expand it in several directions. We test for the relation between leverage and returns to equity and its linearity. Our sample includes all firms in all risk classes, and combines the cross section with the time series. We represent returns to shareholders as stock returns in excess of the risk-free rate (Schwartz, 1959; Fama and French, 1992). MM, in their tests of Proposition II, approximate returns to shareholders by actual shareholder net income and make estimations in the cross section of firms in a single risk class for a single year. As the authors state this is very crude. We use the book value of the ratio of total debt to total capital. MM define leverage as ratio of the market value of bonds and preferred debt to the market value of all securities. Firms in various industries have different asset structures that are financed by cash flows generated from various forms of debt and equity. Following Schwartz (1959), we argue that the narrow definition of financial structure, restricted to stocks and bonds, ignores the large measure of substitutability between the various forms of debt. Thus, we choose to use a broader definition that encompasses the total of all liabilities and ownership claims. The use of book values of both variables ensures that we are measuring the capital structure via the cash flows generated at the time those assets were financed. Following Rajan and Zingales (1995) we argue that the effects of past financing are best represented by the ratio of total debt to capital. We measure capital structure at the time funds are raised to finance the assets. We explicitly account for the difference between the book value and market value of equity by using the market-to-book ratio as an additional risk factor (Fama and French, 1992)[2]. We conduct our empirical analysis in the cross section of all firms and for each industry. Industry classification is a good proxy for business-risk across industries (Bradley, Jarrell and Kim, 1984; Hou and Robinson, 2006), and thus to define a risk class. We use other known risk factors (Fama and French, 1993; and, Carhart, 1997) and show that our results are robust to other risk factors.

[2] Penman, Richardson and Tuna (2007) break-down the book to price component into enterprise book-to-price which reflects the operating risk and a leverage component that reflects financing risk. They find that indeed the leverage component is negatively related to returns and find this evident in firms with both high and low book-to-price companies and their results do not change even after taking into account distress measures and the probability of default.

Excessive corporate leverage increases the possibility of distress. George and Hwang (2009) explain that firms that suffer most in financial distress maintain low leverage. The return premium to low-leverage firms compared to high leverage firms appears to be a form of compensation for the financial distress costs. If that is the case, then firms in more competitive industries with low entry barriers should exhibit a negative relation, but firms in regulated industries should exhibit a positive relation. We find that equity returns increase in leverage in the Utilities risk class. We also find that firms in most other risk classes experience returns that decrease in leverage. Our results provide evidence that the risk class the firms belong to have an important bearing on the direction of the relation between leverage and stock returns.

The paper is organised as follows. Section 2 describes our sample and methods. Section 3 presents the results of the study. Section 4 concludes.

2. Data and Methods

We obtain our data from DataStream. We begin with the 2,673 companies listed in the London Stock Exchange from 1980 to 2008. To enter the sample, we require for each firm year observation that each firm has available a fiscal year-end leverage ratio and stock price series for at least during the preceding 12 months. We exclude financial companies, including banks, investment companies, insurance and life assurances, and companies that have changed the fiscal period end date during the research period. Thus, we remove 1,092 financial companies. We also exclude 490 companies because they do not have matching year-end leverage ratios and stock prices for all subsequent years. We also drop 173 companies with short quotation experience. Finally, we eliminate 130 companies with a market value of less than £1 million. Our final sample contains 10,194 firm year-end observations of 788 companies listed from 1980 onwards. We do not use negative market-to-book value. Within each industry classification and for the full sample, we rank firms according to the leverage that is available from annual reports with year-end dates of December 31st or before, every year. We use the capital gearing definition (DataStream code: WC08221) to represent the leverage of companies in the sample. This definition represents the total debt to total financing of the firm and is defined as:

Leverage = Long term debt + Short term debt/ Total Capital + Long term debt + Short term debt (1)

We use the market value (DataStream code: MV) of companies to represent the company size. Market capitalization is the share price multiplied by the number of ordinary shares in issue. The market-to-book value (DataStream code: MTBV) refers to the share prices of companies divided by the net book value. The market risk measure is the beta coefficients (β), which we estimate over a five-year period in a rolling window using monthly data. Tax is the effective corporate tax rate for year *t*. We estimate this corporate tax rate for each firm as the ratio of total tax paid by the firm in year t to the total taxable income in year t. The Herfindahl Index is the industry concentration measure for three-digit SIC industries. We estimate the Herfindahl Index by calculating the sum of squared sales based market shares of all firms in that industry in a given year and then averaging them over the past three years. Hence, we define Herfindahl Index, as

$$Herfindahl_j = \sum_{i=1}^{I} s^2 ij \qquad (2)$$

where s_{ij} is the market share of firm *i* in industry *j*. We perform these calculations for each industry and then average the values over the past three years. We classify each risk class into nine main industries using the UK SIC industry classification[3]; namely Oil and Gas(0001), Basic

[3] See Appendix 1

Materials (1000), Industrials (2000), Consumer Goods (3000), Healthcare(4000), Consumer Services (5000), Telecommunications(6000), Utilities(7000) and Technology(9000).

We calculate stock returns for each company on a monthly basis and by using percentage change in consecutive closing prices that we adjust for dividends splits and rights issues (Fama, Fisher, Jensen, and Roll, 1969). The stock returns we use are in excess of the risk-free rate represented by the one-month UK Treasury discount bill. We obtain these data from DataStream (LDN:FT). The average returns calculated for each firm are over the 12 months from May 1st of the year following the announcement of the leverage ratios.

We use Generalized Method of Moments (GMM) estimators and fixed effects for firms when running the regressions. GMM estimators ensure that we do not need to make any assumptions about the distributional properties of the variables, most of which are not normally distributed. We use fixed effects for firms in the panel to account for information that can be unique to the firm, and for the possibility of individual taste for risk in ownership decisions. We perform a two-level analysis at the firm and portfolio levels. We repeat estimations for each risk class.

2.1 Firm Level Analysis

Following MM (1958), we first do a raw, direct test on whether leverage can explain the returns at the stock level. Next, we add its square to test for linearity. We add market risk, size, and market-to-book ratio to test for the robustness of our results to other risk factors. To understand their effect on stock returns, we add the effective tax rate a firm pays and the concentration ratio of the industry it operates as independent variables. We conduct estimations in the full sample as well as in different risk classes. We estimate the following equations:

$$R_{it}=ά+β_1LEVERAGE_{it}+ε_t \quad (3)$$

$$R_{it}=ά+β_1LEVERAGE_{it}+ LEVERAGE^2_{it}+ε_t \quad (4)$$

$$R_{it}=ά+β_1LEVERAGE_{it}+ β_2RISK_{it}+β_3SIZE_{it}+ β_4MB_{it}+ β_5Tax_{it} + β_6HI_{it} +ε_t \quad (5)$$

where, R_{it} represents the average stock returns in excess of the risk-free rate for company i, at time *t*, α stands for constant, LEVERAGE is the ratio of total debt to total capital and LEVERAGE ^{2} its square, RISK is the market risk measured as the beta coefficients estimated over five years, using monthly data' SIZE refers to the log of total market capitalization. MB refers to the ratio of market to book ratio, Tax is the effective tax rate of firm *i* in year *t*.1, and HI is the industry concentration measure for three digit SIC industries.

2.2 Portfolio Level Analysis

We perform time-series regressions using Fama and French 1(993) procedure in forming size and market-to-book ratio, market-risk mimicking portfolios and Carhart (1997) momentum mimicking portfolios. In May of each year we rank stocks on size. We then use the median size to split the stocks into two groups, small and big (S and B). Next, we sort all stocks based on the book–to-market ratio into three market-to-book equity groups based on the breakpoints for the bottom 30% (Low), middle 40% (medium), and top 30% (high). Following Carhart (1997), we form momentum-based portfolios on the breakpoints for the bottom 30% (Low), middle 40% (medium), and top 30% (high). The portfolio SMB (small minus big) mimics the risk factor in returns related to size. The portfolio HML (high minus low) mimics the risk factor in returns related to market-to-book equity. The portfolio MOMENTS (high minus low) mimics the risk factor in returns related to momentum (Carhart, 1997). ExRM is our proxy for the market factor in stock returns, which we define as the excess market return over the one month UK treasury discount bill. We estimate the following equation:

$$R_t=\acute{\alpha}+\beta_1 LEVERAGE_t+ \beta_2 SMB_t+\beta_3 HML_t+ \beta_4 ExRM_t+ \beta_5 MOMENTS_t+ \beta_5 Tax_t + \beta_6 HI_t+\varepsilon_t \qquad (6)$$

where, R_t is the monthly stock returns in excess of the risk-free rate in month t, α stands for constant, LEVERAGE is the ratio of total debt to total equity plus debt, SMB is the size mimicking portfolio, HML is the market-to-book-mimicking portfolio, MOMENTS is the momentum-mimicking portfolio, ExRM is the excess of the one-month UK Treasury discount bill over the FTSE All Share Index, and Tax is the effective corporate tax rate for year t. HI is the industry concentration measure for three-digit SIC industries. We estimate HI by calculating the sum of squared sales based on the market shares of all firms in that industry in a given year and then averaging over the past three years. ε_t is the error term. We estimate equation (6) both in the overall sample and in the various sectors. We estimate equation (6) both with firm- and portfolio-level variables. We conduct additional estimations in four subsamples: firms that do not pay tax and firms that do pay tax; firms that are in low concentration sectors and those in high concentration sectors.

2.3. Descriptive Statistics

Panel A in Table 1 presents the descriptive statistics. Mean and median returns are 0.28% and 0.33%, respectively. The distribution has a standard deviation of 3.68% and a range between -20.72% and 72.74%. The mean and median of the leverage are quite close, 27.96% and 26.7%, respectively. The standard deviation is 20.3% with a range between zero and 99.67%. All variables have high skewness and kurtosis coefficients and Jarque Bera test statistic rejects normality. We consider the properties of the sample in empirical estimations and use GMM estimators. In Table 1, Panel B reports the summary statistics for firm leverage for each risk class. The Utilities sector has the highest mean and median leverage of 45.08 and 46.7%, respectively. The mean and median leverage in the technology sector is the lowest with 17.25% and 10.2%, respectively.

***** insert table 1*****

3. Stock Returns and Leverage

Table 2 reports the results of the model used by MM when we estimate using equations (3) and (4). The coefficient estimate for leverage is negative and significant. The coefficient estimate for the squared term is not significant, indicating a linear relation. In the overall sample we find that for every 1% increase in leverage, returns will fall by -0.04%. Leverage coefficient is negative in the Consumer Goods, Consumer Services and Industrials sectors. For all other sectors, the coefficient estimates are not significant. For every 1% fall in leverage, returns will increase by 0.07% in the Consumer Goods sector. In the Industrials sector, returns increase by 0.03% for every 1% decrease in leverage. For every 1% decrease in leverage, returns will increase by 0.05% in the Consumer Services sector. A possible explanation for theses results could be that these sectors are not as capital intensive as other sectors such as Utilities; hence, their debt requirements would be relatively lower. Since these sectors are not regulated and highly competitive firms might try to maintain low leverage levels due to their industry characteristics (Ovtchinnikov, 2009).

***** insert table 2 *****

Table 3 reports the empirical results from our estimation of equation (5) in the full sample as well in the various risk classes. Explanatory variables comprise firm level values of leverage, risk, size, market-to-book ratio, tax, and Herfindahl Index (HI). The coefficient estimates for firm leverage remains negative (-0.02%), but the idiosyncratic factors have additional explanatory power. The coefficient estimate for tax is positive and for HI is negative. Firms that are on higher tax rates earn higher returns. Firms in more competitive industries with smaller concentration ratios earn higher returns.

***** insert table 3*****

We repeat the estimations for each risk class. For firms in Consumer Goods, Consumer Services, and Industrials, the coefficient estimates for leverage are negative at -0.03%, -0.01%, and -0.02.%, respectively. The coefficient estimate for leverage is positive, 0.03%, in the Utilities sector, which is comparable to the results obtained by MM (1958). For every 1% increase in the leverage in the Utilities sector, returns increase by 0.03%. In MM (1958), the coefficient estimate for leverage in the Utilities sector was 0.01%. This positive coefficient may be due to the fact that Utilities represent a concentrated, regulated sector that insulates these firms from distress risk. The coefficient estimates for tax is positive in Consumer Goods, Consumer Services, Oil and Gas and Telecoms industries. The coefficient estimates for concentration ratio (HI) is positive in Basic Materials, Healthcare, Oil and Gas, Telecoms, and Utilities, indicating that in these sectors, as the industry becomes more concentrated, returns increase.

Table 4 reports the empirical results of equation (6) in the full sample as well in the various risk classes. In the overall sample, the coefficient estimate for firm leverage remains negative, but the idiosyncratic factors have additional explanatory power. For every 1% fall in leverage, returns increase by 0.01%. The coefficient estimate for tax is positive, but the coefficient estimate for HI is not significant.

***** insert table 4*****

Next, we repeat the estimations of equation (6) for each risk class. We find that the coefficient estimate for leverage to be negative in the sectors of Basic Materials (-0.02%), Consumer Goods (-0.01%), Consumer Services (-0.01%), Industrials (-0.01%), Oil and Gas (-0.02%), Technology (-0.02%) and Telecommunications (-0.04%). We find that the coefficient estimate for leverage to be positive in the Healthcare and Utilities sectors (0.01%). The positive relation between leverage and stock returns in the Utilities sector is comparable to that of our findings at the firm level and the findings of MM. The coefficient estimates for tax is positive in the Consumer Goods, Consumer Services, and Technology sectors. The coefficient estimate for concentration ratio is negative in Consumer Goods and Consumer Services, industries indicating that returns increase as the industry becomes less concentrated. The coefficient estimate is positive in the Technology sector, indicating that returns increase as the sector becomes more concentrated.

Table 5 reports the results of equation (6) when we divide our sample into four subsamples of firms based on tax-paying and non-tax-paying firms and the degree of industry concentration as low and high. In Table 5, Panel A reports the results of firm level estimations for tax-paying firms and firms that do not pay taxes. The coefficient estimate for leverage is negative for tax-paying firms. The coefficient estimate for leverage is not significant for firms that do not pay taxes. The coefficient estimates for industry concentration (HI) and tax rate are both negative for tax-paying firms. The returns increase as the firm pays less tax and industry concentration is lower. When we conduct a portfolio-level analysis, we find that the coefficient estimate for leverage is negative for both the tax-paying firms and the firms that do not pay any tax. For firms that do not pay taxes, the coefficient estimate for industry concentration (HI) is negative indicating that returns increase as industry concentration decreases.

Panel B in Table 5 reports the results for firms in low- and high-concentration industries. The coefficient estimate for leverage is negative (-0.02%) for low-concentration firms. The coefficient estimate for leverage is non-significant for high-concentration firms. For both groups of firms, the coefficient estimates for industry concentration (HI) are negative and coefficient estimates for tax is positive. Firms in low-concentration industries and firms that pay higher taxes earn higher returns. In our portfolio-level analysis, we find that the coefficient estimate for leverage is negative both for low- and high-concentration firms. For low-concentration firms, the coefficient estimate for industry concentration (HI) is negative, indicating that as industry concentration declines returns increase. For high-concentration firms, the coefficient estimate for tax is positive, indicating that as tax rate increases returns increase.

***** insert table 5*****

4. Conclusion

We empirically test the MM Proposition II, which postulates that returns to equity increase with leverage and that the relation is linear. MM show that returns increase in leverage in the Utilities and Oil and Gas sectors. We too find that returns increase in the Utilities sector. We also show the relation is linear. However, our other results are different. We show that leverage has a negative relation to stock returns. The relation is negative in the cross section of all firms and in most other risk classes. This negative relation is due to the nature of industry and the tax firms effectively pay. Tax-paying firms and firms in low-concentration industries exhibit a negative relation between their leverage and their stock returns. Our results are robust to the level of analysis and other risk factors.

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Table 1: Summary Statistics

This table presents the descriptive statistics for our sample. We have a total of 10,194 year end observations for a sample of 788 companies for the period 1980-2008. We calculate stock returns for each company on a monthly basis in excess of the risk-free rate and define them as the percentage difference of consecutive closing prices that we adjust for dividends, splits, and rights issues. The risk free rate is the one-month UK Treasury discount bill. We obtain all data from Datastream (LDN: FT).The returns are averaged from May of year *t* over a one-year period. Leverage is observed as of beginning of May of year *t* (Datastream Code: WC08221).It represents the total debt to total financing of the firm and is defined as in equation (1). The market-to-book value (Datastream code: MTBV) of companies is the share prices of companies divided by the net book value and is observed as of beginning of May of year *t*. The market value (Datastream code: MV) of companies represent the size factor of companies in the sample. This is the share price multiplied by the number of ordinary shares in issue as of beginning of May of year *t*. The market risk measure is the beta coefficients estimated over 5 years using monthly data and is observed as of beginning of May of year *t*. Tax is the marginal corporate tax rate for year *t-1*. The Herfindahl Index (HI) refers to the degree of concentration of firms. It is estimated by calculating the sum of squared sales based market shares of all firms in that industry in a given year and then averaging over the past three years. All non-financial companies listed on London Stock Exchange (LSE) which meet the criteria of the data requirements for the research study are classified into the industrial sectors they are engaged in. According to the SIC industry classification, the 9 main industries are oil &gas (0001),basic materials(1000), industrials(2000), consumer goods(3000), healthcare(4000), consumer services(5000), telecommunications(6000), utilities(7000) and technology(9000).

Panel A : Full Sample

	Returns	Leverage	Market-to-Book	Size	Risk	Tax	AvgHI
Mean	0.28	27.85	3.91	2.20	0.88	0.27	1211.78
Median	0.33	26.73	1.92	2.11	0.84	0.30	700.70
Std dev.	3.68	20.29	36.81	0.80	-2.53	0.14	1175.70
Kurtosis	22.95	3.04	3.03	3.03	11.76	4.19	10.08
Skewness	1.10	0.60	0.55	0.55	1.38	1.38	2.33
Minimum	-20.72	0.00	0.06	0.06	-2.52	0.00	330.53
Maximum	72.73	99.67	5.26	5.25	7.03	0.89	9741.05
JB statistic	171053.00	610.92	226.00	516.53	35826.00	603.50	30486.2

Panel B: Firm Leverage in each risk class

	Oil&Gas	Basic Materials	Industrials	Consumer Goods	Healthcare	Consumer Services	Telecommunications	Utilities	Techn
Mean	23.21	27.07	29.25	28.39	25.41	26.98	27.03	45.08	17
Median	21.43	26.92	28.56	27.79	22.59	24.23	25.72	46.74	10
Std dev.	18.17	16.65	19.47	19.21	20.57	21.91	21.58	20.66	19
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.
Maximum	97.38	97.15	99.67	91.69	89.06	98.88	91.43	93.81	9(

Table 2: Stock Returns, Leverage and Linearity

This table presents the regression results of leverage and its square as independent variables with returns. We have a total of 10194 year end observations for a sample of 788 companies for the period 1980-2008. All non-financial companies listed on London Stock Exchange (LSE) which meet the criteria of the data requirements for the research study are classified into 9 main industries; oil&gas (0001),basic materials(1000),industrials(2000),consumer goods(3000), healthcare(4000), consumer services(5000), telecommunications(6000), utilities(7000) and technology(9000). We use GMM estimators and fixed effects for firms with weights in the cross-sections to undertake the regressions. Stock returns for each company are calculated on a monthly basis in excess of the risk-free rate and defined as the percentage difference of consecutive closing prices that were adjusted for dividends, splits and rights issues. The risk free rate is the 1 month UK Treasury discount bill and is obtained from Datastream (LDN:FT).The returns are averaged from May of year *t* over a one-year period. Leverage is observed as of beginning of May of year *t* (Datastream Code: WC08221).It represents the total debt to total financing of the firm and is defined as in equation (1). *** represents significance at 1%, **represents significance at 5% and * represents significance at 10%

	LEVERAGE	SQUARE LEVERAGE
Overall Sample	-0.04***	0.01
Basic Materials	0.09	0.02
Consumer Goods	-0.07***	0.01
Consumer Services	-0.05***	0.00
Healthcare	0.01	0.03
Industrials	-0.03***	0.03
Oil&Gas	-0.03	0.02
Technology	0.09	0.01
Telecoms	0.04	0.02
Utilities	0.01	0.03

Table 3: Firm Level Analysis of Stock Returns and Leverage

This table reports the cross-sectional regression results on average stock returns and leverage, size, market-to-book ratios, market risk (beta) and industry sector classifications. We have a total of 10194 year end observations for a sample of 788 companies for the period 1980-2008.All non-financial companies listed on London Stock Exchange (LSE) which meet the criteria of the data requirements for the research study are classified into 9 main industries; oil&gas(0001),basic-materials(1000),industrials(2000),consumer-goods(3000),healthcare(4000),consumer-services(5000), telecommunications(6000), utilities(7000) and technology(9000). We use GMM estimators and fixed effects for firms with weights in the cross-sections to undertake the regressions. Stock returns for each company are calculated on a monthly basis in excess of the risk-free rate and is defined as the percentage difference of consecutive closing prices that were adjusted for dividends, splits and rights issues. The risk free rate is the 1 month UK Treasury discount bill and is obtained from Datastream (LDN:FT).The returns are averaged monthly from May of year *t* over a one-year period. Leverage is observed as of beginning of May of year *t* (Datastream Code: WC08221).It represents the total debt to total financing of the firm and is defined as in equation (1). Market-to-Book ratio (Datastream code: MTBV) represents price divided by its net book value. Size (Datastream code: MV) represents the market capitalisation of the companies. Market risk (beta) is the beta coefficients estimated over 5 years using monthly data. Tax is the firms' marginal corporate tax rate for year *t-1*. The Herfindahl Index (HI) refers to the degree of concentration of firms. It is estimated by calculating the sum of squared sales based market shares of all firms in that industry in a given year and then averaging over the past three years.*** represents significance at 1%, **represents significance at 5% and * represents significance at 10%

	No of	C	Leverage	Size	Market-to-Book	Risk	Tax	HI
Overall Sample	**Observations**							
	10194	0.9***	-0.02***					
	10194	5.7***	-0.01***	-2.27***	-0.01***	-0.07		
	10194	6.81***	-0.01***	-2.47***	-0.01***	-0.12	0.68***	-0.01***
Sectors								
Basic Materials	585	13.14***	0.03	-1.52***	-1.25	-1.25	-1.62	0.01***
Consumer Goods	1316	6.26***	-0.03***	-0.73***	0.01	-0.57**	1.69*	0
Consumer Services	2370	6.47***	-0.01***	-1.18***	-0.01***	-0.12	1.41*	0.00
Healthcare	312	8.55***	-0.02	-2.13***	-0.05	0.18	-3.72	0.01***
Industrials	4457	10.22***	-0.02***	-1.42***	-0.01***	0.14	0.63	0
Oil&Gas	260	6.32***	-0.02	-0.82***	-0.12	0.74	5.30***	0.00***
Technology	528	9.24***	-0.02	-2.31***	-0.03**	0.07	3.04	0.00
Telecoms	178	14.44***	0.03	-1.92***	-0.05	-0.62	6.79***	0.01*
Utilities	188	9.77***	0.03***	-1.35***	0.00	0.10	-0.71	0.01***

Table 4: Portfolio Level Analysis of Stock Returns and Leverage

This table reports the time-series regression results on monthly stock returns, leverage and Fama-French risk factors of size, market-to-book, market risk and momentum factor. We have a total of 10194 month end observations for a sample of 788 companies for the period 1980-2008.All non-financial companies listed on London Stock Exchange (LSE) which meet the criteria of the data requirements for the research study are classified into 9 main industries; oil&gas (0001), basic materials (1000), industrials (2000), consumer-goods (3000), healthcare (4000), consumer-services (5000), telecommunications (6000), utilities (7000) and technology (9000). Stock returns for each company are calculated on a monthly basis in excess of the risk-free rate and defined as the percentage difference of consecutive closing prices that were adjusted for dividends, splits and rights issues. The risk free rate is the 1 month UK Treasury discount bill and is obtained from Datastream (LDN: FT). Leverage is observed as of beginning of May of year *t* (Datastream Code: WC08221). It represents the total debt to total financing of the firm and is defined as in equation (1). SMB and HML are Fama-French factor-mimicking portfolios for size and market-to-book. SMB is the size-factor mimicking portfolio for the returns on small minus big stocks. HML is the market-to-book mimicking portfolio for the returns of high minus low market-to-book stocks and ExRM is the excess of the 1 month UK Treasury discount bill over the FTSE All Share Index. Moments are the momentum factor-mimicking portfolios for the returns of high minus low momentum. Tax is the firms' marginal corporate tax rate for year *t-1*. The Herfindahl Index (HI) refers to the degree of concentration of firms. It is estimated by calculating the sum of squared sales based market shares of all firms in that industry in a given year and then averaging over the past three years.*** represents significance at 1%, **represents significance at 5% and * represents significance at 10%

	No of Observations	C	Leverage	SMB	HML	ExRM	MOMENTS	Tax	HI
Overall Sample									
	151516	-1.92***	-0.01***	0.74***	0.03***	0.98***	0.11***		
	151516	-2.13***	-0.01***	0.74***	0.03***	0.98***	0.11***	0.71***	
	151516	-1.89***	-0.01***	0.74***	0.03***	0.98***	0.11***		0
	151516	2.11***	0.01***	0.74***	0.03***	0.98***	0.10***	0.70***	0
Sectors									
Basic Materials	8212	0.18	-0.02***	0.49***	-0.16***	0.97***	0.07***	0.20	00
Consumer Goods	18784	0.60	-0.01***	0.56***	-0.21***	0.82***	0.11***	1.30***	-0.01***
Consumer Services	35689	-1.20**	-0.01***	0.76***	0.10***	0.93***	0.10***	0.93***	-0.01***
Healthcare	6039	-2.68*	0.02**	0.93***	0.29***	0.99***	0.10***	-0.55	0.01
Industrials	63372	-1.05***	-0.01***	0.67***	-0.15***	1.02***	0.12***	0.20	0
Oil&Gas	4067	2.08	-0.02*	0.75***	-0.19***	0.96***	0.01	1.42	0
Technology	9559	-4.44***	-0.02***	1.64***	1.09***	1.28***	0.11***	1.95***	0.01***
Telecoms	3239	-6.48***	-0.04***	0.90***	0.79***	1.33***	0.21***	4.14	0
Utilities	2555	1.51	0.01*	-0.05	-0.25***	0.47***	-0.06*	-0.44	0.01

Table 5: Stock Returns and Leverage for Tax Paying and Non-Tax Paying Firms and Firms in Low and High Concentration industries

Panel A of this table reports the firm level and portfolio level regression results on monthly stock returns, leverage, size, market-to-book, risk, industry concentration, tax on firms that pay zero tax versus firms that pay a tax rate greater than zero. Panel B reports the firm level and portfolio level regression results on monthly stock returns, leverage, size, market-to-book, risk, industry concentration, tax on firms in low and high concentration sectors.We have a total of 10194 month end observations for a sample of 788 companies for the period 1980-2008.All non-financial companies listed on London Stock Exchange (LSE) which meet the criteria of the data requirements for the research study are classified into 9 main industries; oil&gas (0001),basic materials(1000),industrials(2000),consumer-goods(3000),healthcare(4000),consumer-services (5000), telecommunications(6000),utilities(7000) and technology(9000). Stock returns for each company are calculated on a monthly basis in excess of the risk-free rate and defined as the percentage difference of consecutive closing prices that were adjusted for dividends, splits and rights issues. The risk free rate is the 1 month UK Treasury discount bill and is obtained from Datastream (LDN: FT). Leverage is observed as of beginning of May of year t (Datastream Code: WC08221). It represents the total debt to total financing of the firm and is defined as in equation (1).Market-to-Book ratio (Datastream code: MTBV) represents price divided by its net book value. Size (Datastream code: MV) represents the market capitalisation of the companies. Risk (beta) is the beta coefficients estimated over 5 years using monthly data. SMB and HML are Fama-French factor-mimicking portfolios for size and market-to-book. The Herfindahl Index (HI) refers to the degree of concentration of firms. It is estimated by calculating the sum of squared sales based market shares of all firms in that industry in a given year and then averaging over the past three years. Low concentration firms range from 0-1800 and high concentration firms are those that range from 1800-10000. Tax is the firms' marginal corporate tax rate for year *t-1*. SMB is the size-factor mimicking portfolio for the returns on small minus big stocks. HML is the market-to-book mimicking portfolio for the returns of high minus low market-to-book stocks and ExRM is the excess of the 1 month UK Treasury discount bill over the FTSE All Share Index. Moments are the momentum factor-mimicking portfolios for the returns of high minus low momentum. *** represents significance at 1%, **represents significance at 5% and * represents significance at 10%.

Panel A

Firm Analysis	Tax Rate=0	Taxrate>0	Portfolio Analysis	Tax Rate=0	Taxrate>0
C	11.87***	6.71***	**C**	-3.03***	-1.86***
Leverage	0.02	-0.02***	**Leverage**	-0.01***	-0.01***
Size	-6.88***	-2.22***	**ExRm**	1.16***	0.96***
Market-to-Book	-0.01	-0.01***	**SMB**	1.30***	0.67
Betas	-0.51	-0.10	**HML**	0.18***	0.01
HI	0.01	-0.01***	**MOMENT**	0.16***	0.10***
TAX		-0.13***	**HI**	-0.01***	0
			TAX		0.26

Panel B

Firm Analysis	Low Concentration	High Concentration	Portfolio Analysis	Low Concentration	High Concentration
C	9.44***	11.51***	**C**	-1.75***	-2.60***
Leverage	-0.02***	0.01	**Leverage**	-0.01***	-0.01***
Size	-2.95***	-3.96***	**ExRm**	0.97***	1.03***
Market-to-Book	-0.01***	-0.03***	**SMB**	0.70***	0.87***
Betas	-0.06	-0.45*	**HML**	-0.07***	0.35***
HI	-0.01***	-0.01***	**MOMENT**	0.12***	0.09***
TAX	0.82***	1.39***	**HI**	-0.01***	0
			TAX	0.31	2.05***

Appendix 1 Industry Classification

Code	Industry	Sector
1	Oil and gas	Oil & Gas Producers
		Oil Equipment & Services
1000	Basic Materials	Chemicals
		Forestry & Paper
		Industrial Metals
		Mining
2000	Industrials	Construction & Materials
		Aerospace & Defense
		General Industries
		Electronic & Electric Equipment
		Industrial Engineering
		Industrial Transportation
		Support Services
3000	Consumer Goods	Automobiles & Parts
		Beverages
		Food Producers
		Household Goods
		Leisure Goods
		Personal Goods
4000	Healthcare	Healthcare Equipment & Services
		Pharmaceuticals & Biotechnology
5000	Consumer Services	Food & Drug Retailers
		General Retailers
		Media
		Travel & Leisure
6000	Telecommunications	Fixed Line Telecommunications
		Mobile Telecommunications
7000	Utilities	Electricity
		Gas, Water & Multi utilities
9000	Technology	Software & Computer Services
		Technology Hardware & Equipment

MOODY'S INVESTORS SERVICE

Credit Opinion: Hydro-Québec

Global Credit Research - 06 Aug 2012

Quebec, Canada

Ratings

Category	Moody's Rating
Outlook	Stable
Bkd Senior Unsecured	Aa2
Bkd Commercial Paper	P-1
Bkd Other Short Term	(P)P-1

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Key Indicators

Hydro-Québec[1]

	[2]LTM	2011	2010	2009	2008
(CFO Pre-W/C + Interest) / Interest Expense	2.8x	2.8x	2.6x	2.9x	2.8x
(CFO Pre-W/C) / Debt	11.4%	11.6%	11.7%	13.1%	14.0%
(CFO Pre-W/C - Dividends) / Debt	7.0%	7.3%	6.2%	7.2%	8.2%
Debt / Book Capitalization [3]	74.7%	76.4%	72.2%	70.5%	62.7%

Source: Moody's Financial Metrics TM

[1] All ratios are calculated using Moody's Standard Adjustments. In addition, Moody's adjusts for one-time items. [2] LTM = last twelve months to March 31, 2012. [3] Debt to Capitalization figures from 2009 onward reflect the change in HQ's accounting policy for depreciation policy effective January 1, 2010. Results for 2008 and earlier periods have not been restated to reflect the accounting policy change.

Note: For definitions of Moody's most common ratio terms please see the accompanying *User's Guide*.

Opinion

Rating Drivers

Rating Methodology for Government Related Issuers

Combination of stable, low-return, regulated transmission & distribution operations with more profitable, volatile, unregulated power generation

Relatively weak key financial metrics

Satisfactory liquidity

Corporate Profile

Hydro-Québec (HQ) is a vertically integrated electric utility wholly-owned by the Government of Québec (Aa2) with approximately 37,000 MW of installed capacity producing among the lowest electricity rates in North America. It is a key component of the Province's industrial strategy and the Province guarantees HQ's long-term debt, commercial paper (CP) and US$2 billion revolving credit facility. HQ's generation, transmission and distribution assets are organized into three principal divisions: HQ Production (HQP), HQ Distribution (HQD) and HQ TransÉnergie (HQT). HQP is unregulated, while HQD and HQT are regulated by Québec's Régie de l'énergie (Régie).

SUMMARY RATING RATIONALE

HQ's Aa2 rating is identical to the Province's rating as the Province guarantees HQ's debt. HQ's Baa1 Baseline Credit Assessment (BCA) is primarily driven by the company's massive, low cost, renewable hydro-electric facilities and transmission infrastructure that distributes the power in both Quebec and also, very profitably, into the US and neighbouring jurisdictions. These relative credit strengths are balanced by HQ's relatively weak financial profile, hydrology risk and exposure to unregulated energy market volatility on export sales.

DETAILED RATING CONSIDERATIONS

RATING METHODOLOGY FOR GOVERNMENT RELATED ISSUERS

The Province of Quebec's explicit guarantee of HQ's debt means that HQ is rated the same as the Province (Aa2). In addition, we evaluate HQ's BCA, which is 8 (on a scale of 1 to 21, where 1 represents the equivalent risk of Aaa, 2/Aa1, 3/Aa2 and so forth) and equivalent to Baa1. In addition to the explicit guarantee of the Province, we also believe that the Province and HQ have a high default dependence and, even without the guarantee, we would expect there to be a high probability of extraordinary support from the Province given HQ's importance to Quebec's economy, its operating and financial proximity to the government, as well as its key role in the provincial government's economic development and financial strategy.

HQ's BCA of 8, which is one notch higher than the BCA indicated by our Regulated Electric and Gas Utility rating methodology, is driven by the following:

COMBINATION OF STABLE, LOW-RETURN, REGULATED TRANSMISSION & DISTRIBUTION OPERATIONS WITH MORE PROFITABLE, VOLATILE, UNREGULATED POWER GENERATION

HQ's T&D assets operate in a supportive, stable regulatory environment with limited regulatory lag. However, HQ's allowed ROE and deemed equity are low in comparison to other Canadian utilities and international peers. HQ's 2012 Distribution rates reflect an allowed ROE of 6.37% - approximately 1.4% lower than what was requested by the company - and deemed equity of 35%. Transmission rates for 2012 incorporate an allowed ROE of 6.39% and deemed equity of 30%. The relatively low allowed ROE's are mitigated by the fact that HQD and HQT have been able to earn up to 4% more than their allowed returns.

We expect that HQ's regulated divisions will continue to be able to recover prudently incurred costs; although extraordinary costs related to energy efficiency measures and weather are amortized over extended periods of 10 and 5 years respectively.

HQP generates approximately 65% of HQ's consolidated net income. Hydro-electric generation assets represent over 95% of HQP's installed capacity of nearly 37,000 MW. According to the provisions of the Hydro-Québec Act, HQP is required to provide HQD with up to 165 TWh of electricity annually, at an average price of 2.79 cents / kWh. We view the risk profile of this `heritage pool' obligation, which represented roughly 84% of HQP's 197 TWh of net sales in 2011, as similar to that of a regulated utility since demand is virtually certain and the price at which the heritage volumes are sold is supported by a combination of legislation and regulation.

HQP sells any net production in excess of its heritage pool obligations in both export markets and the Quebec domestic market. In recent years export sales have represented between 15% (2011) and 31% (2008) of HQ's reported consolidated net income. The cash flow contribution of export sales is subject to hydrology risk, market price risk and exchange rate fluctuations. Weaker 2011 income from export sales reflects a combination of softer power prices driven by historically low natural gas, warm weather and the strong Canadian dollar. Given the likely persistence of these drivers, revenue from exports is expected to remain below expectations in the short to medium term. HQP's ongoing multi-billion dollar investments in projects like the Eastmain-1-A/Sarcelle/Rupert project and the

Romaine complex project will significantly expand its generation capacity and the amount of energy available for export. This will position the company to benefit from eventual North American carbon legislation.

HQP's exports are managed conservatively. As one of the lowest cost generators in North America, with operational flexibility provided by its energy storage capability, HQP's export sales will be profitable in virtually any market price environment and generate a positive cash flow contribution - provided HQP's reservoirs remain above the company's acceptable minimum levels. The company restricts the majority of its export sales to relatively short tenors so that exports can be curtailed during periods of poor hydrology.

The Province's energy plan calls for the integration of up to 4,000 MW of wind-generation from independent power producers (IPP) into the grid by 2015. This is expected to provide some modest diversification of hydrologic risk.

RELATIVELY WEAK KEY FINANCIAL METRICS

Although HQ's low-risk, regulated assets generate stable and predictable funds from operations and its unregulated generation businesses earn strong returns, we expect HQ's financial metrics to remain relatively weak for the next few years. The weakness reflects a number of factors including allowed ROEs which are among the lowest in Canada, ongoing high levels of capital spending on projects which generate little to no cash flow until completed and placed into service, weak power prices and the January 1, 2010 change in HQ's accounting depreciation policy . We view the accounting change as having no impact on HQ's fundamental credit profile, notwithstanding that it has contributed to the increase in HQ's reported debt to capitalization.

HQP's export sales have historically allowed HQ to achieve ROEs in the 11 to 14% range, well in excess of the allowed ROEs applicable to HQ's regulated activities. Also contributing to HQ's achieved ROEs, and the low cost of electricity in Québec, is HQ's status as a crown corporation exempt from income taxes.

In the medium-term we expect HQ's financial ratios to improve as generation projects currently under construction are completed and begin generating revenue, the heritage contract price is increased to 3.79 cents/kWh from 2.79 cents/kWh between 2014 and 2018 and power prices eventually recover. However, the current weakness in HQ's financial ratios causes the company to map more closely to a BCA of 9 (Baa2) than to the currently assigned 8 (Baa1). That said, absent material deterioration in HQ's financial or business profile, we do not foresee a change in the existing BCA of 8.

SATISFACTORY LIQUIDITY

HQ has sufficient resources under our liquidity stress scenario.

While HQ's US$2 billion committed syndicated credit facility does not provide full coverage of the company's US$3.5 billion CP program, HQ's short-term rating is Prime-1. This is based on the Province's guarantee of HQ's commercial paper notes and the bank CP back up facility, as well as the fact that HQ rarely, if ever, issues commercial paper up to the program limit. Our views on HQ's liquidity resources also consider HQ's strong and stable cash flows, conservative cash management policies and superior debt market access. Furthermore, we recognize that HQ also has the ability to manage its liquidity by drawing down a portion of the energy stored in its reservoirs, deferring a portion of its capital expenditures or reducing dividends to the Province.

After capital expenditures of about $4.4 billion, we expect HQ to have negative free cash flow of approximately $1 billion for the twelve months to September 30, 2013. Together with scheduled debt maturities prior to September 30, 2013 of roughly $1.5 billion, this indicates a gross funding requirement of about $2.5 billion. Net of $640 million cash and cash equivalents on hand at March 31, 2012, we estimate that HQ has a net funding requirement of approximately $2 billion which would be covered by HQ's $2 billion credit facility.

Rating Outlook

HQ's rating outlook is stable, reflecting the stable outlook of the guarantor, the Province of Québec. Given the Province's explicit guarantee of HQ's long-term debt, HQ's senior unsecured rating is insensitive to changes in the BCA. We believe that the Province of Québec will continue to maintain 100% ownership of HQ for the foreseeable future.

What Could Change the Rating - Up

The BCA could be positively impacted by a material and sustainable improvement in HQ's financial profile although the senior unsecured rating would only be positively impacted by an upgrade of the guarantor.

What Could Change the Rating - Down

HQ's BCA could be negatively impacted by deterioration in HQ's financial profile or an increase in the level of business risk associated with HQP's energy trading activities. HQ's senior unsecured rating would be negatively impacted by a reduction in the rating of the Province of Québec or any policy change that results in a change in ownership and/or the structure of the guarantee for future debts.

Rating Factors

Hydro-Québec

Regulated Electric and Gas Utilities Industry [1][2]	**Current**		**[3]Moody's 12-18 month Forward View As of 07/20/2012**	
Factor 1: Regulatory Framework (25%)	**Measure**	**Score**	**Measure**	**Score**
a) Regulatory Framework		A		A
Factor 2: Ability To Recover Costs And Earn Returns (25%)				
a) Ability To Recover Costs And Earn Returns		Baa		Baa
Factor 3: Diversification (10%)				
a) Market Position (10%)		Baa		Baa
b) Generation and Fuel Diversity (0%)		A		A
Factor 4: Fin. Strength, Liquidity And Key Fin. Metrics (40%)				
a) Liquidity (10%)		Baa		Baa
b) CFO pre-WC + Interest/ Interest (3 Year Avg) (7.5%)	2.7x	Baa3	2.7x - 3.0x	Baa
c) CFO pre-WC / Debt (3 Year Avg) (7.5%)	11.7%	Ba1	12.0% - 13.0%	Ba
d) CFO pre-WC - Dividends / Debt (3 Year Avg) (7.5%)	6.9%	Ba1	6.0% - 9.0%	Ba
e) Debt/Capitalization (3 Year Avg) (7.5%)	71.8%	B3	70.0% - 75.0%	B
Rating:				
a) Indicated Baseline Credit Assessment from Methodology Grid		9 (Baa2)		9 (Baa2)
b) Actual Baseline Credit Assessment Assigned				8 (Baa1)

Source: Moody's Financial Metrics.

[1] All ratios are calculated using Moody's Standard Adjustments. [2] Financial ratios reflect three year averages for 2009, 2010 and 2011. [3] This represents Moody's forward view; not the view of the issuer; and unless noted in the text, does not incorporate significant acquisitions and divestitures.

Investments by Regulated Public Utilities

Sean Bird
Deloitte & Touche LLP

Mike Reno
Deloitte Tax LLP

9/20/11

Agenda

- How rates are set
- Impact of renewable energy investments on rates
  - Long-term power purchase agreement
  - Owning a generation facility
- Accounting and ratemaking restrictions for ITC and Treasury grants
- Impact of credits and grants on modeling by IPPs and regulated utilities
- Whether to build or buy and seeking regulatory approval

How Rates Are Set

The Ratemaking Formula and Its Components

Rate base

x Allowed rate of return

= Required return (i.e., operating income)

+ Operating expenses (e.g., depreciation, taxes)

= Revenue requirement*

*Total amount which must be collected in rates for the utility to recover its prudently incurred costs and earn a fair return

Rate Base

- Consists of the amount of the company investors' investment in net utility plant and other items such as regulatory assets and working capital devoted to the rendering of utility service upon which a fair return may be earned
- Potentially excludes CWIP, non-utility property, plant acquisition adjustment and plant held for future use
- Deductions from rate base are made for investments in net utility plant and other assets funded by others, such as customers and the government
- Analyze balance sheet
  - Funded by investors
  - Funded by others

Rate of Return

- Percent which the commission finds should be earned on rate base in order to recover the cost of debt and equity
- Rate of return usually refers to the rate of return on rate base required to recover:
  - Cost of debt
  - Cost of equity
  - Other
- The total dollar amount of return, or earnings, is calculated by multiplying the percentage rate of return by the utility's total dollar amount of rate base
- Returns are normally permitted, not guarantees or caps
- Analyze capital structure

Rate of Return

- Utility’s earned rate of return can vary from its authorized rate of return for a variety of reasons
  - Interest rate fluctuations
  - Inflation
  - Budgeting and cost-control efforts of the utility
  - Weather

Operating Expenses

- Allowable operating expenses include operation, maintenance, depreciation and taxes
  - Interest expense is excluded from operating expenses because it is considered in the rate of return element of the formula
  - Referred to as above-the-line costs
- Analyze income statement

Operating Expenses

- Requirements for inclusion of costs in revenue requirement
  - Jurisdictional
  - Utility vs. non-utility
  - Costs must be just and reasonable
  - Costs must be prudently incurred
  - Cost adjustments must be known and measurable
  - Reflective of known changes
  - Reflective of normal operations
  - Consistent with rate base
  - Consistent with regulatory accounting

Revenue Requirement

- **Required Revenue** is the total amount which must be collected from customers in rates in order for the utility to recover its costs, including the allowed equity return
- **Rate Design** refers to the allocation of the revenue requirement among the classes of customers

Above-the-line Costs

Operating revenues		$1,500,000
Operating expenses:		
Cost of gas sold	$ 856,000	
Cost of fuel and **purchased power**	144,000	
Operating and maintenance	160,000	
Administrative and general	90,000	
Depreciation	10,000	
General taxes	6,000	
Income taxes	43,300	
Total operating expenses		1,309,300
Operating income		$ 190,700

Below-the-line Costs

Operating income		$190,700
Other income and deductions:		
Non-regulated revenue	$ 1,000	
Interest income	500	
Allowance for equity funds	6,500	
Other deductions	(3,000)	
Taxes applicable to other income and deductions	(2,500)	
Other income and deductions-net		2,500
Income before interest charges		$193,200
Interest charges:		
Interest on debt	$109,000	
Allowance for borrowed funds	(5,800)	
Interest charges-net		103,200
Net income		$ 90,000

Tax-on-tax Gross-up Formula – Federal Items and Allowed Equity Return

- Required revenue is the total amount which must be collected from customers in rates in order for the utility to recover its costs, including the allowed equity return and income taxes
- Allowed equity return must be grossed-up for taxes:

$$\frac{\text{Equity Return}}{1 - \text{Tax Rate*}} = \text{Gross-up for Equity Return and Taxes}$$

*Based on composite statutory federal/state tax rates

- Example:

Allowed Equity Return = $3,000,000

$3,000,000 / (1 – 40%) = $5,000,000

Rate Base Components
Income Taxes

- Accumulated Deferred Income Taxes* – represents the deferred federal income taxes resulting from tax normalization and is considered a source of interest-free funds (i.e., cost-free capital) provided by the U.S. Treasury to the utility
  - Accumulated deferred income taxes balance deducted from rate base, or
  - Accumulated deferred income taxes balance included in the capital structure of the utility at zero cost when computing the rate of return

*Referred to as Deferred Tax Liabilities under SFAS No. 109 and ASC 740 and also includes deferred state income taxes.

Rate Base Components
Income Taxes

- Accumulated Deferred Investment Tax Credits (ADITC)
  - The accounting and ratemaking treatment for ITC is largely dictated by former Internal Revenue Code (IRC) Sections 46(f)(1) and 46(f)(2)
  - The IRC permits sharing of ITC benefits between utility investors and customers either as
    - Option 1 - ADITC rate base reduction, with no amortization through operating expenses (i.e., regulatory income tax expense)

    -OR-

    - Option 2 - Amortization of ITC "above-the-line" as a reduction in operating expenses (i.e., regulatory income tax expense). No rate base reduction. Option 2 deferred ITC should earn at least the overall cost of capital if included in the capital structure

Impact of Renewable Energy Investments on Rates

Impact of Renewable Energy Investments on Rates

- Long-term power purchase agreements (PPAs)
- Owning a generation facility

Impact of Renewable Energy Investments on Rates

	Long-term PPA	Plant Ownership
Amounts included in operating costs	Purchase price for power	Depreciation, repairs, taxes, etc.
Impact of PTC, ITC or Treasury grants on regulatory tax expense	None	If Option 2, reduces recoverable income tax or depreciation expense on a grossed-up basis
Amounts included in rate base	None	Undepreciated book value of plant. If Option 1, reduce rate base by unamortized ITC/grant.
Impact on equity return, book income, EPS	None	Increase

Issues in Evaluating Whether to Buy or Build

- Impact to shareholders
- Impact to ratepayers
- RFP and regulatory approval process

Accounting and Ratemaking Restrictions for ITC and Treasury Grants

ITC Normalization Requirements

- Normalization provisions require ITC benefits to be shared:
  - Between utilities and ratepayers
  - Between generations of ratepayers
- ITC benefit is spread over the regulatory life of property
  - Two main options are available for ratemaking
- Legislative intent
- Application to Treasury grants

Normalization of Treasury Grants

- ARRA Section 1603(f)* – Grants for specified energy property in lieu of tax credits

  APPLICATION OF CERTAIN RULES.—In making grants under this section, the Secretary of the Treasury shall apply rules similar to the rules of section 50 of the Internal Revenue Code of 1986. In applying such rules, if the property is disposed of, or otherwise ceases to be specified energy property, the Secretary of the Treasury shall provide for the recapture of the appropriate percentage of the grant amount in such manner as the Secretary of the Treasury determines appropriate.

- Treasury guidance (July 2009/March 2010)

  VIII. Miscellaneous Provisions, F. Applicability of Normalization Rules

  Payments received under the Section 1603 program must be normalized. See former IRC Section 46(f).

*American Recovery and Reinvestment Act of 2009 (P.L. 111-5) Section 1603

Normalization of Other Credits Section 50(d)

- CERTAIN RULES MADE APPLICABLE. -- For purposes of this subpart, rules similar to the rules of the following provisions (as in effect on the day before the date of the enactment of the Revenue Reconciliation Act of 1990) shall apply: ...
  - Section 46(f) (relating to limitation in case of certain regulated companies).
- Other applicable credits
  - Rehabilitation credit - Section 47
  - Energy credit* - Section 48
  - Qualifying advanced coal project credit - Section 48A
  - Qualifying gasification project credit - Section 48B
  - Qualifying advanced energy project credit – Section 48C

*Public utility property placed in service after February 13, 2008, in tax years ending after such date, qualifies.

ITC Normalization Requirements

- Former IRC Section 46(f)(1) - Option 1
  - Rate base offset for the balance of unamortized ITC
  - Rate base restoration not less rapidly than ratably over the regulatory depreciable lives of the associated property
    - Below-the-line amortization
  - No reduction of rate through cost of service (i.e., ratemaking income tax expense)
- Former IRC Section 46(f)(2) - Option 2
  - Reduction of rate through cost of service (i.e., ratemaking income tax expense) not more rapidly than ratably over depreciable life of property
  - No rate base offset for the balance of unamortized ITC

Impact of Owning a Renewable Energy Facility on the Tax Provision

- Long-term power purchase agreements (PPAs)
- Owning a generation facility
- Tax gross-up of credits
  - Recovering $1 of federal income tax through rates requires $1.54 of revenue (tax-on-tax effect)
  - Earning $1 of PTC results in a $1.54 reduction in the revenue requirement

Sharing PTCs with Ratepayers

- Periodic rate cases based on expected/normal operations
- Including PTCs as part of base rates without a true-up provision
- Sharing PTCs through rate adjustment clauses for fuel and/or purchased power
  - Generally reconciled at least annually
  - Regulatory liabilities for overcollected costs and regulatory assets for undercollected costs

Impact of ITC on Rates (Option 1)

Wages/salaries
Pension expense
Depreciation expense
Current FIT expense
Deferred FIT expense
<Refund of excess deferred taxes>
Fuel expense
Decommissioning costs
Other costs

Operating expenses

Plant
<Accumulated depreciation>
<Accumulated deferred FIT>
<Accumulated deferred ITC>

Rate base
X Rate of return

Operating income (return)

Revenue requirement

Impact of ITC on Rates (Option 2)

Wages/salaries
Pension expense
Depreciation expense
Current FIT expense
Deferred FIT expense
<Refund of excess deferred taxes>
<ITC amortization>
Fuel expense
Decommissioning costs
Other costs

Operating expenses

Plant
<Accumulated depreciation>
<Accumulated deferred FIT>

Rate base
X Rate of return

Return (operating income)

Revenue requirement

Intent of the ITC Normalization Requirements

- Congressional intent – regulated utilities should benefit from accelerated depreciation and investment tax credit, just like taxpayers in unregulated industries
  - Generally, higher customer rates in the short term
  - Sharing between utility shareholders and utility ratepayers
  - Sharing between current ratepayers and future ratepayers

- What was the Congressional intent in extending the ITC normalization requirements to Treasury grants?
  - Utility shareholders and utility ratepayers
  - Current ratepayers and future ratepayers

Consequences of a Normalization Violation

- Recapture of the greater of:
  - All ITC claimed during all open tax years
  - The unamortized ITC balance as of the date of the violation
- Requirement that violating taxpayers notify the District Director within 30 days of violation
  - Industry Director, Natural Resources and Construction
- How would the ITC normalization sanctions apply to violations involving Treasury grants?

Impact of Credits and Grants on Modeling by IPPs and Regulated Utilities

Regulatory Considerations – Normalization

- Modeling whether PTC or ITC/Treasury grants are more attractive to:
  - Ratepayers
  - Shareholders
- RFP to assess whether plant ownership or PPA is more advantageous to:
  - Ratepayers
  - Shareholders

How Independent Power Producers Model Investment and PPA Opportunities

- Cash flow modeling
  - PTC v. ITC v. Treasury grant
  - Income taxes are “just another cash flow”
    - Impact on return available to tax investors
    - Determining the flip point
- Bidding against other IPPs v. the local utility
  - Minimum acceptable return
  - Slightly lower than the price resulting from application of the normalization requirements

Owning a Renewable Energy Facility Tax and Tax Accounting Decisions

- Accounting for the deferred grant as a reduction to plant basis or as deferred revenue
  - Option 2 companies
  - Impact on property taxes?
- Deferred tax benefit associated with the net DTA for the basis reductions
  - Why rate-regulated utilities should not immediately recognize as the deferred tax benefit

Whether to Build or Buy and Seeking Regulatory Approval

Leveling the Playing Field

- Are there structures that can be employed to avoid by regulated utilities to circumvent the ratemaking (pricing) restrictions on ITC and Treasury grants?
  - Indirect normalization violations
    - Any ratemaking decision intended to achieve an effect similar to a direct reduction to cost of service or rate base
    - Reg. Sec. 1.46-6(b)(4)
  - Seeking a private letter ruling from the Internal Revenue Service
    - Pre-submission conference

Leveling the Playing Field

- Legislative proposals to limit the application of the normalization requirements to projects owned by utilities not subject to RPS thresholds
  - APPLICATION OF NORMALIZATION RULES. -- Paragraph (2) of section 50(d) shall not apply with respect to property placed in service by a person in the trade or business of furnishing or selling electrical energy if any law or regulation requires that not less than a certain amount of the electrical energy so furnished or sold by such person be derived from one or more renewable resources.

Questions?

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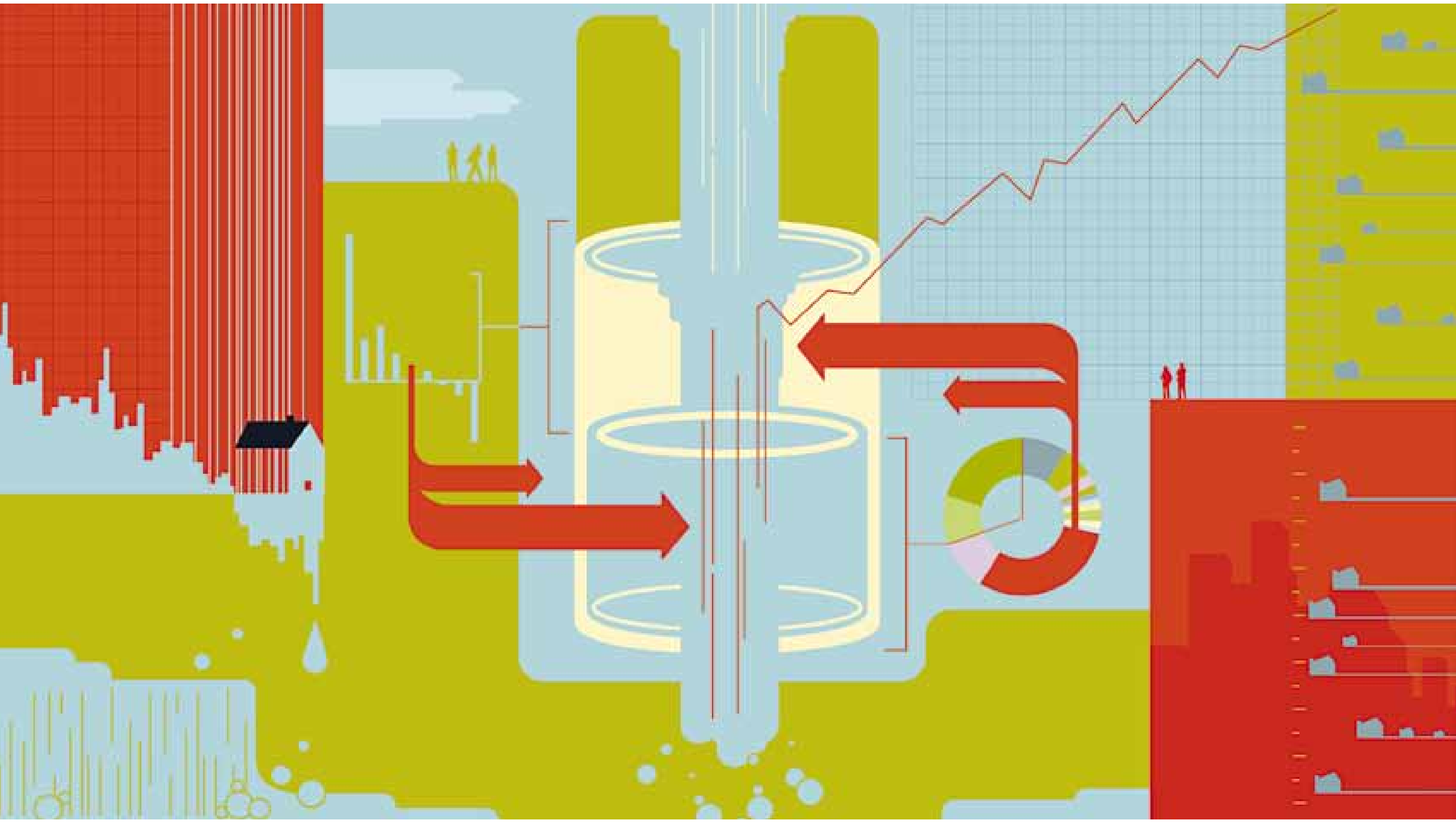

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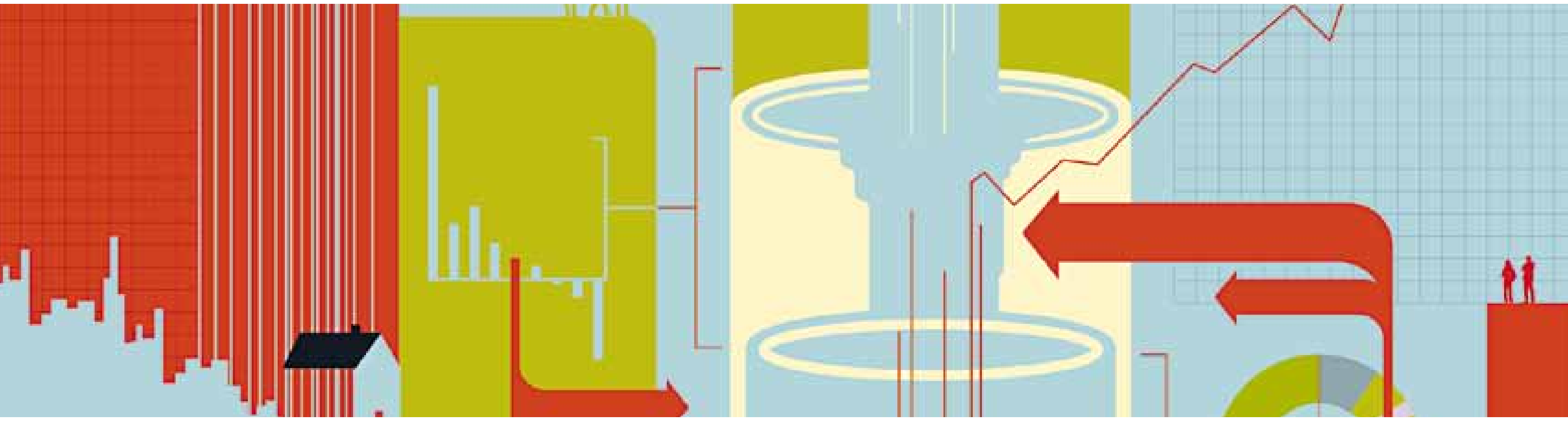


Why value value?

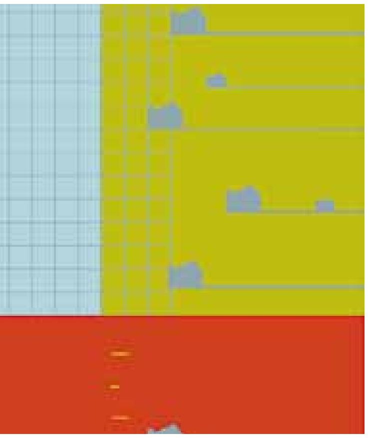
Companies, investors, and governments must relearn the guiding principles of value creation if they are to defend against future economic crises.

Timothy M. Koller

In response to the economic crisis that began in 2007, several serious thinkers have argued that our ideas about market economies must change fundamentally if we are to avoid similar crises in the future. Questioning previously accepted financial theory, they promote a new model, with more explicit regulation governing what companies and investors do, as well as new economic theories.

My view, however, is that neither regulation nor new theories will prevent future bubbles or crises. This is because past ones have occurred largely when companies, investors, and governments have forgotten how investments create value, how to measure value properly, or both. The result has been a misunderstanding about which investments are creating real value—a misunderstanding that persists until value-destroying investments have triggered a crisis.

Accordingly, I believe that relearning how to create and measure value in the tried-and-true fashion is an essential step toward creating more secure economies and defending ourselves against future crises. The guiding principle of value creation is that companies create value by using capital they raise from investors to generate future cash flows at rates of return exceeding the cost of capital (the rate investors require as payment). The faster companies can increase their revenues and deploy more capital at attractive rates of return, the more value they create. The combination



of growth and return on invested capital (ROIC) relative to its cost is what drives value. Companies can sustain strong growth and high returns on invested capital only if they have a well-defined competitive advantage. This is how competitive advantage, the core concept of business strategy, links to the guiding principle of value creation.

The corollary of this guiding principle, known as the conservation of value, says anything that doesn't increase cash flows doesn't create value.[1] For example, when a company substitutes debt for equity or issues debt to repurchase shares, it changes the ownership of claims to its cash flows. However, it doesn't change the total available cash flows,[2] so in this case value is conserved, not created. Similarly, changing accounting techniques will change the appearance of cash flows without actually affecting cash flows, so it will have no effect on the value of a company.

These principles have stood the test of time. Economist Alfred Marshall spoke about the return on capital relative to the cost of capital in 1890.[3] When managers, boards of directors, and investors have forgotten these simple truths, the consequences have been disastrous. The rise and fall of business conglomerates in the 1970s, hostile takeovers in the United States during the 1980s, the collapse of Japan's bubble economy in the 1990s, the Southeast Asian crisis in 1998, the dot-com bubble in the early 2000s, and the economic crisis starting in 2007 can all, to some extent, be traced to a misunderstanding or misapplication of these principles. Using them to create value requires an understanding of both the economics of value creation (for instance, how competitive advantage enables some companies to earn higher ROIC than others) and the process of measuring value (for example, how to calculate ROIC from a company's accounting statements). With this knowledge, companies can make wiser strategic and operating decisions, such as what businesses to own and how to make trade-offs between growth and returns on invested capital—and investors can more confidently calculate the risks and returns of their investments.

Market bubbles

During the dot-com bubble, managers and investors lost sight of what drove ROIC; indeed, many forgot the importance of this ratio entirely. When Netscape Communications went public in 1995, the company saw its market capitalization soar to $6 billion on an annual revenue base of just $85 million, an astonishing valuation. This phenomenon convinced the financial world that the Internet could change the way business was done and how value was created in every sector, setting off a race to create Internet-related companies and take them public. Between 1995 and 2000, more than 4,700 companies went public in the United States and Europe, many with billion-dollar-plus market capitalizations.

Many of the companies born in this era, including Amazon.com, eBay, and Yahoo!, have created and are likely to continue creating substantial profits and value. But for every solid, innovative, new business idea, there were dozens of companies that turned out to have virtually no ability to generate revenue or value in either the short or the long term. The initial stock market success of these flimsy companies represented a triumph of hype over experience.

Many executives and investors either forgot or threw out fundamental rules of economics in the rarefied air of the Internet bubble. Consider the concept of increasing returns to scale—also known as "network effects" or "demand-side economies of scale"—an idea that enjoyed great popularity during the 1990s in the wake of Carl Shapiro and Hal Varian's book *Information Rules: A Strategic Guide to the Network Economy.*[4]

The basic idea is this: in certain situations, as companies get bigger, they can earn higher margins and returns on capital because their product becomes more valuable with each new customer. In most industries, competition forces returns back to reasonable levels. But in industries with increasing returns, competition is kept at bay by the low and decreasing unit costs incurred by the market leader (hence the "winner takes all" tag given to this kind of industry).

Take Microsoft's Office software, a product that provides word processing, spreadsheets, and graphics. As the installed base of Office users expanded, it became ever more attractive for new customers to use Office as well, because they could share their documents, calculations, and images with so many others. Potential customers became increasingly unwilling to purchase and use competing products. Because of this advantage, in 2009 Microsoft made profit margins of more than 60 percent and earned operating profits of approximately $12 billion on Office software—making it one of the most profitable products of all time.

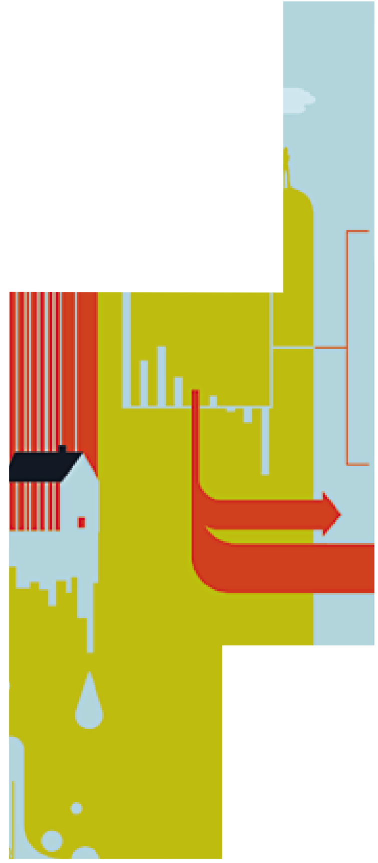
As Microsoft's experience illustrates, the concept of increasing returns to scale is sound economics. What was unsound during the Internet era was its misapplication to almost every product and service related to the Internet. At that time, the concept was misinterpreted to mean that merely getting big faster than your competitors in a given market would result in enormous profits. To illustrate, some analysts applied the idea to mobile-phone service providers, even though mobile customers can and do easily switch providers, forcing the providers to compete largely on price. With no sustainable competitive advantage, mobile-phone service providers were unlikely ever to earn the 45 percent ROIC that was projected for them. Increasing-returns logic was also applied to Internet grocery-delivery services, despite these companies having to invest (unsustainably, eventually) in more drivers, trucks, warehouses, and inventory as their customer bases grew.

The history of innovation shows how difficult it is to earn monopoly-sized returns on capital for any length of time except in very special circumstances. That did not matter to commentators who ignored history in their indiscriminate recommendations of Internet stocks. The dot-com bubble left a sorry trail of intellectual shortcuts taken to justify absurd prices for technology company shares. Those who questioned the new economics were branded as simply "not getting it"—the new-economy equivalent of defenders of Ptolemaic astronomy.

When the laws of economics prevailed, as they always do, it was clear that many Internet businesses, including online pet food sales and grocery-delivery companies, did not have the unassailable competitive advantages required to earn even modest ROIC. The Internet has revolutionized the economy, as have other innovations, but it did not and could not render obsolete the rules of economics, competition, and value creation.

Financial crises

Behind the more recent financial and economic crises beginning in 2007 lies the fact that banks and investors forgot the principle of the conservation of value. Let's see how. First, individuals and speculators bought homes—illiquid assets, meaning they take a while to sell. They took out mortgages on which the interest was set at artificially low teaser rates for the first



few years but then rose substantially when the teaser rates expired and the required principal payments kicked in. In these transactions, the lender and buyer knew the buyer couldn't afford the mortgage payments after the teaser period ended. But both assumed either that the buyer's income would grow by enough that he or she could make the new payments or that the house's value would increase enough to induce a new lender to refinance the mortgage at similar, low teaser rates.

Banks packaged these high-risk debts into long-term securities and sold them to investors. The securities too were not very liquid, but the investors who bought them—typically hedge funds and other banks—used short-term debt to finance the purchase, thus creating a long-term risk for whoever lent them the money.

When the interest rate on the home buyers' adjustable-rate debt increased, many could no longer afford the payments. Reflecting their distress, the real-estate market crashed, pushing the values of many homes below the values of the loans taken out to buy them. At that point, homeowners could neither make the required payments nor sell their houses. Seeing this, the banks that had issued short-term loans to investors in securities backed by mortgages became unwilling to roll over the loans, prompting the investors to sell all such securities at once. The value of the securities plummeted. Finally, many of the large banks themselves owned these securities, which they, of course, had also financed with short-term debt that they could no longer roll over.

This story reveals two fundamental flaws in the decisions made by participants in the securitized mortgage market. They assumed that securitizing risky home loans made the loans more valuable because it reduced the risk of the assets. This violates the conservation-of-value rule. Securitization did not increase the aggregated cash flows of the home loans, so no value was created and the initial risks remained. Securitizing the assets simply enabled their risks to be passed on to other owners: some investors, somewhere, had to be holding them. Yet the complexity of the chain of securities made it impossible to know who was holding precisely which risks. After the housing market turned, financial-services companies feared that any of their counter parties could be holding massive risks and almost ceased to do business with one another. This was the start of the credit crunch that triggered a recession in the real economy.

The second flaw was to believe that using leverage to make an investment in itself creates value. It does not, because—referring once again to the conservation of value—it does not increase the cash flows from an investment. Many banks used large amounts of short-term debt to fund their illiquid long-term assets. This debt did not create long-term value for shareholders in those banks. On the contrary, it increased the risks of holding their equity.

In the past 30 years, the world has seen at least six financial crises that arose largely because companies and banks were financing illiquid assets with short-term debt.

Excessive leverage

As many economic historians have described, aggressive use of leverage is the theme that links most major financial crises. The pattern is always the same: companies, banks, or investors use short-term debt to buy long-lived, illiquid assets. Typically, some event triggers unwillingness among lenders to refinance the short-term debt when it falls due. Since the borrowers don't have enough cash on hand to repay the short-term debt, they must sell some of their assets. But because the assets are illiquid, and other borrowers are trying to do the same, the price each borrower can realize is too low to repay the debt. In other words, the borrower's assets and liabilities are mismatched.

In the past 30 years, the world has seen at least six financial crises that arose largely because companies and banks were financing illiquid assets with short-term debt. During the 1980s, in the United States, savings-and-loan institutions funded an aggressive expansion with short-term debt and deposits. When it became clear that these institutions' investments (typically real estate) were worth less than their liabilities, lenders and depositors refused to lend more to them. In 1989, the US government was forced to bail out the industry.

In the mid-1990s, the fast-growing economies in East Asia, including Indonesia, South Korea, and Thailand, fueled their investments in illiquid industrial property, plants, and equipment with short-term debt, often denominated in US dollars. When global interest rates rose and it became clear that the East Asian companies had built too much capacity, those companies were unable to repay or refinance their debt. The ensuing crisis destabilized local economies and damaged foreign investors.

Other financial crises fueled by too much short-term debt have included the Russian-government default and the collapse of the US hedge fund Long-Term Capital Management, both in 1998; the US commercial real-estate crisis of the early 1990s; and the Japanese financial crisis that began in 1990 and, according to some, continues to this day.

Market bubbles and crashes are painfully disruptive, but we don't need to rewrite the rules of competition and finance to understand and avoid them. Certainly the Internet has changed the way we shop and communicate. But it has not created a "New Economy," as the 1990s catchphrase went. On the contrary, it has made information, especially about prices, transparent in a way that intensifies old-style market competition in many real markets. Similarly, the financial crisis triggered in 2007 will wring out some of the economy's recent excesses, such as people buying houses they can't afford and uncontrolled credit-card borrowing by consumers. But the key to avoiding the next crisis is to reassert the fundamental economic rules, not to revise them. If investors and lenders value their investments and loans according to the guiding principle of value creation and its corollary, prices for both kinds of assets will reflect the real risks underlying the transactions.

Equity markets

Contrary to popular opinion, stock markets generally continue to reflect a company's intrinsic value during financial crises. For instance, after the 2007 crisis had started in the credit markets, equity markets too came under criticism. In October 2008, a *New York Times* editorial thundered, "What's been going on in the stock market hardly fits canonical notions of rationality. In the last month or so, shares in Bank of America plunged to $26, bounced to $37, slid to $30, rebounded to $38, plummeted to $20, sprung above $26 and skidded back to almost $24. Evidently, people don't have a clue what Bank of America is worth."[5] Far from showing that the equity market was broken, however, this example points out the fundamental difference between the equity markets and the credit markets. The critical difference is that investors could easily trade shares of Bank of America on the equity markets, whereas credit markets (with the possible exception of the government bond market) are not nearly as liquid. This is why economic crises typically stem from excesses in credit rather than equity markets.

The two types of markets operate very differently. Equities are highly liquid because they trade on organized exchanges with many buyers and sellers for a relatively small number of securities. In contrast, there are many more debt securities than equities because there are often multiple debt instruments for each company and even more derivatives, many of which are not standardized. The result is a proliferation of small, illiquid credit markets. Furthermore, much debt doesn't trade at all. For example, short-term loans between banks and from banks to hedge funds are one-to-one transactions that are difficult to buy or sell. Illiquidity leads to frozen markets where no one will trade or where prices fall to levels far below that which reflect a reasonable economic value. Simply put, illiquid markets cease to function as markets at all.

During the credit crisis that began in 2007, prices on the equity markets became volatile, but for the most part they operated normally. The volatility reflected the uncertainty hanging over the real economy. The S&P 500 index traded between 1,200 and 1,400 from January 2008 to September 2008. In October, upon the collapse of US investment bank Lehman Brothers and the US government takeover of the insurance company American International Group (AIG), the index began its slide to a trading range of 800 to 900. But that drop of about 30 percent was not surprising given the uncertainty about the financial system, the availability of credit, and its impact on the real economy. Moreover, the 30 percent drop in the index was equivalent to an increase in the cost of equity of only about 1 percent,[6] reflecting investors' sense of the scale of increase in the risk of investing in equities generally.

There was a brief period of extreme equity market activity in March 2009, when the S&P 500 index dropped from 800 to 700 and rose back to 800 in less than one month. Many investors were apparently sitting on the market sidelines, waiting until the market hit bottom. The moment the index dropped below 700 seemed to trigger their return. From there, the market began a steady increase—reaching about 1,100 in December 2009. Our research suggests that a long-term trend value for the S&P 500 index would have been in the 1,100 to 1,300 range at that time, a reasonable reflection of the real value of equities.

In hindsight, the behavior of the equity market has not been unreasonable. It actually functioned quite well in the sense that trading continued and price changes were not out of line with what was going on in the economy. True, the equity markets did not predict the economic crisis. However, a look at previous recessions shows that the equity markets rarely predict inflection points in the economy.[7]

[1] Assuming there are no changes in the company's risk profile.
[2] Indeed, the tax savings from debt may increase the company's cash flows.
[3] Alfred Marshall, *Principles of Economics,* Volume 1, New York: Macmillan, 1920, p. 142.
[4] Carl Shapiro and Hal R. Varian, *Information Rules: A Strategic Guide to the Network Economy,* Boston: Harvard Business School Press, 1998.
[5] Eduardo Porter, "The lion, the bull and the bears," *New York Times,* October 17, 2008.
[6] Richard Dobbs, Bin Jiang, and Timothy M. Koller, "Why the crisis hasn't shaken the cost of capital," mckinseyquarterly.com, December 2008.
[7] Richard Dobbs and Timothy M. Koller, "The crisis: Timing strategic moves," mckinseyquarterly.com, April 2009.

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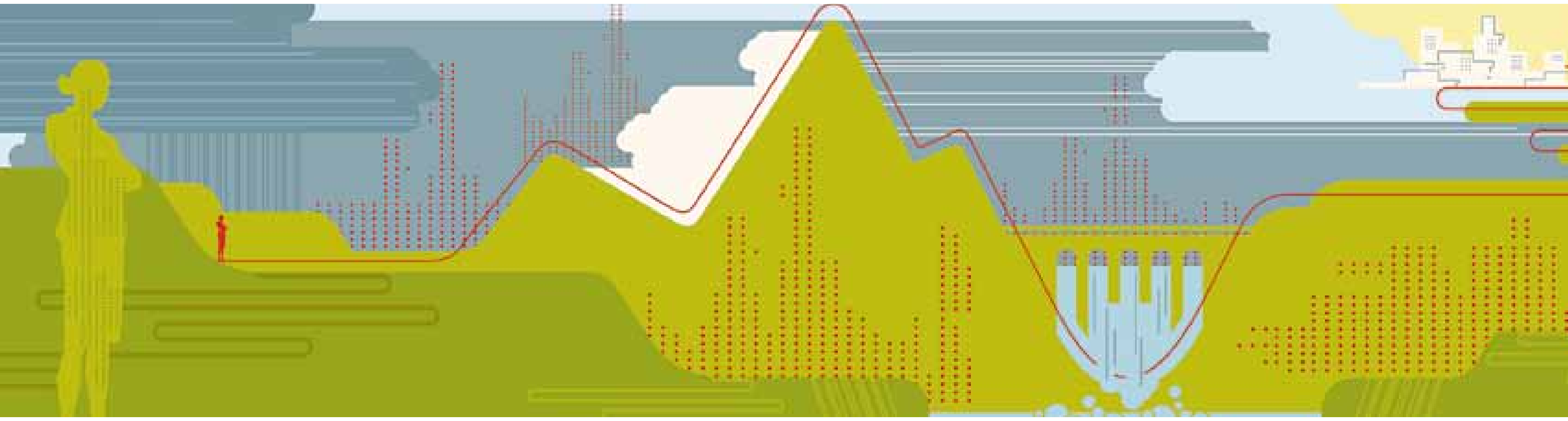

Thinking longer term during a crisis: An interview with Hewlett Packard's CFO

Cathie Lesjak reflects on the company's response to the recent global financial crisis—and the long-term effects it will have on performance.

Paul Roche

What CFO didn't face a baptism by fire during the economic crisis? Wild swings in currency rates, dramatic shifts in supply and demand, and the virtual freezing of the financial markets tested the mettle of even the most veteran CFO.

Hewlett-Packard's Cathie Lesjak was no exception. She ascended to the CFO role in January 2007, after nearly two decades in the treasury and other finance leadership positions at the company. As the global financial crisis escalated during the second half of 2008, the company was integrating its $13.9 billion acquisition of Electronic Data Systems (now known as HP Enterprise Services). When the crisis peaked, Lesjak was suddenly faced with severe cost-cutting measures, unprecedented uncertainty, and the full spectrum of crisis-related management challenges. Yet, a little more than a year later, the company announced its $2.7 billion acquisition of 3Com, signaling its intention to continue investing in future growth even during the challenging economic environment.

Lesjak recently sat down with McKinsey's Paul Roche, a partner in the Silicon Valley office, to recall the steps she took to ensure that HP could continue to meet its commitments to the market and to look ahead at the company's strategy. The interview took place in Lesjak's office at the company's headquarters, in Palo Alto, California.

McKinsey on Finance: *What was your immediate response when the financial crisis hit?*

Cathie Lesjak: Our business began to decline in late November of 2008, and by early December we were looking at a lot of different scenarios. The first thing we did was try to ascertain how bad the economy might get and how it would affect our financial performance.

The challenge was to pull together a big picture of all the moving parts, put in place additional measures, and, frankly, get everyone more focused on the tough environment. We started modeling more "what if" scenarios of what we thought could happen and what types of actions we would need to take. By mid-February, we had announced several initiatives. Some were short-term actions, such as cutting travel by almost 90 percent in all but our revenue-generating activities. It's interesting to note that a lot of that travel is never going to come back, even as things are getting better, because people have gotten more comfortable using our Halo video-conferencing solutions. So some things have changed culturally as a result of tough times.

In addition, most of our employees took a pay cut, which gave us an additional cushion. And what we ultimately did, which I think is a little unique, is we converted that pay cut to a bonus opportunity. At the end of the year, when it turned out that we didn't need the extra cushion, we paid bonuses that in the aggregate exceeded the total amount of the pay cuts.

McKinsey on Finance: *How did the mix of HP's business portfolio play out, in products as well as services?*

Cathie Lesjak: Service businesses have recurring revenue, which makes them very resilient. In this respect, the EDS acquisition couldn't have come at a better time, because it gave us stability just when it was most needed. And our technology services business, for example, continued to do well through the first half of 2009 and only started to feel the impact of the downturn in the second half of the year. The printer supplies business is also very resilient, and, in fact, if you look at the mix of hardware versus supplies in 2009, we had 60 to 65 percent of our revenue coming from supplies. Those are very-high-margin businesses, which also provides a certain amount of resiliency.

On the other hand, our PC, server, and storage businesses require a lot of operating leverage, so their operating profit was down almost twice as much as their revenue was in 2009. Obviously, the good news is that in 2010 we have an opportunity for that profit to come back as the economy picks up.

McKinsey on Finance: *You mentioned some of the modeling that you did. What have you done to the planning and budgeting process itself to build in new capabilities or new ways of looking at, for example, scenarios? Did you change that, or was this more of a crisis, in that you responded and moved on?*

Cathie Lesjak: There was a real demand placed on the finance function throughout 2009. The challenge wasn't just the recessionary environment; it was also the currency volatility. The late November–December 2008 period was very challenging because we'd get new forecasts showing massive moves in revenue, and obviously therefore in profit. Even through mid-2009, there were still some pretty big month-to-month jumps from a forecasting perspective. Revising the annual plan multiple times to get a sense of what was happening from a currency perspective wasn't something we could put the organization through as often as we wanted, so we spent a lot of time coming up with new models to understand how the different businesses within HP would respond under different sets of circumstances. We were in a position to help senior management really understand the dynamics that were going on—which gave finance a bigger voice at the table.

It was a great learning experience for the business folks as well, because the finance people couldn't do it by themselves. They had to go and talk to people, and by asking the types of questions that the finance function asks they got the business guys thinking as well. So it became a much more collaborative effort to deliver the new models and the new understanding of how businesses would respond under a variety of economic conditions.

McKinsey on Finance: *Can you give some examples of that?*

Cathie Lesjak: If you go back to some of the modeling that I talked about, finance people were saying, "OK, what happened in the past, when the dollar has either dramatically strengthened or weakened? How quickly did you either raise or lower prices?" Having those types of discussions brings a heightened awareness to everybody about how long it has taken to pass increased costs or savings through to customers in the form of higher or lower prices.

Cathie Lesjak

Vital statistics
Born in 1959

Education
Graduated with a BA in biology in 1981 from Stanford University

Earned an MBA in finance in 1986 from the University of California, Berkeley

Career highlights
Hewlett-Packard
CFO and executive vice president (2007–present)

Senior vice president and treasurer (2003–07)

Group controller, HP Software Solutions (2000–03)

Controller and credit manager, HP Commercial Customer Organization (1998–2000)

Fast facts
Serves as a director of Neoware, a company HP acquired in October 2007

When we first started asking these questions, it wasn't like somebody said, "Oh, you know, for industry standard servers, it's three to four months. For PCs, it's a week." People didn't have those frames of reference. Now, after really thinking it through, there is a better understanding of what the "puts and takes" are for a business, as well as for the P&L. This is helpful to the business folks too.

McKinsey on Finance: *When you do budgeting in one of the businesses or in a function, do you have a process through the year where spending can be ratcheted up and down without having to do a complete replan?*

Cathie Lesjak: We absolutely do, although it's not as if you start the year with a plan and build in the conditions up front. It really happens as the quarters evolve and the year unfolds that you start to think, "Okay, we've got room to make some additional investments that are going to be important to HP in the long term." In 2009, our strategy was to continue investing in sales coverage and R&D to put HP in a stronger position. We wanted to build in the confidence and the cushion so that we could make these investments and take advantage of the downturn, as opposed to being on our back foot the entire time.

McKinsey on Finance: *On another topic, did the financial crisis accelerate or change the way you viewed the shift of revenue and the shift of markets globally?*

Cathie Lesjak: Longer term, not really. For quite some time, we've been focused on the fact that emerging markets were going to be a good growth opportunity for us—and they have been. In 2009, for example, China actually ended up growing. The first quarter was a bit tough, and we were concerned, but if you look at our fourth quarter, China grew in excess of 40 percent in PCs and more than 20 percent for HP.

The rest of the BRIC[1] countries and the emerging markets definitely had a tougher time. But we still believe, in the long term, that emerging markets are where a lot of the growth will take place. For example, if you look at PC penetration rates in the emerging markets, they're a fraction of what they are in developed markets. So the opportunity is definitely there.

Now, no question, you've got to have the right products. We have set up R&D facilities in India, China, and other locations specifically to do development *in* local markets *for* local markets. We've got to design the right set of products, both in the premium and value markets, to make sure that we're targeting the overall market correctly.

McKinsey on Finance: *What does expected growth in China as well as in some of the other emerging markets imply for the size and staffing of the finance organization, the treasury organization, controlling, and so forth in those regions?*

Cathie Lesjak: Two or three years ago, we concluded that we would need to staff emerging markets differently. Some of them are small, but complex and growing rapidly. If we used our normal rule of thumb in terms of the level and amount of resources that we would place in those countries, we'd end up with less experience than we actually needed there. We realized we'd have to staff these markets as if they were bigger countries, because of the complexity and rapid growth. Folks who are less experienced are fine if a market is growing on a predictable, relatively slow basis. But when business grows exponentially, you need more skilled, experienced people who have seen a variety of things.

So we've decided to overhire, from our rule-of-thumb perspective, so that we're able to take advantage of what each market is going to be, rather than what it is today.

McKinsey on Finance: *What effect has the financial crisis of 2009 had on the treasury department within HP?*

Cathie Lesjak: There was a whole revamping of our thought process, especially in late 2008 and early 2009. For example, we used to rely heavily on S&P and Moody's and Fitch for their investment ratings, but now we need another layer of scrutiny.

Today, you want to look at a variety of indicators of credit strength, as opposed to just relying on a rating that comes out. Because, frankly, if you looked at asset-backed investments and money markets that invested heavily in asset-backed securities, the ratings in many instances—not in all—just didn't hold up. I mean, things that we thought were AA and AAA, they certainly didn't act like AA and AAA investments. And so, in addition to the ratings, we're looking at other filters, such as the credit-default-swap spreads, to figure out what we want to do.

There have also been a number of changes in treasury as a result of the financial markets in terms of what the opportunities are, what the yields are, and how much risk we want to take. It doesn't help that the yields are incredibly low right now. Almost no matter what you do—unless you go very risky—the yields are low, and I think that's impacting a lot of companies. I get a lot of questions from treasury organizations on what we're doing about the yields.

McKinsey on Finance: *What's your sense about the balance that HP's looking for between operating improvement and growth? Because clearly, over the years you've achieved some of each, but outsiders in the Valley would certainly look at HP and say, "Wow, the operational improvement has been tremendous." What's the right mix?*

Cathie Lesjak: Getting your cost structure right is the enabler to growth, so we'll always be focused on both cost initiatives and growth. In 2010, we are definitely taking additional cost actions because we're always going to do that, but we're also making more significant investments to cover our total addressable market.

So the folks inside HP are going to hear a lot more about sales coverage in 2010 than they did in 2009. For example, we view the 3Com acquisition as more of a growth acquisition than a cost story, because while there are some synergies—the real long-term value of 3Com is to address more of the market, which includes both networking and data centers. Also, a good chunk of 3Com's business is in China, including a strong R&D presence that we can build on for the future.

[1] Brazil, Russia, India, and China.

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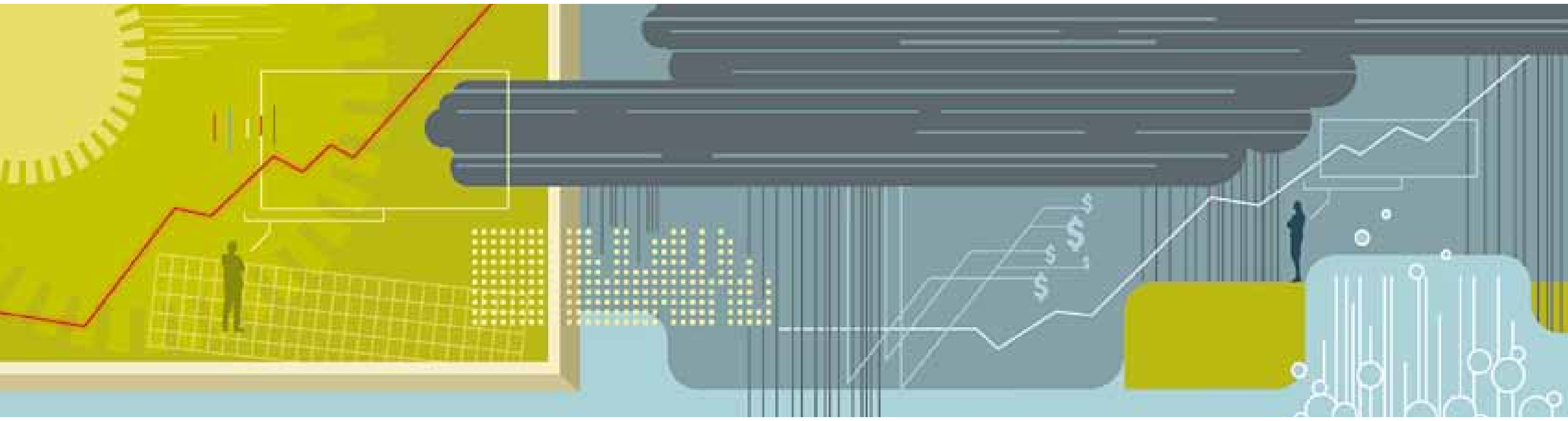


Equity analysts: Still too bullish

After almost a decade of stricter regulation, analysts' earnings forecasts continue to be excessively optimistic.

Marc H. Goedhart, Rishi Raj, and Abhishek Saxena

No executive would dispute that analysts' forecasts serve as an important benchmark of the current and future health of companies. To better understand their accuracy, we undertook research nearly a decade ago that produced sobering results. Analysts, we found, were typically overoptimistic, slow to revise their forecasts to reflect new economic conditions, and prone to making increasingly inaccurate forecasts when economic growth declined.[1]

Alas, a recently completed update of our work only reinforces this view—despite a series of rules and regulations, dating to the last decade, that were intended to improve the quality of the analysts' long-term earnings forecasts, restore investor confidence in them, and prevent conflicts of interest.[2] For executives, many of whom go to great lengths to satisfy Wall Street's expectations in their financial reporting and long-term strategic moves, this is a cautionary tale worth remembering.

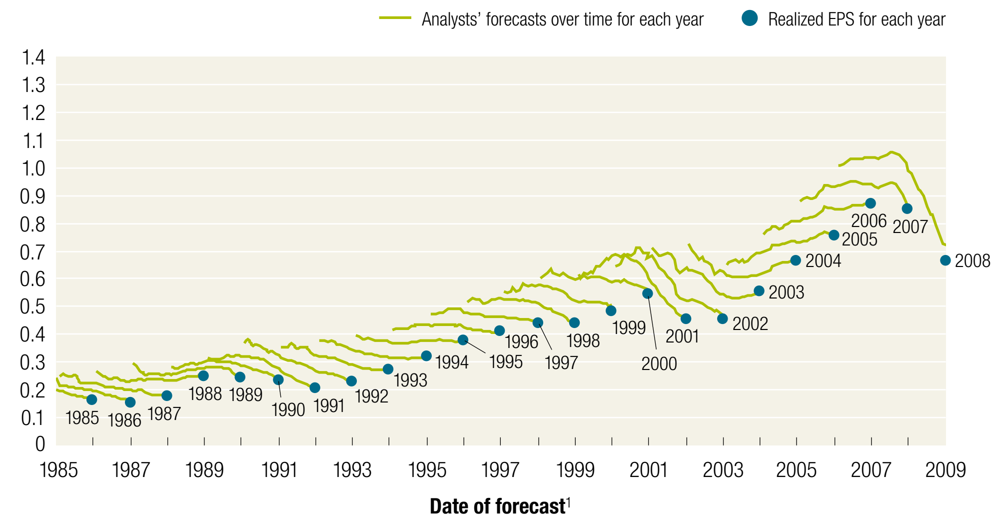
Exceptions to the long pattern of excessively optimistic forecasts are rare, as a progression of consensus earnings estimates for the S&P 500 shows (Exhibit 1). Only in years such as 2003 to 2006, when strong economic growth generated actual earnings that caught up with earlier predictions, do forecasts actually hit the mark.

Exhibit 1

Off the mark

With few exceptions, aggregate earnings forecasts exceed realized earnings per share.

Earnings per share (EPS) for S&P 500 companies, $



[1] Monthly forecasts.

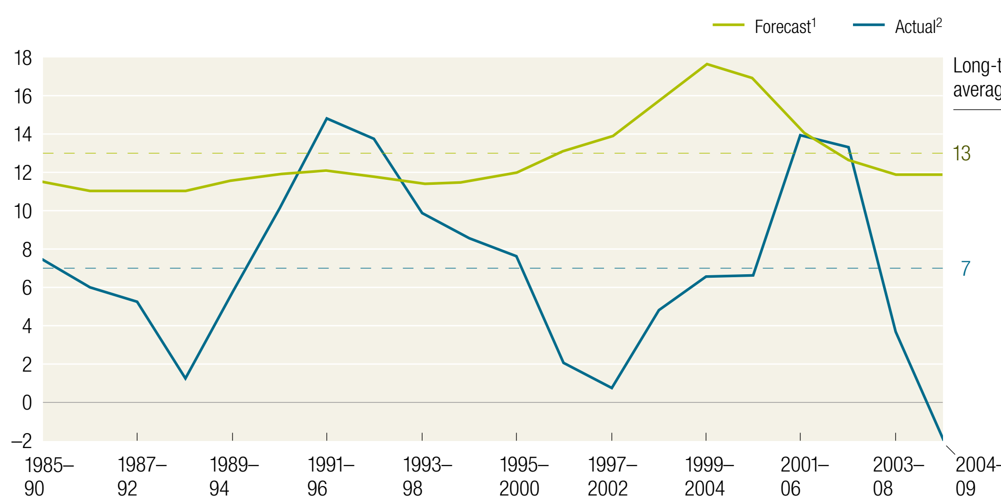
Source: Thomson Reuters I/B/E/S Global Aggregates; McKinsey analysis

Exhibit 2

Overoptimistic

Actual growth surpassed forecasts only twice in 25 years—both times during the recovery following a recession.

Earnings growth for S&P 500 companies, 5-year rolling average, %



[1] Analysts' 5-year forecasts for long-term consensus earnings-per-share (EPS) growth rate. Our conclusions are same for growth based on year-over-year earnings estimates for 3 years.

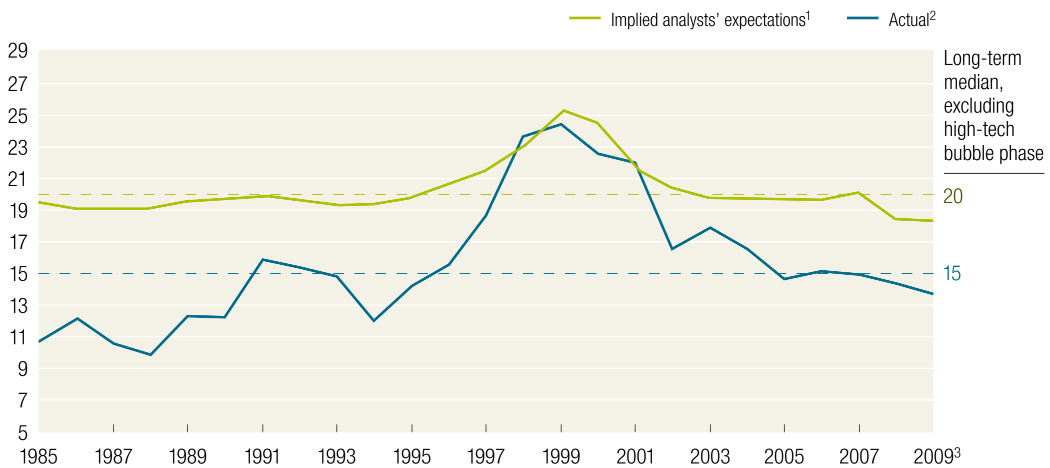
[2] Actual compound annual growth rate (CAGR) of EPS; 2009 data are not yet available, figures represent consensus estimate as of Nov 2009.

Source: Thomson Reuters I/B/E/S Global Aggregates; McKinsey analysis

Exhibit 3
Less giddy

Capital market expectations are more reasonable.

Actual P/E ratio vs P/E ratio implied by analysts' forecasts, S&P 500 composite index



[1] P/E ratio based on 1-year-forward earnings-per-share (EPS) estimate and estimated value of S&P 500. Estimated value assumes: for first 5 years, EPS growth rate matches analysts' estimates then drops smoothly over next 10 years to long-term continuing-value growth rate; continuing value based on growth rate of 6%; return on equity is 13.5% (long-term historical median for S&P 500), and cost of equity is 9.5% in all periods.
[2] Observed P/E ratio based on S&P 500 value and 1-year-forward EPS estimate.
[3] Based on data as of Nov 2009.

Source: Thomson Reuters I/B/E/S Global Aggregates; McKinsey analysis

This pattern confirms our earlier findings that analysts typically lag behind events in revising their forecasts to reflect new economic conditions. When economic growth accelerates, the size of the forecast error declines; when economic growth slows, it increases.[3] So as economic growth cycles up and down, the actual earnings S&P 500 companies report occasionally coincide with the analysts' forecasts, as they did, for example, in 1988, from 1994 to 1997, and from 2003 to 2006.

Moreover, analysts have been persistently overoptimistic for the past 25 years, with estimates ranging from 10 to 12 percent a year,[4] compared with actual earnings growth of 6 percent.[5]

Over this time frame, actual earnings growth surpassed forecasts in only two instances, both during the earnings recovery following a recession (Exhibit 2). On average, analysts' forecasts have been almost 100 percent too high.[6]

Capital markets, on the other hand, are notably less giddy in their predictions. Except during the market bubble of 1999–2001, actual price-to-earnings ratios have been 25 percent lower than implied P/E ratios based on analyst forecasts (Exhibit 3). What's more, an actual forward P/E ratio[7] of the S&P 500 as of November 11, 2009—14—is consistent with long-term earnings growth of 5 percent.[8] This assessment is more reasonable, considering that long-term earnings growth for the market as a whole is unlikely to differ significantly from growth in GDP,[9] as prior McKinsey research has shown.[10] Executives, as the evidence indicates, ought to base their strategic decisions on what they see happening in their industries rather than respond to the pressures of forecasts, since even the market doesn't expect them to do so.

[1] Marc H. Goedhart, Brendan Russell, and Zane D. Williams, "Prophets and profits," mckinseyquarterly.com, October 2001.
[2] US Securities and Exchange Commission (SEC) Regulation Fair Disclosure (FD), passed in 2000, prohibits the selective disclosure of material information to some people but not others. The Sarbanes–Oxley Act of 2002 includes provisions specifically intended to help restore investor confidence in the reporting of securities' analysts, including a code of conduct for them and a requirement to disclose knowable conflicts of interest. The Global Settlement of 2003 between regulators and ten of the largest US investment firms aimed to prevent conflicts of interest between their analyst and investment businesses.
[3] The correlation between the absolute size of the error in forecast earnings growth (S&P 500) and GDP growth is –0.55.
[4] Our analysis of the distribution of five-year earnings growth (as of March 2005) suggests that analysts forecast growth of more than 10 percent for 70 percent of S&P 500 companies.
[5] Except 1998–2001, when the growth outlook became excessively optimistic.
[6] We also analyzed trends for three-year earnings-growth estimates based on year-on-year earnings estimates provided by the analysts, where the sample size of analysts' coverage is bigger. Our conclusions on the trend and the gap vis-à-vis actual earnings growth does not change.
[7] Market-weighted and forward-looking earnings-per-share (EPS) estimate for 2010.
[8] Assuming a return on equity (ROE) of 13.5 percent (the long-term historical average) and a cost of equity of 9.5 percent—the long-term real cost of equity (7 percent) and inflation (2.5 percent).
[9] Real GDP has averaged 3 to 4 percent over past seven or eight decades, which would indeed be consistent with nominal growth of 5 to 7 percent given current inflation of 2 to 3 percent.
[10] Timothy Koller and Zane D. Williams, "What happened to the bull market?" mckinseyquarterly.com, November 2001.

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Board directors and experience: A lesson from private equity

Independent directors contribute an outside perspective to governance, but analysis of private-equity firms suggests they need relevant managerial expertise too.

Viral V. Acharya and Conor Kehoe

Independent directors are very much in fashion. Many companies, particularly in Europe, are looking to fill openings on their boards with professionals they hope will bring close oversight, renewed enthusiasm, and broader perspectives on strategy.

Similar attributes—such as independence and deep engagement in setting strategy and managing performance—are often cited as the primary reasons for the success of the better private-equity firms. Indeed, our own past analyses have found that these firms persistently outperform the S&P 500 because their partners are active directors of the businesses in their funds. They are more engaged with setting strategy and managing performance as their own interests are tied to the success of a business.[1]

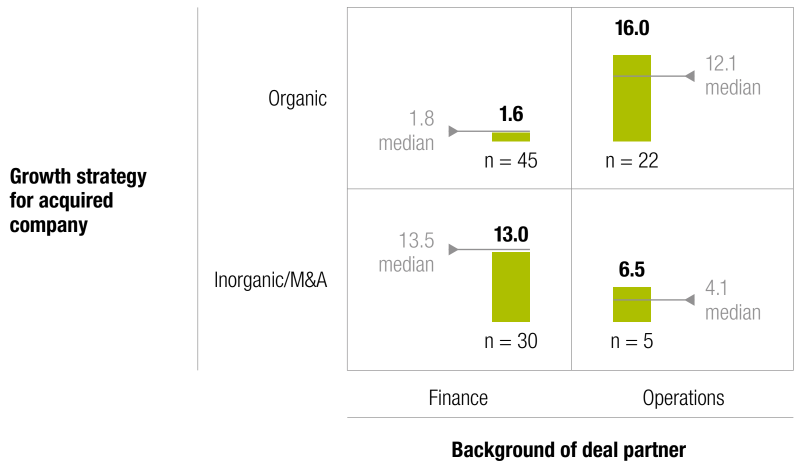
Yet greater involvement is apparently not the whole story. Our new research on private-equity firms shows that deals generate the greatest value when the skills of the lead partner are directly relevant to the business strategy of the portfolio companies to which they are assigned.[2] Partners with a finance background, for example, do best when acquisitions are central to a value creation strategy, and partners with managerial backgrounds do better with companies whose chosen route to value is organic development (exhibit). And both strategies led to outperformance: companies that developed organically grew sales in line with

Exhibit

A good match

The deals that generated the greatest value involved deal partners whose skills were directly relevant to the business strategy for the acquired company.

Outperformance[1] for 110 of the largest European deals from 1996 to 2005, simple average, %



[1]Rate of return on equity (ROE) of a deal minus that of quoted peers and excluding the effect of debt.

their public-company peers but improved their margins more rapidly through faster improvements in productivity. Companies that grew through acquisitions improved their value by increasing expected future profits[3] more than quoted peers did—for example, because of higher expected margins once acquisitions are properly integrated.[4]

For public companies, these findings raise interesting questions about the expertise and experience they should be seeking even from independent directors—and their ability to match the strengths of a board to their overall strategies. The challenge goes beyond finding directors who will dedicate enough time to the company and who understand it (perhaps as the result of experience in its industry). The findings suggest that directors might also be chosen for their experience in having executed similar strategies elsewhere—perhaps in industries that have evolved further.

For private-equity firms, our findings raise questions about how they assign partners to deals. Do these firms consider the way value will be added to an acquired company? Should they deploy small teams of partners with different backgrounds for deals requiring more complex strategies? Are the firms doing enough to develop and expand the skills of partners beyond what they learned before entering private equity? ○

[1] See Andreas Beroutsos, Andrew Freeman, and Conor F. Kehoe, “What public companies can learn from private equity,” mckinseyquarterly.com, January 2007; and Viral Acharya, Conor Kehoe, and Michael Reyner, “The voice of experience: Public versus private equity,” mckinseyquarterly.com, December 2008.

[2] We looked at 110 of the largest European deals in the decade from 1996 to 2005.

[3] Expressed as the multiple of current profits at which they were valued.

[4] The companies in our sample typically started out with average margins—so they were not turnarounds.

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A better way to measure bank risk

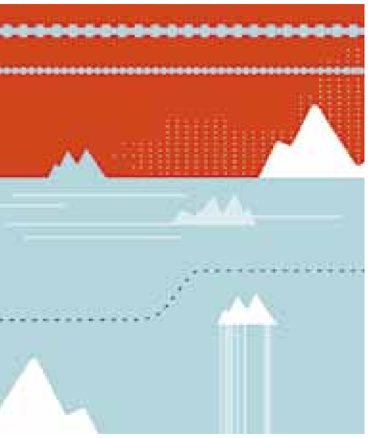
One capital ratio tops others in foreshadowing distress—and it's not the one that's traditionally been regulated.

Kevin S. Buehler, Christopher J. Mazingo, and Hamid H. Samandari

In response to the global banking crisis, regulators and policy makers worldwide have united behind efforts to increase financial institutions' minimum capital requirements and to limit leverage, hoping to reduce the likelihood of future bank distress.[1] As of this writing, the debate over proper capital requirements continues, with major implications for the industry and the economy—yet there have been few specifics on which ratios should be targeted or at what levels.

To shed some light on the discussions, we analyzed the global banking crisis of 2007 through 2009[2] to identify relationships that different types of capital and capital ratios have to bank distress.[3] Our analysis is observational, based on historical data, and not a real-world experiment, which would have required randomly selected financial institutions to hold different capital levels to gauge their effects. As a result, the findings do not definitively establish how institutions might perform in the future if minimum capital ratios were changed, but we believe that the evidence we provide is a valuable input for current policy discussions.

We found that one capital ratio—the ratio of tangible common equity (TCE)[4] to risk-weighted assets—outperforms all others as a predictor of future bank distress. We also found that requiring a minimum leverage ratio would not have offered any insights that couldn't have been found



by studying the right capital ratio. And, not surprising, we found that a higher bar on capital requirements, while reducing the likelihood of bank distress, comes at an increasing cost.

One capital ratio outperforms the rest

Among the various ratios, the one that offers the greatest clarity into the likelihood of bank distress actually measures TCE (the portion of equity that is neither preferred equity nor intangible assets) against risk-weighted assets, or RWA (Exhibit 1). TCE, like Tier 1[5] capital, can absorb losses because it offers banks the contractual flexibility either to eliminate repayments entirely or to defer them for extended periods of time. It can also absorb losses whether or not a bank remains a going concern. Moreover, our analysis found that the measures most commonly regulated currently—those based on the combined Tier 1 plus Tier 2[6] capital levels—are the least useful, in part because banks can seldom use Tier 2 capital to absorb a loss if they are to continue operating. For example, unrealized gains on securities may be unavailable in times of severe economic stress, and subordinated debt may trigger default if payments are deferred.

In addition, banks have successfully arbitraged capital ratios traditionally watched by regulators through the banks' increasing use of non-common-equity instruments, such as cumulative preferred stock and trust-preferred securities, that qualify for treatment as Tier 1 capital but could be issued at lower cost than common equity. This practice weakens the ability of an institution to absorb losses and the ability of regulations to limit its riskiness.

Leverage ratios add little benefit

Our analysis also found that an additional leverage ratio would not have offered any insight into the likelihood of bank distress beyond that provided by the TCE/RWA ratio. The same number of banks are affected (and the same amount of distress avoided) whether or not limits are placed on leverage.

Exhibit 1

From the analysis

The TCE/RWA capital ratio outperformed every other metric in predicting how many banks were likely to become distressed.

When a random sample predicted this percentage of distressed banks . . .	. . . the TCE/RWA[1] ratio predicted this:	The next-best predictor of distress was . . .
20%	33%	Tier 1 + Tier 2 Capital/RWA ratio predicted 33% (matching TCE/RWA here, but less predictive at every other level)
40%	67%	Tier 1 Capital/RWA predicted 54%
80%	100%	Tier 1 Capital/RWA predicted 96%

[1]TCE, or tangible common equity, is shareholders' equity, less preferred shares, goodwill, and other intangibles; RWA is risk-weighted assets.

Exhibit 2

Costly security

Higher capital ratios leave fewer banks at risk of distress but also come with a higher price tag—and lower returns for banks.

The TCE/RWA ratio[1] . . .	. . . predicts this percentage of distressed banks . . .	+	. . . but requires this much capital industry-wide . . .	=	. . . leading to this reduction in returns on equity (ROE) industry-wide.
	%		$ billion		Basis points
7.50–10.0	100		1,450		–560
6.50–7.49	83		540		–260
5.50–6.49	58		280		–140
<5.5	29		110		–60

[1]TCE, or tangible common equity, is shareholders' equity, less preferred shares, goodwill, and other intangibles; RWA is risk-weighted assets.

This finding does not prove that regulating leverage ratios is a bad idea. It does suggest, however, that the rationale must be based on other considerations. For example, leverage ratios might protect the liability side of the balance sheet against greater-than-expected haircuts on repurchase (or repo) financing, which could precipitate a systemic crisis. They also might help prevent future errors in risk weighting and regulatory arbitrage of risk weightings. But the use of leverage ratios has also arguably created an incentive for the growth of off-balance-sheet activities, which remove certain assets from the leverage ratio calculation and increase risk while circumventing additional capital requirements.

Lowering risk has a cost

While it is possible to lower a bank's level of risk by increasing its TCE/RWA ratio, the trade-off is higher costs. Reducing the number of banks at risk through a higher capital base decreases the returns on equity (ROE) for the industry (Exhibit 2). For instance, a TCE/RWA ratio of 10 percent would have affected all of the banks that became distressed during the recent crisis but would have required an incremental $1.45 trillion in capital[7] and reduced industry-wide average ROEs by an extraordinarily high 560 basis points. In addition to the impact on ROEs, increasing the required capital levels would likely have macroeconomic costs, including the effects of a short-term contraction in the availability of credit and the potential long-term effects of reduced lending levels, which result in lower GDP growth.[8]

One test for regulators is wisely balancing the incremental benefits of higher capital requirements against the costs that they impose on financial institutions, borrowers, and society more broadly. For example, our analysis indicates that requiring banks to hold a TCE/RWA ratio in the range of 6.5 to 7.5 percent would have affected 83 percent of banks that became distressed while requiring $540 billion in incremental capital and a decrease in ROE of 260 basis points.

• • •

In the effort to prevent future banking crises, regulators would do well to set minimum capital requirements by balancing the benefits of reduced distress with the costs that come from higher capital requirements.

[1] For example, the Basel Committee on Banking Supervision (an international consortium of banking regulators) proposed a major series of revisions to minimum capital standards in December 2009. The committee proposed regulating ratios that had not previously been regulated internationally, such as the ratio of tangible common equity (TCE) to risk-weighted assets (RWA) and the leverage ratio.

[2] Our approach was simply to take a snapshot of global bank balance sheets, including capital position as of December 31, 2007, and to estimate the relationship between initial capital and leverage ratios and subsequent bank performance in 2008–09. We analyzed 115 large global banks (minimum asset size, $30 billion) representing $62.2 trillion in total assets—about 85 percent of developed-market banking assets and 65 percent of global banking assets.

[3] We deemed a bank to be in distress if it met any of four conditions: (1) it had declared bankruptcy, (2) it had been taken over by the government or placed into government receivership, (3) it had merged with another bank under duress, or (4) it had received a government bailout of more than 30 percent of its Tier 1 capital as of December 31, 2007. Using this definition, 24 banks with $18.5 trillion in assets were considered distressed.

[4] TCE is shareholders' equity, less preferred shares, goodwill, and other intangibles (for instance, deferred-tax assets and mortgage-servicing rights).

[5] Tier 1 capital includes issued and fully paid common stock, perpetual noncumulative preferred shares, reserves created out of retained earnings or surpluses related to share issuance, and minority interests in consolidated subsidiaries, less disallowed intangibles (for instance, goodwill).

[6] Tier 2 capital includes undisclosed reserves, unrealized gains on securities, asset revaluation reserves, general provisions and loan-loss reserves, hybrid capital instruments, and an allowable portion of subordinated debt.

[7] Incremental capital required is the estimated amount of additional capital required for all global banks below the maximum capital ratio in the range to reach that level. It is measured by the banks' capital position as of December 31, 2007.

[8] See, for example, Tamim Bayoumi and Ola Melander, "Credit matters: Empirical evidence on U.S. macro-financial linkages," International Monetary Fund working paper 08/169, July 2008; and David Greenlaw, Jan Hatzius, Anil K. Kashyap, and Hyun Song Shin, "Leveraged losses: Lessons from the mortgage market meltdown," US Monetary Policy Forum report number 2, Rosenberg Institute at the Brandeis International Business School and the Initiative on Global Markets, University of Chicago Booth School of Business, 2008.

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A new look at carbon offsets

Carbon markets will continue to play a role in pricing—and limiting—emissions, but the opportunity in developing markets may be less promising than once expected.

Marcel Brinkman

The CFOs of any company that uses or produces energy were naturally interested in the outcome of December 2009's Copenhagen round of global climate negotiations, for both the potential new costs and new opportunities. Although the conference did not lead to the legally binding global carbon reduction treaty that a lot of climate watchers had hoped for, many are still watching closely as regional (rather than global) carbon markets continue to evolve. For despite the uncertainty in Copenhagen, current global carbon market arrangements will probably survive. The pricing that these markets set for carbon emission allowances will continue to be increasingly important for businesses—in particular, those facing the cost of buying allowances (so-called carbon credits) or developing projects for which carbon credits are anticipated sources of revenue.

Emission caps and related carbon trading in developed nations are a very effective way to reduce carbon emissions if supported by other forms of regulation, such as energy-efficiency standards. Moreover, developed nations will continue to be bound by domestically defined emission caps and can trade their carbon allocations among each other and through the offset market for developing nations.

However, the role of carbon markets in developing nations (through offset financing) is still unclear and might be relatively limited compared with their

role in developed nations. The difference is a result of both the large potential of and requirements for emission reduction in developing countries and the limited demand for offsets from developed nations, given the current proposals on the table. This imbalance may limit the ability of companies in developed markets to benefit from offset credits for investments in developing nations. Indeed, if carbon markets do not take off in developed nations in a major way, companies could be left holding credits for which there is no demand.

The economics of offset markets

Even though a global deal remains elusive, domestic and regional carbon markets will continue to grow—from slightly less than €100 billion in 2008 to around €800 billion in 2020, according to recent McKinsey estimates. The European Union, for example, already has a domestic carbon market—currently the only one of its size, with trading volumes expected to increase as the market matures and liquidity increases. The United States is poised to establish one, with climate change legislation awaiting action this year. And a number of other countries, including Australia, Canada, Japan, and New Zealand, are considering the introduction of domestic carbon markets. At the same time, multiple regional markets exist (within the United States, for example) or are being considered (as in China), mostly voluntary in nature.

Companies in these markets have a choice of reducing their own emissions to stay within their caps, buying credits from other companies, or buying international offsets. Abatement achieved through domestic carbon markets counts toward the economy-wide targets, as do purchased international offset credits. Without a mechanism linking the various domestic carbon markets, prices, driven by local market conditions, will probably vary significantly.

The offset market plays a key role, as it is the de facto international carbon price mechanism, in the absence of direct market linkage. In theory, an originator of offset credits—say, an offset project developer—can sell its credits to a government in an Annex I country[1] (which will use these credits to offset its carbon reduction commitments) or to a company in a domestic carbon market. These activities can create price arbitrage between various domestic carbon markets and the international carbon market.

Two factors hamper price equalization among the offset market, domestic carbon markets, and the global market as envisioned by the assigned amount units (AAU) established in the 1997 Kyoto Protocol on climate change.

- On the one hand, countries have limited the amount of offsets that can be imported into domestic carbon markets. For instance, the European Union will allow only 1.6 metric gigatons[2] (GT) of offset credits to be imported into its market from 2008 to 2020, or on average 0.1–0.2 GT per annum. As this quota will probably be exhausted by 2015, prices on the European carbon market might start to deviate from offset market prices.

- On the other hand, the demand for offsets from Annex I countries is less certain, as the global market is oversupplied with “hot air,”[3] which limits the need to buy offset credits. Therefore, national demand for offset credits is typically seen as “soft.”

Offset market supply also plays a key role in offset market prices. Initially, offsets were based on relatively cheap sources; for instance, many reductions in levels of greenhouse gases other than carbon dioxide require little upfront investment. As the market matures, more expensive sources of abatement, often requiring an upfront investment, will be pursued. Supply will also be determined by the offset market's future structure. Currently, carbon offsets are project based, which requires independent verification of projects—a slow and bureaucratic process. There are also concerns about the so-called additionality of project-based offsets.[4]

Multiple proposals have been put on the table to scale up offset markets. Key options include a reformed project-based mechanism, a program-matic mechanism that would award policies with credits, a sector no-lose mechanism that would reward abatements but not punish their absence, outright sector caps, or any combination of the above. The eventual supply of credits and their relative cost will be determined by the choice of mechanism, as well as the type of offset credits allowed (for example, whether they include carbon capture and storage, nuclear power, or efforts to cut emissions by reducing deforestation and the degradation of forests).

McKinsey has developed a carbon market model based on the firm's most recent greenhouse-gas-abatement cost curve.[5] This tool models all domestic and international carbon markets over time and estimates emission reductions and long-term fundamental carbon price levels by markets, as well as the flows among them. The model is not a price-forecasting tool but does help users understand relative price differences between markets and the fundamental factors that explain those differences. The "hard" demand for offsets is expected to be around 1.4 GT by 2020—adding up demand from domestic carbon markets, including the European carbon market and the expected US one. Additional soft demand from Annex I countries, arising from their reduction commitments, could add a further 0.5 GT of demand but depends critically on the resolution of the hot-air overhang from the 2008–12 Kyoto period and the absence of hot air after 2012.

The model calculates that 2020 carbon prices in the EU emission-trading system (around €29 a ton) will be well above the price in the offset market (around €13 a ton, which reflects the exhaustion of the system's offset quota). The US carbon market price (€16 a ton) is much closer to the offset market price. The difference results from the offset discount factor proposed in the American Clean Energy and Security Act of 2009.[6]

Abatement: A modest role in developing countries

The Intergovernmental Panel on Climate Change (IPCC) suggests that the global community needs to limit emissions to 44 GT in 2020 in order to limit global warming to two degrees.[7] That goal would require global cuts of up to 17 GT of emissions by 2020. A large share of this decline will have to take place in developed nations, but their potential is limited to 5 GT by 2020. Faster-growing developing nations have more room to make low-carbon choices in energy efficiency and power (6 GT by 2020), as well as most of the emission reduction potential of preserved forests (roughly another 6 GT by 2020).

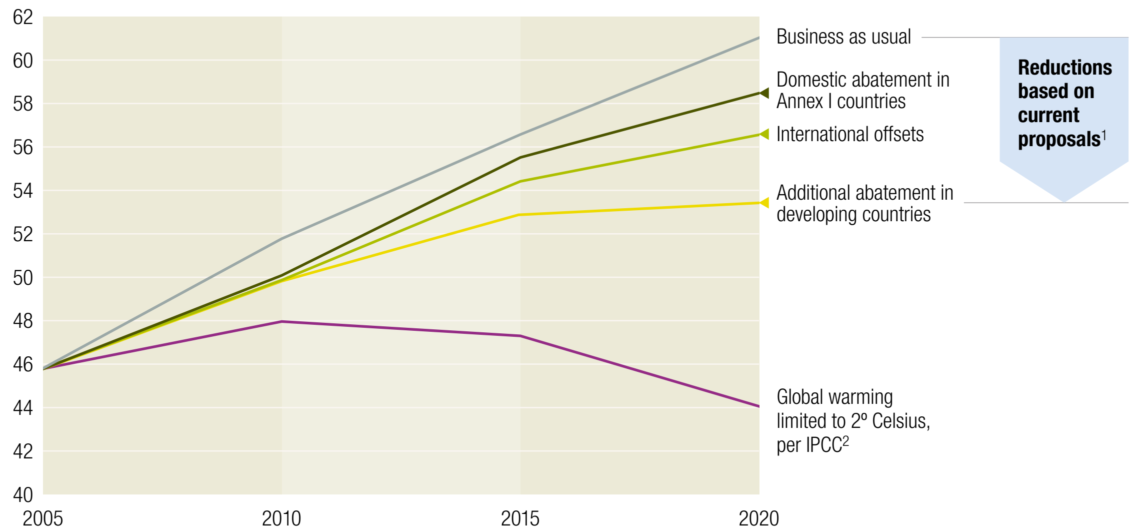
McKinsey's carbon market model offers a view on the likely outcomes of the global regulatory debate, and in particular the role played by carbon markets. To do so, the model assesses the effectiveness of existing and proposed climate change regulations, including those outside the emissions directly capped by carbon markets. Emission reductions of all kinds influence carbon market outcomes. As an example, energy

Exhibit

Only halfway

Based on current proposals, the world will achieve only half of the emission reduction required to limit global warming to 2 degrees Celsius by 2020.

Global greenhouse gas emissions,
metric gigatons of carbon dioxide equivalents



[1]From Annex I and developing countries. Under the Kyoto Protocol, Annex I countries are those 37 industrialized nations that committed themselves to a reduction of greenhouse gases.
[2]Intergovernmental Panel on Climate Change.

efficiency in European buildings (not covered by the EU Emission Trading System) will reduce demand for power and thereby the power sector's emissions (which are covered). In a similar fashion, climate change regulation in developing nations can influence the availability of offset supply, particularly in sectorwide offset programs.

A detailed assessment of all proposals from Annex I and non–Annex I countries currently on the table[8] shows that the world will be able to realize only about half of the emission reduction potential required to limit global warming to two degrees (exhibit). Of this emission potential, three GT of reductions will be achieved as domestic abatements in Annex I countries, up to two GT will be international offsets (which count toward the domestic abatement of Annex I countries), and a further three GT will be achieved by autonomous action from developing nations, potentially with financial support from Annex II nations.[9]

Actions currently envisioned by developing countries include a 70 percent reduction of deforestation in the Amazon rainforest by 2017 (which Brazil has proposed) and the increase of renewable power in China to 15 percent of its energy mix in 2020. In reality, most developing nations are unwilling to make stringent commitments before that year, while some have proposed quantified caps thereafter. South Africa, for instance, proposes to let its emissions peak in 2025 before reducing them after 2035.

Offset demand of up to 2 GT represents significant growth compared with 2008, when 140 megatons of offset credits were issued. Yet 2 GT is a relatively modest amount in light of the up to 17 GT of abatement required to limit global warming to two degrees.

We need to be critical of this assessment, however, as the scenario modeled is only one possible outcome of ongoing discussions. In coming years, countries could markedly improve their proposals for domestic emission caps. The Europena Union has offered to reduce emissions to 30 percent below 1990 levels if other countries make similar commitments. Japan has already announced a target of reducing emissions 25 percent below 1990 levels by 2020. Although that goal is conditioned on the willingness of other countries to take similarly bold action, it is much more ambitious than the country's previous goal.

Furthermore, developed nations proposed substantial financial support for developing ones in the nonbinding political Copenhagen Accord: $30 billion in the period from 2010 to 2012 and up to $100 billion a year by 2020. This money might make developing nations more willing to reduce emissions and could therefore raise global performance. However, it might not be possible to achieve the recommended environmental outcome even given a more ambitious scenario with stricter national targets.

As a result of this uncertainty, companies are likely to move away from projects—such as the capture of gases other than carbon dioxide and the reduction of emissions from cooking stoves,[10] which are responsible for up to 18 percent of global warming—that rely completely on offsets as their income stream. Instead, they will look for projects that also have other income streams, such as power market revenues and government subsidies, even if these projects require significantly more investment.[11]

1 Under the Kyoto Protocol, Annex I countries are those 37 industrialized nations that committed themselves to a reduction of greenhouse gases.
2 Metric tons: 1 metric ton = 2,205 pounds.
3 Russia, Ukraine, and various other Eastern European nations have emission caps above their current emission levels, because of the 1989 collapse of the Soviet Union. The result is a significant overhang of credits.
4 In other words, some projects might have been undertaken without any revenue from carbon credits and therefore may not have any "additional" environmental advantages.
5 McKinsey's global greenhouse-gas-abatement cost curve assesses the technical potential to reduce carbon emissions and the cost by country, industry, and lever. For a full description, see "Pathways to a low-carbon economy," available free of charge on mckinsey.com.
6 Sponsored by US Representatives Henry Waxman and Edward Markey, the act includes provisions on clean energy (and the transition to an economy based on it), energy efficiency, global warming, and agriculture- and forestry-related offsets.
7 This scenario assumes that carbon content in the atmosphere is reduced to 450 parts per million (ppm) by 2100, with an overshoot to 510 ppm in the intermediate period.
8 The proposals in the assessment include the recent submissions to the United Nations Framework Convention on Climate Change (January 31, 2010), the European Union's commitment to reduce carbon emissions to 20 percent below the 1990 level by 2020, and the targets in the American Clean Energy and Security Act of 2009, passed by the US House of Representatives in 2009 and awaiting consideration by the Senate.
9 An Annex I subset of nations that have made a commitment to pay the incremental cost of mitigation and adaptation for developing (non–Annex I) nations. Annex II nations are Australia, Austria, Belgium, Canada, Denmark, the European Union, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.
10 See Elisabeth Rosenthal, "Third-world stove soot is target in climate fight," *New York Times,* April 15, 2009.
11 A company can claim offset income, however, only if a project is not otherwise expected to make a hurdle rate of return. The upside of such investments is therefore capped.

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INVESTOR GROWTH EXPECTATIONS

Summer 2004

A study done by Vander Weide and Carleton in 1988[1] suggests that consensus analysts' forecast of future growth is superior to historically oriented growth measures in stock valuation process for domestic companies. We worked with one of the original authors of the study, Dr. James H. Vander Weide, and closely followed his suggestions and methodology to investigate whether the results still hold in more recent times (2001- 2003).

We used the following equation to determine which estimate of future growth (g) best predicts the firm's P/E ratio when combined with the dividend payout ratio, D/E, and risk variables, B, Cov, Stb, and Sa.

$$P/E = a_0(D/E) + a_1 g(\text{Growth}) + a_2 B(\text{Beta}) + a_3 Cov(\text{Interest Coverage Ratio}) + a_4 Stb(\text{Stability}) + a_5 Sa(\text{Std Dev}) + e$$

Data Description

Earnings Per Share:	IBES consensus analyst estimate of the firm's earnings for the unreported year.
Price/Earnings Ratio:	Closing stock price for the year divided by the consensus analyst earnings per share for the forthcoming year.
Dividends:	Ratio of common dividends per share to the consensus analyst earnings forecast for the forthcoming fiscal year (D/E).

Historical Growth measures

EPS Growth Rate:	Determined by a log-linear least squares regression for the latest year, two years, three years, …, and ten years.
Dividend per Share Growth Rate:	Determined by a log-linear least squares regression for the latest year, two years, three years, …, and ten years.
Book Value per Share Growth Rate:	Common equity divided by the common shares outstanding. Determined by a log-linear least squares regression for the latest year, two years, three years, …, and ten years.
Cash Flow per Share Growth Rate:	Ratio of gross cash flow to common shares outstanding. Determined by a log-linear least squares regression for the latest year, two years, three years, …, and ten years.
Plowback Growth:	Firm's retention ratio for the current year times the firm's latest annual return on equity.
3yr Plowback Growth:	Firm's three-year average retention ratio times the firm's three-year average return on equity.

Consensus Analysts' Forecasts

Five-Year Earnings Per Share Growth: Mean analysts' forecast compiled by IBES.

[1] Vander Weide, J. H., and W. T. Carleton. "Investor Growth Expectations: Analysts vs. History." *The Journal of Portfolio Management*, Spring 1988, pp. 78-82.

Risk Variables

B: Beta, the firm's beta versus NYSE from Value Line.

Cov: The firm's pretax interest coverage ratio from Compustat.

Stb: Five-year historical earnings per share stability. Average absolute percentage difference between actual reported EPS and a 5yr historical EPS growth trend line from IBES.

Sa: The standard deviation of earnings per share estimate for the fiscal year from IBES.

We set five restrictions on the companies included in the study in order to be consistent with the original study and to obtain more meaningful results.

- Excluded all firms that IBES did not follow.
- Eliminated companies with:
  - Negative EPS during any of the years 1991-2003.
  - No dividend during any one of the years 1991-2003.
  - P/E ratio greater than 60 in years 2001-2003.
  - Less than five years of operating history.

The final universe consisted of 411 US firms, fifty-nine of which are utility companies.

Results

The study was performed in two stages.

Stage 1

In order to determine which historically oriented growth measure is most highly correlated with each firm's end-of-year P/E ratio, we computed spearman (rank) correlations between all forty-two historically oriented future growth measures and P/E.

The result of the stage 1 study is displayed in Table 1. Three-year plowback ratio has the highest correlation with P/E in 2001 and 2002, and five-year EPS growth rate has the highest correlation with P/E in 2003.

Table 1

Stage1 Results for Utility and Non-Utility Companies Combined

Correlations between Historically Based Growth Estimates by Year with P/E

Current Year		y1	y2	y3	y4	y5	y6	y7	y8	y9	y10
2001	EPS	0.232	0.210	0.145	0.122	0.059	0.034	-0.007	-0.076	-0.117	-0.154
	DPS	-0.243	-0.297	-0.296	-0.293	-0.313	-0.316	-0.336	-0.334	-0.329	-0.333
	BVPS	0.059	-0.017	-0.098	-0.138	-0.150	-0.182	-0.219	-0.259	-0.271	-0.273
	CFPS	0.092	0.092	0.087	0.042	-0.063	-0.102	-0.141	-0.193	-0.237	-0.262
	plowback	0.203									
	plowback3	0.308									
2002	EPS	-0.007	0.147	0.076	0.080	0.083	0.050	0.030	-0.018	-0.060	-0.089
	DPS	-0.126	-0.202	-0.251	-0.224	-0.215	-0.239	-0.232	-0.233	-0.211	-0.198
	BVPS	-0.036	-0.036	-0.078	-0.115	-0.114	-0.127	-0.152	-0.162	-0.175	-0.171
	CFPS	0.056	0.045	0.017	0.021	0.030	-0.024	-0.050	-0.080	-0.125	-0.162
	plowback	0.093									
	plowback3	0.180									
2003	EPS	0.073	0.084	0.214	0.231	0.244	0.228	0.182	0.158	0.104	0.049
	DPS	0.120	0.054	-0.001	-0.078	-0.090	-0.126	-0.152	-0.165	-0.183	-0.185
	BVPS	0.097	0.076	0.067	0.036	-0.045	-0.062	-0.063	-0.083	-0.105	-0.131
	CFPS	0.146	0.196	0.243	0.239	0.206	0.178	0.107	0.089	0.039	-0.022
	plowback	-0.017									
	plowback3	0.038									

We also independently examined utility and non-utility firms. Table 2 shows the result for the fifty-nine utility firms. Two-year growth in EPS has the highest correlation with P/E in 2001, four-year EPS has the highest correlation in 2002, and six-year EPS has the highest correlation in 2003.

Table 3 exhibits the result for the remaining non-utility firms. EPS one-year growth, two-year growth, and five-year growth has the highest correlation with P/E in 2001, 2002, and 2003, respectively.

Table 2

Stage1 Results for Utility Companies

Correlations between Historically Based Growth Estimates by Year with P/E

Current Year		y1	y2	y3	y4	y5	y6	y7	y8	y9	y10
2001	EPS	0.305	0.330	0.305	0.319	0.238	0.157	0.129	0.107	0.079	0.048
	DPS	-0.215	-0.321	-0.302	-0.294	-0.316	-0.281	-0.332	-0.414	-0.435	-0.429
	BVPS	0.164	0.137	0.147	-0.027	-0.072	-0.135	-0.117	-0.104	-0.106	-0.140
	CFPS	0.194	0.135	0.020	-0.018	-0.122	-0.157	-0.135	-0.134	-0.103	-0.219
	plowback	-0.143									
	plowback3	-0.027									
2002	EPS	-0.065	0.044	0.069	0.119	0.071	0.004	-0.038	-0.069	-0.061	-0.070
	DPS	-0.333	-0.327	-0.278	-0.313	-0.280	-0.321	-0.277	-0.226	-0.203	-0.210
	BVPS	-0.325	-0.239	-0.182	-0.177	-0.230	-0.237	-0.250	-0.247	-0.235	-0.235
	CFPS	-0.205	-0.132	-0.172	-0.166	-0.216	-0.289	-0.285	-0.265	-0.227	-0.218
	plowback	-0.151									
	plowback3	-0.133									
2003	EPS	0.010	0.136	0.186	0.263	0.365	0.367	0.344	0.343	0.309	0.302
	DPS	0.151	-0.029	-0.014	-0.022	-0.054	-0.117	-0.142	-0.137	-0.105	-0.092
	BVPS	0.212	0.060	0.047	0.019	0.003	0.040	0.022	0.005	0.003	-0.002
	CFPS	0.222	-0.046	0.173	0.115	0.165	0.100	0.017	0.077	0.057	0.077
	plowback	-0.365									
	plowback3	-0.403									

Table 3

Stage1 Results for Non-Utility Companies

Correlations between Historically Based Growth Estimates by Year with P/E

Current Year		y1	y2	y3	y4	y5	y6	y7	y8	y9	y10
2001	EPS	0.1843	0.1660	0.1293	0.1218	0.0873	0.0829	0.0618	0.0106	-0.0194	-0.0412
	DPS	-0.2036	-0.2211	-0.2042	-0.1935	-0.2098	-0.2066	-0.2186	-0.2155	-0.2046	-0.1975
	BVPS	0.0757	0.0084	-0.0791	-0.0997	-0.0916	-0.1146	-0.1388	-0.1783	-0.1866	-0.1823
	CFPS	0.0864	0.0710	0.0956	0.0704	-0.0033	-0.0162	-0.0366	-0.0747	-0.1186	-0.1325
	plowback	0.0781									
	plowback3	0.1781									
2002	EPS	0.0762	0.1767	0.0755	0.0817	0.0936	0.0757	0.0708	0.0316	-0.0011	-0.0254
	DPS	-0.0804	-0.1693	-0.2103	-0.1672	-0.1519	-0.1720	-0.1645	-0.1636	-0.1394	-0.1226
	BVPS	0.0527	0.0236	-0.0363	-0.0777	-0.0710	-0.0753	-0.0953	-0.1019	-0.1118	-0.1061
	CFPS	0.0905	0.0488	0.0143	0.0237	0.0563	0.0246	0.0097	-0.0079	-0.0458	-0.0821
	plowback	0.0634									
	plowback3	0.1306									
2003	EPS	0.1254	0.1783	0.2788	0.2689	0.2791	0.2622	0.2219	0.2039	0.1559	0.1090
	DPS	0.1810	0.1290	0.0655	-0.0128	-0.0101	-0.0400	-0.0630	-0.0772	-0.0930	-0.0952
	BVPS	0.1555	0.1740	0.1534	0.1056	0.0127	-0.0069	-0.0054	-0.0218	-0.0416	-0.0636
	CFPS	0.1479	0.2200	0.2512	0.2429	0.2004	0.1839	0.1349	0.1286	0.0892	0.0388
	plowback	-0.1109									
	plowback3	-0.0402									

Stage 2
We compared the multiple regression model of historical growth rate with the highest correlation to the P/E ratio from stage 1 to the five-year earnings per share growth forecast.

$$P/E = a_0(D/E) + a_1 g + a_2 B + a_3 Cov + a_4 Stb + a_5 Sa + e$$

The regression results are displayed in table 4. The results show that the consensus analysts' forecast of future growth better approximates the firm's P/E ratio, which is consistent with the results found by Vander Weide and Carleton. In both regressions, R^2 in the regression with the consensus analysts' forecast is higher than the R^2 in the regression with the historical growth.

Table 4
Stage2 Results for Utility and Non-Utility Companies Combined
Multiple Regression Results
P/E = a0 + a1 **D/E** + a2 **g** + a3 **B** + a4 **Cov** + a5 **Stb** + a6 **Sa**

Historical

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	10.43	8.46	10.79	6.79	0.02	-0.03	-18.83	0.20	13.90
	4.73	5.53	2.93	3.54	3.05	-3.06	-3.32		
2002	12.36	7.60	6.66	1.01	0.00	0.01	-32.48	0.15	9.46
	7.21	6.18	2.61	0.66	1.57	1.48	-4.04		
2003	13.34	5.96	9.87	5.27	0.01	-0.01	-20.46	0.24	17.61
	7.29	4.04	2.95	3.39	3.62	-1.31	-4.25		

Analysts' Forecasts

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	-1.26	16.14	144.75	-0.64	0.01	-0.03	-10.76	0.47	48.00
	-0.62	11.63	13.22	-0.38	3.07	-4.04	-2.29		
2002	3.37	13.37	106.07	-3.60	0.00	0.01	-21.85	0.35	29.73
	1.93	10.97	10.59	-2.57	1.25	1.50	-3.06		
2003	4.77	12.76	61.93	4.38	0.01	0.00	-19.41	0.33	26.38
	2.65	9.48	7.25	3.01	2.45	-0.81	-4.33		

*T-stats below the coefficients in smaller font

For utility companies shown in table 5, consensus analysts' forecast of future growth is superior to historically oriented growth in 2002 and 2003. R^2 is lower in the regression with the consensus analysts' forecast in 2001. For non-utility companies, we found that consensus analysts' forecast of future growth is superior to the alternative in all three years (table 6).

Table 5
Stage2 Results for Utility Companies

Multiple Regression Results

P/E = a0 + a1 **D/E** + a2 **g** + a3 **B** + a4 **Cov** + a5 **Stb** + a6 **Sa**

Historical

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	7.90	11.07	-11.19	-3.00	0.29	0.00	-9.37	0.44	6.38
	2.16	4.80	-5.71	-0.86	0.88	0.64	-1.51		
2002	13.87	7.00	-3.80	-6.89	0.56	0.00	-29.89	0.38	5.11
	4.02	3.54	-0.66	-2.01	1.48	0.42	-2.70		
2003	11.29	7.74	-1.65	-1.40	0.32	0.00	-5.69	0.25	2.68
	3.22	3.30	-0.23	-0.43	1.05	-0.73	-0.75		

Analysts' Forecasts

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	9.61	9.20	66.61	-7.92	0.50	-0.01	-12.83	0.27	2.95
	2.31	3.45	3.66	-1.86	1.31	-1.33	-1.76		
2002	12.43	7.86	50.74	-9.61	0.50	0.00	-24.94	0.48	7.56
	3.89	5.29	3.10	-2.94	1.50	0.17	-2.41		
2003	5.81	11.06	101.12	-1.69	-0.19	0.00	-4.75	0.50	7.81
	1.89	6.32	4.80	-0.58	-0.74	-0.22	-0.74		

*T-stats below the coefficients in smaller font

Table 6
Stage2 Results for Non-Utility Companies

Multiple Regression Results

P/E = a0 + a1 **D/E** + a2 **g** + a3 **B** + a4 **Cov** + a5 **Stb** + a6 **Sa**

Historical

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	15.90	8.39	2.82	3.53	0.02	-0.03	-21.05	0.21	12.45
	6.57	4.13	1.96	1.68	2.97	-2.14	-3.40		
2002	17.76	8.46	6.02	-3.06	0.00	0.02	-36.97	0.27	16.78
	9.39	5.19	3.28	-1.88	1.37	2.52	-4.31		
2003	14.24	9.86	8.85	3.46	0.01	0.00	-19.00	0.30	19.89
	7.49	5.89	2.49	2.11	3.23	-0.15	-3.73		

Analysts' Forecasts

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	-0.51	17.28	140.84	-1.06	0.01	-0.03	-8.63	0.44	36.00
	-0.22	11.21	10.73	-0.59	2.88	-2.62	-1.63		
2002	5.05	15.67	91.22	-4.06	0.00	0.02	-22.93	0.38	27.65
	2.48	11.23	7.66	-2.74	1.18	2.33	-2.87		
2003	7.25	14.47	45.60	3.47	0.01	0.00	-19.09	0.33	22.30
	3.56	9.42	4.68	2.20	2.36	-0.12	-3.89		

*T-stats below the coefficients in smaller font

The Risk Premium Approach to Measuring a Utility's Cost of Equity

Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson

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■ In the mid-1960s, Myron Gordon and others began applying the theory of finance to help estimate utilities' costs of capital. Previously, the standard approach in cost of equity studies was the "comparable earnings method," which involved selecting a sample of unregulated companies whose investment risk was judged to be comparable to that of the utility in question, calculating the average return on book equity (ROE) of these sample companies, and setting the utility's service rates at a level that would permit the utility to achieve the same ROE as comparable companies. This procedure has now been thoroughly discredited (see Robichek [15]), and it has been replaced by three market-oriented (as opposed to accounting-oriented) approaches: (i) the DCF method, (ii) the bond-yield-plus-risk-premium method, and (iii) the CAPM, which is a specific version of the generalized bond-yield-plus-risk-premium approach.

Our purpose in this paper is to discuss the risk-premium approach, including the market risk premium that is used in the CAPM. First, we critique the various procedures that have been used in the past to estimate risk premiums. Second, we present some data on estimated risk premiums since 1965. Third, we examine the relationship between equity risk premiums and the level of interest rates, because it is important, for purposes of estimating the cost of capital, to know just how stable the relationship between risk premiums and interest rates is over time. If stability exists, then one can estimate the cost of equity at any point in time as a function of interest rates as reported in *The Wall Street Journal*, the *Federal Reserve Bulletin*, or some similar source.[1] Fourth, while we do not discuss the CAPM directly, our analysis does have some important implications for selecting a market risk premium for use in that model. Our focus is on utilities, but the methodology is applicable to the estimation of the cost of

[1]For example, the Federal Energy Regulatory Commission's Staff recently proposed that a risk premium be estimated every two years and that, between estimation dates, the last-determined risk premium be added to the current yield on ten-year Treasury bonds to obtain an estimate of the cost of equity to an average utility (Docket RM 80–36). Subsequently, the FCC made a similar proposal ("Notice of Proposed Rulemaking," August 13, 1984, Docket No. 84–800). Obviously, the validity of such procedures depends on (i) the accuracy of the risk premium estimate and (ii) the stability of the relationship between risk premiums and interest rates. Both proposals are still under review.

equity for any publicly traded firm, and also for non-traded firms for which an appropriate risk class can be assessed, including divisions of publicly traded corporations.[2]

Alternative Procedures for Estimating Risk Premiums

In a review of both rate cases and the academic literature, we have identified three basic methods for estimating equity risk premiums: (i) the *ex post*, or historic, yield spread method; (ii) the survey method; and (iii) an *ex ante* yield spread method based on DCF analysis.[3] In this section, we briefly review these three methods.

Historic Risk Premiums

A number of researchers, most notably Ibbotson and Sinquefield [12], have calculated historic holding period returns on different securities and then estimated risk premiums as follows:

$$\text{Historic Risk Premium} = \begin{pmatrix}\text{Average of the} \\ \text{annual returns on} \\ \text{a stock index for} \\ \text{a particular} \\ \text{past period}\end{pmatrix} - \begin{pmatrix}\text{Average of the} \\ \text{annual returns on} \\ \text{a bond index for} \\ \text{the same} \\ \text{past period}\end{pmatrix}. \quad (1)$$

Ibbotson and Sinquefield (I&S) calculated both arithmetic and geometric average returns, but most of their risk-premium discussion was in terms of the geometric averages. Also, they used both corporate and Treasury bond indices, as well as a T-bill index, and they analyzed all possible holding periods since 1926. The I&S study has been employed in numerous rate cases in two ways: (i) directly, where the I&S historic risk premium is added to a company's bond yield to obtain an estimate of its cost of equity, and (ii) indirectly, where I&S data are used to estimate the market risk premium in CAPM studies.

There are both conceptual and measurement problems with using I&S data for purposes of estimating the cost of capital. Conceptually, there is no compelling reason to think that investors expect the same relative returns that were earned in the past. Indeed, evidence presented in the following sections indicates that relative expected returns should, and do, vary significantly over time. Empirically, the measured historic premium is sensitive both to the choice of estimation horizon and to the end points. These choices are essentially arbitrary, yet they can result in significant differences in the final outcome. These measurement problems are common to most forecasts based on time series data.

The Survey Approach

One obvious way to estimate equity risk premiums is to poll investors. Charles Benore [1], the senior utility analyst for Paine Webber Mitchell Hutchins, a leading institutional brokerage house, conducts such a survey of major institutional investors annually. His 1983 results are reported in Exhibit 1.

Exhibit 1. Results of Risk Premium Survey, 1983*

Assuming a double A, long-term utility bond currently yields 12½%, the common stock for the same company would be fairly priced relative to the bond if its expected return was as follows:

Total Return	Indicated Risk Premium (basis points)	Percent of Respondents
over 20½%	over 800	
20½%	800	
19½%	700	
18½%	600	10%
17½%	500	8%
16½%	400	29%
15½%	300	35%
14½%	200	16%
13½%	100	0%
under 13½%	under 100	1%
Weighted average	358	100%

*Benore's questionnaire included the first two columns, while his third column provided a space for the respondents to indicate which risk premium they thought applied. We summarized Benore's responses in the frequency distribution given in Column 3. Also, in his questionnaire each year, Benore adjusts the double A bond yield and the total returns (Column 1) to reflect current market conditions. Both the question above and the responses to it were taken from the survey conducted in April 1983.

[2]The FCC is particularly interested in risk-premium methodologies, because (i) only eighteen of the 1,400 telephone companies it regulates have publicly-traded stock, and hence offer the possibility of DCF analysis, and (ii) most of the publicly-traded telephone companies have both regulated and unregulated assets, so a corporate DCF cost might not be applicable to the regulated units of the companies.

[3]In rate cases, some witnesses also have calculated the differential between the yield to maturity (YTM) of a company's bonds and its concurrent ROE, and then called this differential a risk premium. In general, this procedure is unsound, because the YTM on a bond is a *future expected* return on the bond's *market value*, while the ROE is the *past realized* return on the stock's *book value*. Thus, comparing YTMs and ROEs is like comparing apples and oranges.

Benore's results, as measured by the average risk premiums, have varied over the years as follows:

Year	Average RP (basis points)
1978	491
1979	475
1980	423
1981	349
1982	275
1983	358

The survey approach is conceptually sound in that it attempts to measure investors' expectations regarding risk premiums, and the Benore data also seem to be carefully collected and processed. Therefore, the Benore studies do provide one useful basis for estimating risk premiums. However, as with most survey results, the possibility of biased responses and/or biased sampling always exists. For example, if the responding institutions are owners of utility stocks (and many of them are), and if the respondents think that the survey results might be used in a rate case, then they might bias upward their responses to help utilities obtain higher authorized returns. Also, Benore surveys large institutional investors, whereas a high percentage of utility stocks are owned by individuals rather than institutions, so there is a question as to whether his reported risk premiums are really based on the expectations of the "representative" investor. Finally, from a pragmatic standpoint, there is a question as to how to use the Benore data for utilities that are not rated AA. The Benore premiums can be applied as an add-on to the own-company bond yields of any given utility only if it can be assumed that the premiums are constant across bond rating classes. *A priori*, there is no reason to believe that the premiums will be constant.

DCF-Based *Ex Ante* Risk Premiums

In a number of studies, the DCF model has been used to estimate the *ex ante* market risk premium, RP_M. Here, one estimates the average expected future return on equity for a group of stocks, k_M, and then subtracts the concurrent risk-free rate, R_F, as proxied by the yield to maturity on either corporate or Treasury securities:[4]

$$RP_M = k_M - R_F. \qquad (2)$$

Conceptually, this procedure is exactly like the I&S approach except that one makes direct estimates of future expected returns on stocks and bonds rather than assuming that investors expect future returns to mirror past returns.

The most difficult task, of course, is to obtain a valid estimate of k_M, the expected rate of return on the market. Several studies have attempted to estimate DCF risk premiums for the utility industry and for other stock market indices. Two of these are summarized next.

Vandell and Kester. In a recently published monograph, Vandell and Kester [18] estimated *ex ante* risk premiums for the period from 1944 to 1978. R_F was measured both by the yield on 90-day T-bills and by the yield on the Standard and Poor's AA Utility Bond Index. They measured k_M as the average expected return on the S&P's 500 Index, with the expected return on individual securities estimated as follows:

$$k_i = \left(\frac{D_1}{P_0}\right)_i + g_i, \qquad (3)$$

where,

D_1 = dividend per share expected over the next twelve months,
P_0 = current stock price,
g = estimated long-term constant growth rate, and
i = the i^{th} stock.

To estimate g_i, Vandell and Kester developed fifteen forecasting modéls based on both exponential smoothing and trend-line forecasts of earnings and dividends, and they used historic data over several estimating horizons. Vandell and Kester themselves acknowledge that, like the Ibbotson-Sinquefield premiums, their analysis is subject to potential errors associated with trying to estimate expected future growth purely from past data. We shall have more to say about this point later.

[4] In this analysis, most people have used yields on long-term bonds rather than short-term money market instruments. It is recognized that long-term bonds, even Treasury bonds, are not risk free, so an RP_M based on these debt instruments is smaller than it would be if there were some better proxy to the long-term riskless rate. People have attempted to use the T-bill rate for R_F, but the T-bill rate embodies a different average inflation premium than stocks, and it is subject to random fluctuations caused by monetary policy, international currency flows, and other factors. Thus, many people believe that for cost of capital purposes, R_F should be based on long-term securities.

We did test to see how debt maturities would affect our calculated risk premiums. If a short-term rate such as the 30-day T-bill rate is used, measured risk premiums jump around widely and, so far as we could tell, randomly. The choice of a maturity in the 10- to 30-year range has little effect, as the yield curve is generally fairly flat in that range.

Malkiel. Malkiel [14] estimated equity risk premiums for the Dow Jones Industrials using the DCF model. Recognizing that the constant dividend growth assumption may not be valid, Malkiel used a nonconstant version of the DCF model. Also, rather than rely exclusively on historic data, he based his growth rates on Value Line's five-year earnings growth forecasts plus the assumption that each company's growth rate would, after an initial five-year period, move toward a long-run real national growth rate of four percent. He also used ten-year maturity government bonds as a proxy for the riskless rate. Malkiel reported that he tested the sensitivity of his results against a number of different types of growth rates, but, in his words, "The results are remarkably robust, and the estimated risk premiums are all very similar." Malkiel's is, to the best of our knowledge, the first risk-premium study that uses analysts' forecasts. A discussion of analysts' forecasts follows.

Security Analysts' Growth Forecasts

Ex ante DCF risk premium estimates can be based either on expected growth rates developed from time series data, such as Vandell and Kester used, or on analysts' forecasts, such as Malkiel used. Although there is nothing inherently wrong with time series-based growth rates, an increasing body of evidence suggests that primary reliance should be placed on analysts' growth rates. First, we note that the observed market price of a stock reflects the consensus view of investors regarding its future growth. Second, we know that most large brokerage houses, the larger institutional investors, and many investment advisory organizations employ security analysts who forecast future EPS and DPS, and, to the extent that investors rely on analysts' forecasts, the consensus of analysts' forecasts is embodied in market prices. Third, there have been literally dozens of academic research papers dealing with the accuracy of analysts' forecasts, as well as with the extent to which investors actually use them. For example, Cragg and Malkiel [7] and Brown and Rozeff [5] determined that security analysts' forecasts are more relevant in valuing common stocks and estimating the cost of capital than are forecasts based solely on historic time series. Stanley, Lewellen, and Schlarbaum [16] and Linke [13] investigated the importance of analysts' forecasts and recommendations to the investment decisions of individual and institutional investors. Both studies indicate that investors rely heavily on analysts' reports and incorporate analysts' forecast information in the formation of their expectations about stock returns. A representative listing of other work supporting the use of analysts' forecasts is included in the References section. Thus, evidence in the current literature indicates that (i) analysts' forecasts are superior to forecasts based solely on time series data, and (ii) investors do rely on analysts' forecasts. Accordingly, we based our cost of equity, and hence risk premium estimates, on analysts' forecast data.[5]

Risk Premium Estimates

For purposes of estimating the cost of capital using the risk premium approach, it is necessary either that the risk premiums be time-invariant or that there exists a predictable relationship between risk premiums and interest rates. If the premiums are constant over time, then the constant premium could be added to the prevailing interest rate. Alternatively, if there exists a stable relationship between risk premiums and interest rates, it could be used to predict the risk premium from the prevailing interest rate.

To test for stability, we obviously need to calculate risk premiums over a fairly long period of time. Prior to 1980, the only consistent set of data we could find came from Value Line, and, because of the work involved, we could develop risk premiums only once a year (on January 1). Beginning in 1980, however, we began collecting and analyzing Value Line data on a monthly basis, and in 1981 we added monthly estimates from Merrill Lynch and Salomon Brothers to our data base. Finally, in mid-1983, we expanded our analysis to include the IBES data.

Annual Data and Results, 1966–1984

Over the period 1966–1984, we used Value Line data to estimate risk premiums both for the electric utility industry and for industrial companies, using the companies included in the Dow Jones Industrial and Utility averages as representative of the two groups. Value Line makes a five-year growth rate forecast, but it also gives data from which one can develop a longer-term forecast. Since DCF theory calls for a truly long-term (infinite horizon) growth rate, we concluded that it was better to develop and use such a forecast than to

[5]Recently, a new type of service that summarizes the key data from most analysts' reports has become available. We are aware of two sources of such services, the Lynch, Jones, and Ryan's Institutional Brokers Estimate System (IBES) and Zack's Icarus Investment Service. IBES and the Icarus Service gather data from both buy-side and sell-side analysts and provide it to subscribers on a monthly basis in both a printed and a computer-readable format.

Exhibit 2. Estimated Annual Risk Premiums, Nonconstant (Value Line) Model, 1966–1984

January 1 of the Year Reported	Dow Jones Electrics			Dow Jones Industrials			
	k_{Avg}	R_F	RP	k_{Avg}	R_F	RP	(3) ÷ (6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1966	8.11%	4.50%	3.61%	9.56%	4.50%	5.06%	0.71
1967	9.00%	4.76%	4.24%	11.57%	4.76%	6.81%	0.62
1968	9.68%	5.59%	4.09%	10.56%	5.59%	4.97%	0.82
1969	9.34%	5.88%	3.46%	10.96%	5.88%	5.08%	0.68
1970	11.04%	6.91%	4.13%	12.22%	6.91%	5.31%	0.78
1971	10.80%	6.28%	4.52%	11.23%	6.28%	4.95%	0.91
1972	10.53%	6.00%	4.53%	11.09%	6.00%	5.09%	0.89
1973	11.37%	5.96%	5.41%	11.47%	5.96%	5.51%	0.98
1974	13.85%	7.29%	6.56%	12.38%	7.29%	5.09%	1.29
1975	16.63%	7.91%	8.72%	14.83%	7.91%	6.92%	1.26
1976	13.97%	8.23%	5.74%	13.32%	8.23%	5.09%	1.13
1977	12.96%	7.30%	5.66%	13.63%	7.30%	6.33%	0.89
1978	13.42%	7.87%	5.55%	14.75%	7.87%	6.88%	0.81
1979	14.92%	8.99%	5.93%	15.50%	8.99%	6.51%	0.91
1980	16.39%	10.18%	6.21%	16.53%	10.18%	6.35%	0.98
1981	17.61%	11.99%	5.62%	17.37%	11.99%	5.38%	1.04
1982	17.70%	14.00%	3.70%	19.30%	14.00%	5.30%	0.70
1983	16.30%	10.66%	5.64%	16.53%	10.66%	5.87%	0.96
1984	16.03%	11.97%	4.06%	15.72%	11.97%	3.75%	1.08

use the five-year prediction.[6] Therefore, we obtained data as of January 1 from Value Line for each of the Dow Jones companies and then solved for k, the expected rate of return, in the following equation:

$$P_0 = \sum_{t=1}^{n} \frac{D_t}{(1+k)^t} + \left(\frac{D_n(1+g_n)}{k-g_n}\right)\left(\frac{1}{1+k}\right)^n. \quad (4)$$

Equation (4) is the standard nonconstant growth DCF model; P_0 is the current stock price; D_t represents the forecasted dividends during the nonconstant growth period; n is the years of nonconstant growth; D_n is the first constant growth dividend; and g_n is the constant, long-run growth rate after year n. Value Line provides D_t values for $t = 1$ and $t = 4$, and we interpolated to obtain D_2 and D_3. Value Line also gives estimates for ROE and for the retention rate (b) in the terminal year, n, so we can forecast the long-term growth rate as $g_n = b(ROE)$. With all the values in Equation (4) specified except k, we can solve for k, which is the DCF rate of return that would result if the Value Line forecasts were met, and, hence, the DCF rate of return implied in the Value Line forecast.[7]

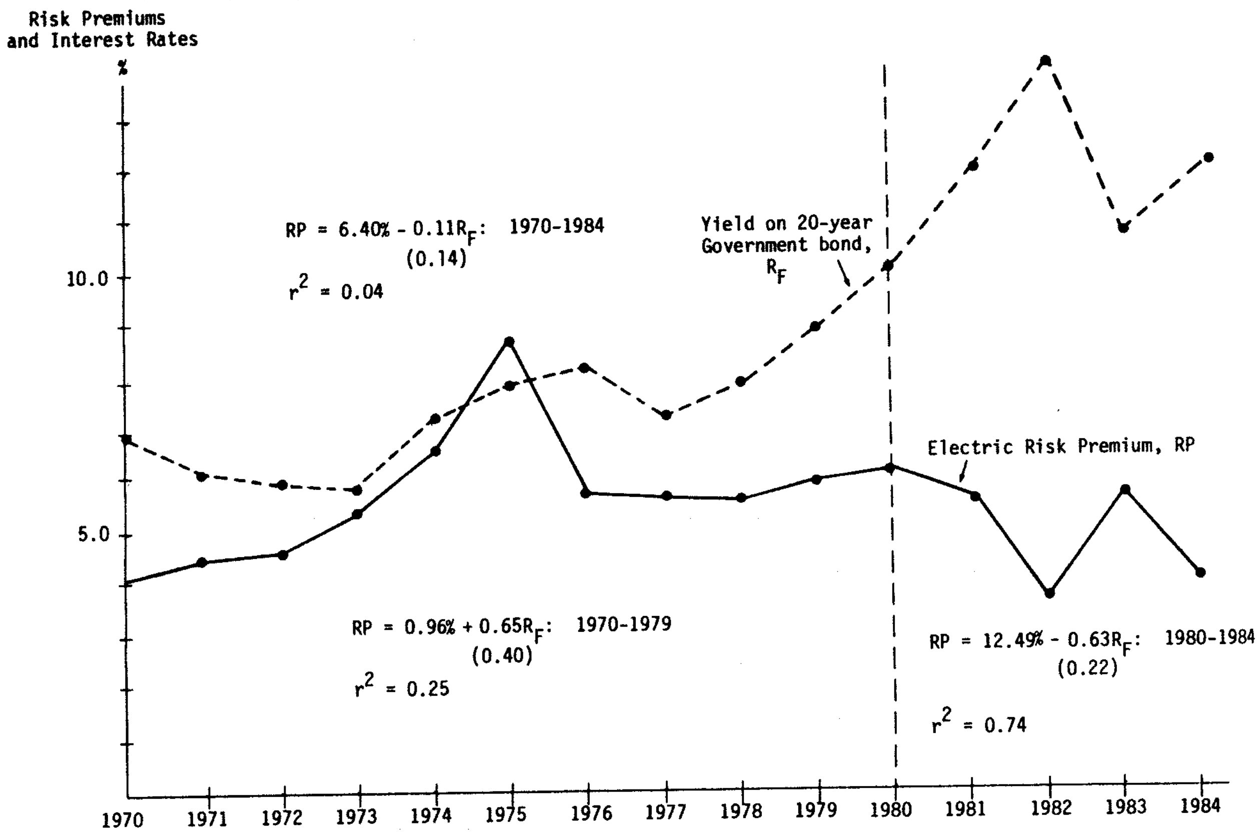
Having estimated a k value for each of the electric and industrial companies, we averaged them (using market-value weights) to obtain a k value for each group, after which we subtracted R_F (taken as the December 31 yield on twenty-year constant maturity Treasury bonds) to obtain the estimated risk premiums shown in Exhibit 2. The premiums for the electrics are plotted in Exhibit 3, along with interest rates. The following points are worthy of note:

1. Risk premiums fluctuate over time. As we shall see in the next section, fluctuations are even wider when measured on a monthly basis.
2. The last column of Exhibit 2 shows that risk premi-

[6]This is a debatable point. Cragg and Malkiel, as well as many practicing analysts, feel that most investors actually focus on five-year forecasts. Others, however, argue that five-year forecasts are too heavily influenced by base-year conditions and/or other nonpermanent conditions for use in the DCF model. We note (i) that most published forecasts do indeed cover five years, (ii) that such forecasts are typically "normalized" in some fashion to alleviate the base-year problem, and (iii) that for relatively stable companies like those in the Dow Jones averages, it generally does not matter greatly if one uses a normalized five-year or a longer-term forecast, because these companies meet the conditions of the constant-growth DCF model rather well.

[7]Value Line actually makes an explicit price forecast for each stock, and one could use this price, along with the forecasted dividends, to develop an expected rate of return. However, Value Line's forecasted stock price builds in a forecasted *change* in k. Therefore, the forecasted price is inappropriate for use in estimating current values of k.

Exhibit 3. Equity Risk Premiums for Electric Utilities and Yields on 20-Year Government Bonds, 1970–1984*



*Standard errors of the coefficients are shown in parentheses below the coefficients.

ums for the utilities increased relative to those for the industrials from the mid-1960s to the mid-1970s. Subsequently, the perceived riskiness of the two groups has, on average, been about the same.

3. Exhibit 3 shows that, from 1970 through 1979, utility risk premiums tended to have a positive association with interest rates: when interest rates rose, so did risk premiums, and vice versa. However, beginning in 1980, an inverse relationship appeared: rising interest rates led to declining risk premiums. We shall discuss this situation further in the next section.

Monthly Data and Results, 1980–1984

In early 1980, we began calculating risk premiums on a monthly basis. At that time, our only source of analysts' forecasts was Value Line, but beginning in 1981 we also obtained Merrill Lynch and Salomon Brothers' data, and then, in mid-1983, we obtained IBES data. Because our focus was on utilities, we restricted our monthly analysis to that group.

Our 1980–1984 monthly risk premium data, along with Treasury bond yields, are shown in Exhibits 4 and 5 and plotted in Exhibits 6, 7, and 8. Here are some comments on these Exhibits:

1. Risk premiums, like interest rates and stock prices, are volatile. Our data indicate that it would not be appropriate to estimate the cost of equity by adding the current cost of debt to a risk premium that had been estimated in the past. Current risk premiums should be matched with current interest rates.
2. Exhibit 6 confirms the 1980–1984 section of Exhibit 3 in that it shows a strong inverse relationship between interest rates and risk premiums; we shall discuss shortly why this relationship holds.
3. Exhibit 7 shows that while risk premiums based on Value Line, Merrill Lynch, and Salomon Brothers

Exhibit 4. Estimated Monthly Risk Premiums for Electric Utilities Using Analysts' Growth Forecasts, January 1980–June 1984

Beginning of Month	Value Line	Merrill Lynch	Salomon Brothers	Average Premiums	20-Year Treasury Bond Yield, Constant Maturity Series
Jan 1980	6.21%	NA	NA	6.21%	10.18%
Feb 1980	5.77%	NA	NA	5.77%	10.86%
Mar 1980	4.73%	NA	NA	4.73%	12.59%
Apr 1980	5.02%	NA	NA	5.02%	12.71%
May 1980	4.73%	NA	NA	4.73%	11.04%
Jun 1980	5.09%	NA	NA	5.09%	10.37%
Jul 1980	5.41%	NA	NA	5.41%	9.86%
Aug 1980	5.72%	NA	NA	5.72%	10.29%
Sep 1980	5.16%	NA	NA	5.16%	11.41%
Oct 1980	5.62%	NA	NA	5.62%	11.75%
Nov 1980	5.09%	NA	NA	5.09%	12.33%
Dec 1980	5.65%	NA	NA	5.65%	12.37%
Annual Avg.	5.35%			5.35%	11.31%
Jan 1981	5.62%	4.76%	5.63%	5.34%	11.99%
Feb 1981	4.82%	4.87%	5.16%	4.95%	12.48%
Mar 1981	4.70%	3.73%	4.97%	4.47%	13.10%
Apr 1981	4.24%	3.23%	4.52%	4.00%	13.11%
May 1981	3.54%	3.24%	4.24%	3.67%	13.51%
Jun 1981	3.57%	4.04%	4.27%	3.96%	13.39%
Jul 1981	3.61%	3.63%	4.16%	3.80%	13.32%
Aug 1981	3.17%	3.05%	3.04%	3.09%	14.23%
Sep 1981	2.11%	2.24%	2.35%	2.23%	14.99%
Oct 1981	2.83%	2.64%	3.24%	2.90%	14.93%
Nov 1981	2.08%	2.49%	3.03%	2.53%	15.27%
Dec 1981	3.72%	3.45%	4.24%	3.80%	13.12%
Annual Avg.	3.67%	3.45%	4.07%	3.73%	13.62%
Jan 1982	3.70%	3.37%	4.04%	3.70%	14.00%
Feb 1982	3.05%	3.37%	3.70%	3.37%	14.37%
Mar 1982	3.15%	3.28%	3.75%	3.39%	13.96%
Apr 1982	3.49%	3.61%	4.29%	3.80%	13.69%
May 1982	3.08%	4.25%	3.91%	3.75%	13.47%
Jun 1982	3.16%	4.51%	4.72%	4.13%	13.53%
Jul 1982	2.57%	4.21%	4.21%	3.66%	14.48%
Aug 1982	4.33%	4.83%	5.27%	4.81%	13.69%
Sep 1982	4.08%	5.14%	5.58%	4.93%	12.40%
Oct 1982	5.35%	5.24%	6.34%	5.64%	11.95%
Nov 1982	5.67%	5.95%	6.91%	6.18%	10.97%
Dec 1982	6.31%	6.71%	7.45%	6.82%	10.52%
Annual Avg.	4.00%	4.54%	5.01%	4.52%	13.09%
Jan 1983	5.64%	6.04%	6.81%	6.16%	10.66%
Feb 1983	4.68%	5.99%	6.10%	5.59%	11.01%
Mar 1983	4.99%	6.89%	6.43%	6.10%	10.71%
Apr 1983	4.75%	5.82%	6.31%	5.63%	10.84%
May 1983	4.50%	6.41%	6.24%	5.72%	10.57%
Jun 1983	4.29%	5.21%	6.16%	5.22%	10.90%
Jul 1983	4.78%	5.72%	6.42%	5.64%	11.12%
Aug 1983	3.89%	4.74%	5.41%	4.68%	11.78%
Sep 1983	4.07%	4.90%	5.57%	4.85%	11.71%
Oct 1983	3.79%	4.64%	5.38%	4.60%	11.64%
Nov 1983	2.84%	3.77%	4.46%	3.69%	11.90%
Dec 1983	3.36%	4.27%	5.00%	4.21%	11.83%
Annual Avg.	4.30%	5.37%	5.86%	5.17%	11.22%
Jan 1984	4.06%	5.04%	5.65%	4.92%	11.97%
Feb 1984	4.25%	5.37%	5.96%	5.19%	11.76%
Mar 1984	4.73%	6.05%	6.38%	5.72%	12.12%
Apr 1984	4.78%	5.33%	6.32%	5.48%	12.51%
May 1984	4.36%	5.30%	6.42%	5.36%	12.78%
Jun 1984	3.54%	4.00%	5.63%	4.39%	13.60%

Exhibit 5. Monthly Risk Premiums Based on IBES Data

Beginning of Month	Average of Merrill Lynch, Salomon Brothers, and Value Line Premiums for Dow Jones Electrics	IBES Premiums for Dow Jones Electrics	IBES Premiums for Entire Electric Industry
Aug 1983	4.68%	4.10%	4.16%
Sep 1983	4.85%	4.43%	4.27%
Oct 1983	4.60%	4.31%	3.90%
Nov 1983	3.69%	3.36%	3.36%
Dec 1983	4.21%	3.86%	3.54%
Jan 1984	4.92%	4.68%	4.18%
Feb 1984	5.19%	5.00%	4.36%
Mar 1984	5.72%	5.35%	4.45%
Apr 1984	5.48%	5.33%	4.23%
May 1984	5.36%	5.26%	4.30%
Jun 1984	4.39%	4.47%	3.40%
Average Premiums	4.83%	4.56%	4.01%

Exhibit 6. Utility Risk Premiums and Interest Rates, 1980–1984

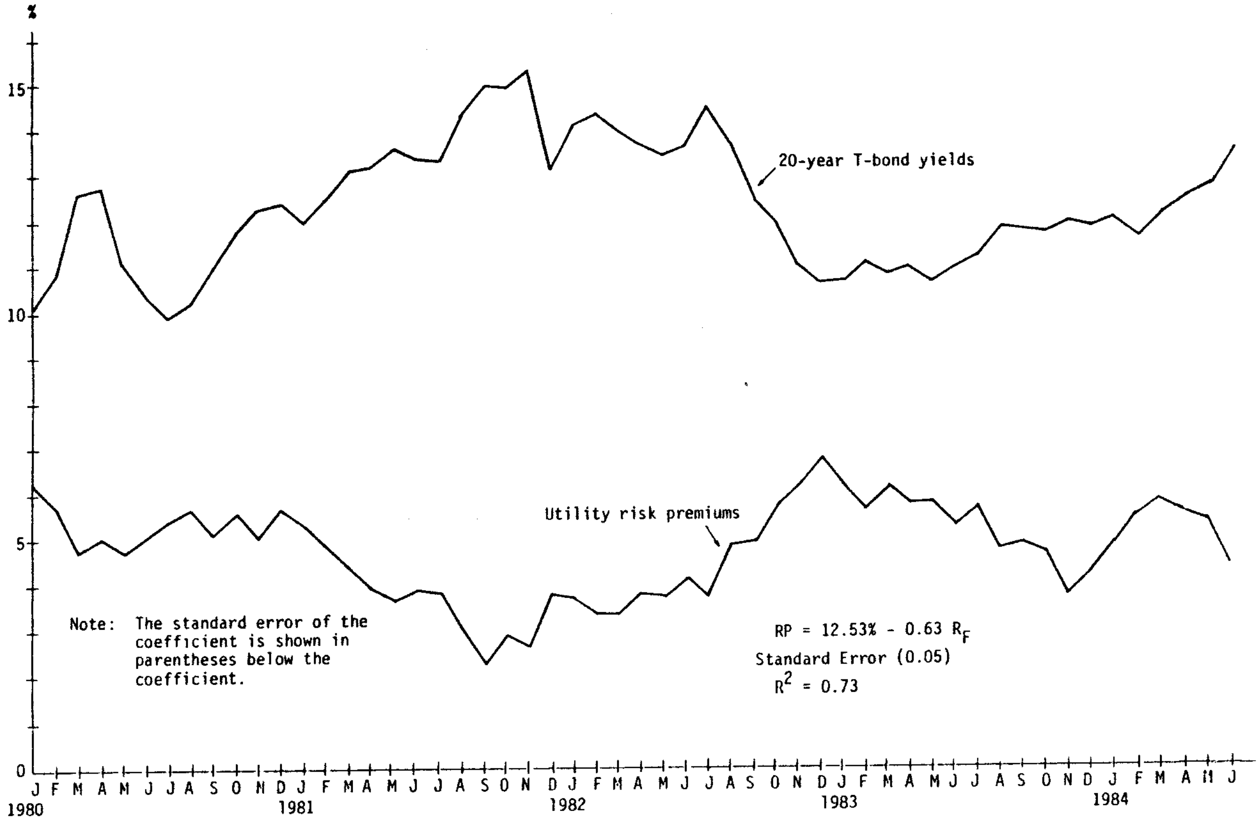


Exhibit 7. Monthly Risk Premiums, Electric Utilities, 1981–1984 (to Date)

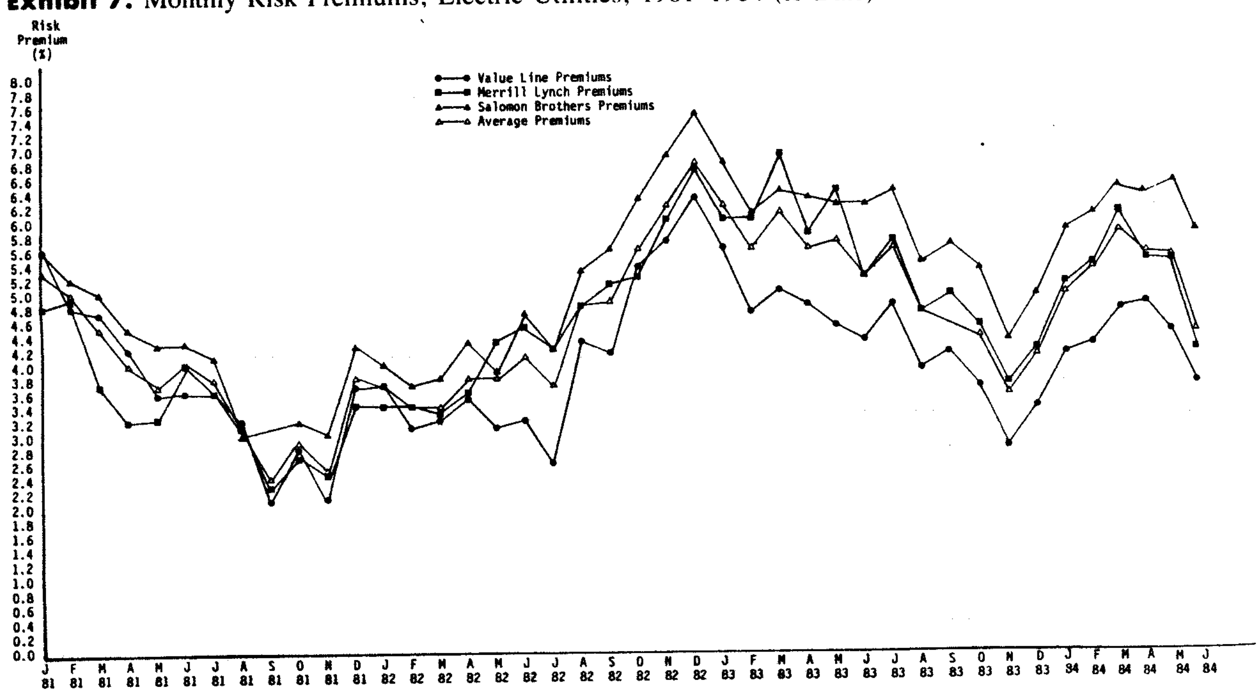
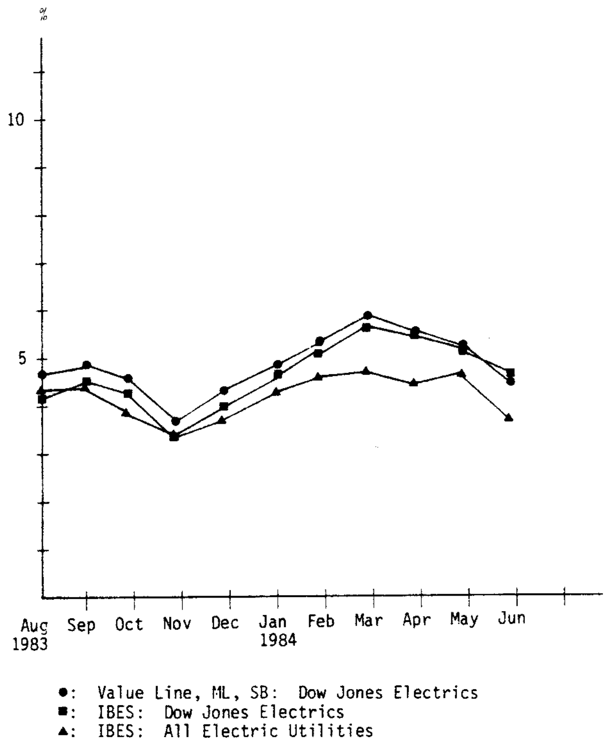


Exhibit 8. Comparative Risk Premium Data



do differ, the differences are not large given the nature of the estimates, and the premiums follow one another closely over time. Since all of the analysts are examining essentially the same data and since utility companies are not competitive with one another, and hence have relatively few secrets, the similarity among the analysts' forecasts is not surprising.

4. The IBES data, presented in Exhibit 5 and plotted in Exhibit 8, contain too few observations to enable us to draw strong conclusions, but (i) the Dow Jones Electrics risk premiums based on our three-analyst data have averaged 27 basis points above premiums based on the larger group of analysts surveyed by IBES and (ii) the premiums on the 11 Dow Jones Electrics have averaged 54 basis points higher than premiums for the entire utility industry followed by IBES. Given the variability in the data, we are, at this point, inclined to attribute these differences to random fluctuations, but as more data become available, it may turn out that the differences are statistically significant. In particular, the 11 electric utilities included in the Dow Jones Utility Index all have large nuclear investments, and this may cause them to be regarded as riskier than the industry average, which includes both nuclear and non-nuclear companies.

Tests of the Reasonableness of the Risk Premium Estimates

So far our claims to the reasonableness of our risk-premium estimates have been based on the reasonableness of our variable measures, particularly the measures of expected dividend growth rates. Essentially, we have argued that since there is strong evidence in the literature in support of analysts' forecasts, risk premiums based on these forecasts are reasonable. In the spirit of positive economics, however, it is also important to demonstrate the reasonableness of our results more directly.

It is theoretically possible to test for the validity of the risk-premium estimates in a CAPM framework. In a cross-sectional estimate of the CAPM equation,

$$(k - R_F)_i = \alpha_0 + \alpha_1\beta_i + u_i, \qquad (5)$$

we would expect

$$\hat{\alpha}_0 = 0 \text{ and } \hat{\alpha}_1 = k_M - R_F = \text{Market risk premium.}$$

This test, of course, would be a joint test of both the CAPM and the reasonableness of our risk-premium estimates. There is a great deal of evidence that questions the empirical validity of the CAPM, especially when applied to regulated utilities. Under these conditions, it is obvious that no unambiguous conclusion can be drawn regarding the efficacy of the premium estimates from such a test.[8]

A simpler and less ambiguous test is to show that the risk premiums are higher for lower rated firms than for higher rated firms. Using 1984 data, we classified the

[8]We carried out the test on a monthly basis for 1984 and found positive but statistically insignificant coefficients. A typical result (for April 1984) follows:

$$(k - R_F)_i = \underset{(0.91)}{3.1675} + \underset{(1.44)}{1.8031}\ \beta_i.$$

The figures in parentheses are standard errors. Utility risk premiums do increase with betas, but the intercept term is not zero as the CAPM would predict, and α_1 is both less than the predicted value and not statistically significant. Again, the observation that the coefficients do not conform to CAPM predictions could be as much a problem with CAPM specification for utilities as with the risk premium estimates.

A similar test was carried out by Friend, Westerfield, and Granito [9]. They tested the CAPM using expectational (survey) data rather than *ex post* holding period returns. They actually found their coefficient of β_i to be negative in all their cross-sectional tests.

Exhibit 9. Relationship between Risk Premiums and Bond Ratings, 1984*

Month	Aaa/AA	AA	Aa/A	A	A/BBB	BBB	Below BBB
January†	—	2.61%	3.06%	3.70%	5.07%	4.90%	9.45%
February	2.98%	3.17%	3.36%	4.03%	5.26%	5.14%	7.97%
March	2.34%	3.46%	3.29%	4.06%	5.43%	5.02%	8.28%
April	2.37%	3.03%	3.29%	3.88%	5.29%	4.97%	6.96%
May	2.00%	2.48%	3.42%	3.72%	4.72%	6.64%	8.81%
June	0.72%	2.17%	2.46%	3.16%	3.76%	5.00%	5.58%
Average	2.08%	2.82%	3.15%	3.76%	4.92%	5.28%	7.84%

*The risk premiums are based on IBES data for the electric utilities followed by both IBES and Salomon Brothers. The number of electric utilities followed by both firms varies from month to month. For the period between January and June 1984, the number of electrics followed by both firms ranged from 96 to 99 utilities.
†In January, there were no Aaa/AA companies. Subsequently, four utilities were upgraded to Aaa/AA.

utility industry into risk groups based on bond ratings. For each rating group, we estimated the average risk premium. The results, presented in Exhibit 9, clearly show that the lower the bond rating, the higher the risk premiums. Our premium estimates therefore would appear to pass this simple test of reasonableness.

Risk Premiums and Interest Rates

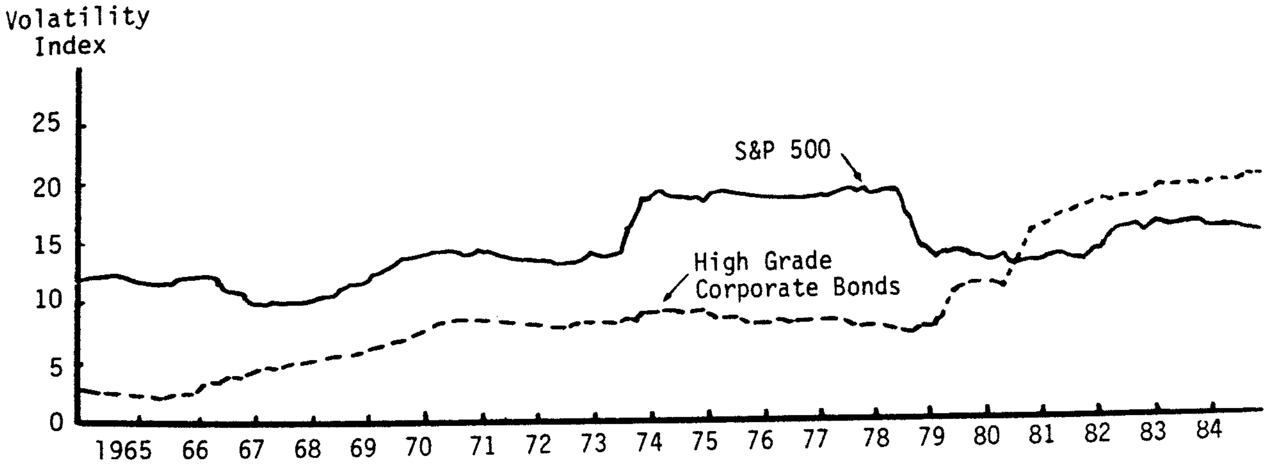
Traditionally, stocks have been regarded as being riskier than bonds because bondholders have a prior claim on earnings and assets. That is, stockholders stand at the end of the line and receive income and/or assets only after the claims of bondholders have been satisfied. However, if interest rates fluctuate, then the holders of long-term bonds can suffer losses (either realized or in an opportunity cost sense) even though they receive all contractually due payments. Therefore, if investors' worries about "interest rate risk" versus "earning power risk" vary over time, then perceived risk differentials between stocks and bonds, and hence risk premiums, will also vary.

Any number of events could occur to cause the perceived riskiness of stocks versus bonds to change, but probably the most pervasive factor, over the 1966–1984 period, is related to inflation. Inflationary expectations are, of course, reflected in interest rates. Therefore, one might expect to find a relationship between risk premiums and interest rates. As we noted in our discussion of Exhibit 3, risk premiums were positively correlated with interest rates from 1966 through 1979, but, beginning in 1980, the relationship turned negative. A possible explanation for this change is given next.

1966–1979 Period. During this period, inflation heated up, fuel prices soared, environmental problems surfaced, and demand for electricity slowed even as expensive new generating units were nearing completion. These cost increases required offsetting rate hikes to maintain profit levels. However, political pressure, combined with administrative procedures that were not designed to deal with a volatile economic environment, led to long periods of "regulatory lag" that caused utilities' earned ROEs to decline in absolute terms and to fall far below the cost of equity. These factors combined to cause utility stockholders to experience huge losses: S&P's Electric Index dropped from a mid-1960s high of 60.90 to a mid-1970s low of 20.41, a decrease of 66.5%. Industrial stocks also suffered losses during this period, but, on average, they were only one third as severe as the utilities' losses. Similarly, investors in long-term bonds had losses, but bond losses were less than half those of utility stocks. Note also that, during this period, (i) bond investors were able to reinvest coupons and maturity payments at rising rates, whereas the earned returns on equity did not rise, and (ii) utilities were providing a rising share of their operating income to debtholders versus stockholders (interest expense/book value of debt was rising, while net income/common equity was declining). This led to a widespread belief that utility commissions would provide enough revenues to keep utilities from going bankrupt (barring a disaster), and hence to protect the bondholders, but that they would not necessarily provide enough revenues either to permit the expected rate of dividend growth to occur or, perhaps, even to allow the dividend to be maintained.

Because of these experiences, investors came to regard inflation as having a more negative effect on utility stocks than on bonds. Therefore, when fears of inflation increased, utilities' measured risk premiums

Exhibit 10. Relative Volatility* of Stocks and Bonds, 1965–1984



*Volatility is measured as the standard deviation of total returns over the last 5 years.
Source: Merrill Lynch, *Quantitative Analysis*, May/June 1984.

also increased. A regression over the period 1966–1979, using our Exhibit 2 data, produced this result:

$$RP = 0.30\% + \underset{(0.22)}{0.73}\ R_F; \qquad r^2 = 0.48.$$

This indicates that a one percentage point increase in the Treasury bond rate produced, on average, a 0.73 percentage point increase in the risk premium, and hence a 1.00 + 0.73 = 1.73 percentage point increase in the cost of equity for utilities.

1980–1984 Period. The situation changed dramatically in 1980 and thereafter. Except for a few companies with nuclear construction problems, the utilities' financial situations stabilized in the early 1980s, and then improved significantly from 1982 to 1984. Both the companies and their regulators were learning to live with inflation; many construction programs were completed; regulatory lags were shortened; and in general the situation was much better for utility equity investors. In the meantime, over most of the 1980–1984 period, interest rates and bond prices fluctuated violently, both in an absolute sense and relative to common stocks. Exhibit 10 shows the volatility of corporate bonds very clearly. Over most of the eighteen-year period, stock returns were much more volatile than returns on bonds. However, that situation changed in October 1979, when the Fed began to focus on the money supply rather than on interest rates.[9]

In the 1980–1984 period, an increase in inflationary expectations has had a more adverse effect on bonds than on utility stocks. If the expected rate of inflation increases, then interest rates *will increase* and bond prices *will fall*. Thus, uncertainty about inflation translates directly into risk in the bond markets. The effect of inflation on stocks, including utility stocks, is less clear. If inflation increases, then utilities should, in theory, be able to obtain rate increases that would offset increases in operating costs and also compensate for the higher cost of equity. Thus, with "proper" regulation, utility stocks would provide a better hedge against unanticipated inflation than would bonds. This hedge did not work at all well during the 1966–1979 period, because inflation-induced increases in operating and capital costs were not offset by timely rate increases. However, as noted earlier, both the utilities and their regulators seem to have learned to live better with inflation during the 1980s.

Since inflation is today regarded as a major investment risk, and since utility stocks now seem to provide a better hedge against unanticipated inflation than do

[9]Because the standard deviations in Exhibit 10 are based on the last five years of data, even if bond returns stabilize, as they did beginning in 1982, their reported volatility will remain high for several more years. Thus, Exhibit 10 gives a rough indication of the current relative riskiness of stocks versus bonds, but the measure is by no means precise or necessarily indicative of future expectations.

bonds, the interest-rate risk inherent in bonds offsets, to a greater extent than was true earlier, the higher operating risk that is inherent in equities. Therefore, when inflationary fears rise, the perceived riskiness of bonds rises, helping to push up interest rates. However, since investors are today less concerned about inflation's impact on utility stocks than on bonds, the utilities' cost of equity does not rise as much as that of debt, so the observed risk premium tends to fall.

For the 1980–1984 period, we found the following relationship (see Exhibit 6):

$$RP = 12.53\% - \underset{(0.05)}{0.63}\, R_F; \qquad r^2 = 0.73.$$

Thus, a one percentage point increase in the T-bond rate, on average, caused the risk premium to fall by 0.63%, and hence it led to a 1.00 − 0.63 = 0.37 percentage point increase in the cost of equity to an average utility. This contrasts sharply with the pre-1980 period, when a one percentage point increase in interest rates led, on average, to a 1.73 percentage point increase in the cost of equity.

Summary and Implications

We began by reviewing a number of earlier studies. From them, we concluded that, for cost of capital estimation purposes, risk premiums must be based on expectations, not on past realized holding period returns. Next, we noted that expectational risk premiums may be estimated either from surveys, such as the ones Charles Benore has conducted, or by use of DCF techniques. Further, we found that, although growth rates for use in the DCF model can be either developed from time-series data or obtained from security analysts, analysts' growth forecasts are more reflective of investors' views, and, hence, in our opinion are preferable for use in risk-premium studies.

Using analysts' growth rates and the DCF model, we estimated risk premiums over several different periods. From 1966 to 1984, risk premiums for both electric utilities and industrial stocks varied widely from year to year. Also, during the first half of the period, the utilities had smaller risk premiums than the industrials, but after the mid-1970s, the risk premiums for the two groups were, on average, about equal.

The effects of changing interest rates on risk premiums shifted dramatically in 1980, at least for the utilities. From 1965 through 1979, inflation generally had a more severe adverse effect on utility stocks than on bonds, and, as a result, an increase in inflationary expectations, as reflected in interest rates, caused an increase in equity risk premiums. However, in 1980 and thereafter, rising inflation and interest rates increased the perceived riskiness of bonds more than that of utility equities, so the relationship between interest rates and utility risk premiums shifted from positive to negative. Earlier, a 1.00 percentage point increase in interest rates had led, on average, to a 1.73% increase in the utilities' cost of equity, but after 1980 a 1.00 percentage point increase in the cost of debt was associated with an increase of only 0.37% in the cost of equity.

Our study also has implications for the use of the CAPM to estimate the cost of equity for utilities. The CAPM studies that we have seen typically use either Ibbotson-Sinquefield or similar historic holding period returns as the basis for estimating the market risk premium. Such usage implicitly assumes (i) that *ex post* returns data can be used to proxy *ex ante* expectations and (ii) that the market risk premium is relatively stable over time. Our analysis suggests that neither of these assumptions is correct; at least for utility stocks, *ex post* returns data do not appear to be reflective of *ex ante* expectations, and risk premiums are volatile, not stable.

Unstable risk premiums also make us question the FERC and FCC proposals to estimate a risk premium for the utilities every two years and then to add this premium to a current Treasury bond rate to determine a utility's cost of equity. Administratively, this proposal would be easy to handle, but risk premiums are simply too volatile to be left in place for two years.

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The Relative Importance of Determinants of Financial Analysts' Forecasts Quality: A Reappraisal

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The Relative Importance of Determinants of Financial Analysts' Forecasts Quality: A Reappraisal

Abstract:
Using a different method than in earlier studies, we analyse the relative importance of country-, accounting-, industry-, and firm-specific factors in explaining the source of variation in the forecast errors made by financial analysts. Following Heston and Rouwenhorst (1994), we first estimate each factor with a dummy variable regression, and then decompose the variance of forecast errors into different effects. We find that industries explain little of cross-sectional variations in analysts' forecast errors of 18 developed countries examined over the 1990-2000 period. We document that the differences among countries, industrial sectors, accounting systems or analyst following offer a weak explanation for differences in forecast accuracy and forecast bias, while the type of earnings – profits or losses – and the variation of earnings– growth or fall – appear to be the two main explanation sources for the performance of financial analysts. Besides, we shed light on the contribution of legal systems and earnings opacity measures to explain financial analysts' forecasts quality.

The Relative Importance of Determinants of Financial Analysts' Forecasts Quality: A Reappraisal

A lot of work has been dedicated to the accuracy and quality of financial analysts' forecasts (hereafter referred to as *FAFs*). This research area has long focused largely on the U.S. market. Some of the most documented determinants of the quality of *FAFs* are the type of earnings – profits vs. losses, increases vs. decreases – (Dowen, 1996; Ciccone, 2001), the size of the firm (Brown *et al.*, 1987), the business activities of the firm (Dunn and Nathan, 1998), the economic situation (Chopra, 1998), the forecast horizon (Richardson et al., 1999), the industrial sectors (Brown, 1997), and the competence of analysts (Mikhail et al., 1997).

Most of these studies provide US evidence on the accuracy and quality of *FAFs,* and generally focus on one determinant. They do not allow the proper evaluation of the accuracy and quality of *FAFs* in different environments. Recently, some articles have taken an interest in *FAFs* around the world, and revealed significant differences in their respective accuracy levels (Hope, 2003; Ang and Ciccone, 2001; Chang *et al.*, 2000; Capstaff *et al.*, 1998). They try to explain the reasons for these differences, underscoring worldwide determinants of the quality of *FAFs*. Beyond the type of earnings effect largely documented in the U.S., they highlight the importance of country and industry effects.

The accounting, legal, and institutional environments are the most obvious country-related determinants of *FAFs'* accuracy. The most important determinant is probably the accounting dimension. According to numerous studies, the differences in accounting systems lead to significant differences in the quality and in the quantity of information available, making earnings forecasting more complex (Basu *et al.*, 1998).

Further, as pointed out by Bhattacharya et al. (2003) and Leuz *et al.* (2003), there are systematic differences in earnings management across countries around the world.

Some of international studies underscoring the differences in accounting systems do not take into consideration the significant differences that exist between industrial structures. Norms and accounting practices tend to vary from one sector to the next. For example, firms belonging to the natural resources sector may benefit from more choices to account for their costs, making their earnings more difficult to analyse and to forecast. In this case, the high number of such firms in a country may lead to significant errors in earnings forecasting. Differences in accounting systems may be interpreted to a greater extent as a sector effect rather than a simple country effect explaining variances in *FAFs* errors. Furthermore, with international harmonization in accounting, sector differences should appear to be greater than country differences.

Moreover, studies stressing the accounting factor tend to neglect firm-specific effects, such as the type of earnings – profits vs. losses, or increases vs. decreases (Hope, 2003; Huang and Jan, 1998) – or analyst following. As mentioned by Ang and Ciccone (2001), it seems easier to forecast profits than losses, and earnings increases rather than decreases. The larger the analyst coverage of the firm, the more accurate the *FAFs* would be (Alford and Berger, 1999).

As far as we know, no study has been conducted to analyse the relative importance of country-, accounting-, industry- or firm-specific effects in explaining the cross-sectional variance in *FAFs* errors. The question is nonetheless fundamental for analysts as for international investors. If country factors are not be the main determinants of forecasts errors, they do not stand as major obstacles to earnings forecasting. In this case, these findings would put into question the efforts led to improve and disclose financial information on markets around the world. Besides, the knowledge of these predominant effects should lead financial analysts to concentrate their efforts on their analysis, and contribute to an improvement in the quality and accuracy of their forecasts. International investors, which have to choose a portfolio and decide to group equities by country or sector, also need to know whether earnings forecast errors are larger across countries or across industries.

Our contribution to the debate on the determinants of *FAFs'* accuracy is twofold. First, we use a more powerful methodology to separate the relative importance of each class of determinants. This approach differs in many respects from previous studies carried out at the international level. The few previous studies that analyse country effects on the quality of forecasts compare the moments and the distribution of errors. This conventional and traditional approach is open to criticism in so far as it is unable to deal simultaneously with many effects and to measure and quantify their relative extents.

Second, to simultaneously examine the relative importance of country-, accounting-, industry-, and firm-specific effects in explaining the quality of *FAFs*, we concentrate on a sample of 18 developed countries (excluding the US)[1] over the 1990-2000 period. Our sample includes (1) countries from Europe, North America and Australasia where international harmonization has been important during the last decade, (2) countries with sharply contrasted sectors (Energy in Canada, Finance and Banking in Singapore, Hong Kong and Switzerland), (3) countries with different accounting, legal and institutional systems, where the index of disclosure and the quality of financial information vary sharply. These different regions implemented significant financial and legal reforms in order to establish a certain level of trust among investors. This

[1] We have voluntarily excluded United States from our sample. The market capitalization of U.S. stands for more than 40% of the world market capitalization and the number of firms followed by financial analysts is enormous compared to the other countries. These stylized facts may significantly influence our results. To avoid this statistical and methodological problem, we have decided to restrict our sample to the developed countries mentioned.

evolving financial context offers the opportunity to analyse the evolution of the factors influencing the performance of financial analysts.

Section 1 presents and justifies our conceptual framework to test our hypotheses concerning the performance of analysts during the period. Section 2 describes the data source and forecast errors measures used in the analysis. The methodology is developed in section 3. The results are presented and analysed in section 4. In section 5, we summarize our main results and present the conclusions.

I. Determinants of FAFs

We consider the quality of FAF results through four elements: 1) the relative facility of forecasting earnings, 2) the quantity of information available, 3) the quality of information, and 4) the financial analysts' ability to analyse this information. Recent studies led by Allen et al. (1999), Chang et al. (2000), Ang and Ciccone (2001), Black and Carnes (2002) or Hope (2003) among others, document that accounting, legal and economic systems tend to have a relative important impact on the quality of forecasts. These features hinge essentially on the second and third aforementioned determinants of *FAFs*. They may be included in the country effect which is one, but by no means, the only determinant of *FAFs*.

We examine two hypotheses. First, we analyze the relative importance of country-, industry-, and firm-specific effects (type of earnings, increase or decrease in earnings, analyst coverage) in explaining cross-sectional differences between *FAFEs*. Second, we test if differences in accounting and legal systems, in ownership concentration, as well as differences in terms of earnings management, also called opacity, can substitute for country effects.

A. Country-, Industry-, and Firm-specific Effects

1. Country Effects

Studies on many countries reveal sharp contrasts in the quality of *FAFs*. Chang et al. (2000) obtain an average size absolute forecast error of 25.5% for the 47 countries in their sample: from 2.3% for the U.S. to 71.2% for Slovaquia. Ang and Ciccone (2001), with a sample of 42 countries from 1988 to 1997, give another illustration of this important diversity of performance with an average absolute forecast error of 60% and a dispersion of 31%. The results of Capstaff et al. (1996) and Higgings (1998), for Europe, and Allen et al. (1997), Black and Carnes (2002) and Coën and Desfleurs (2004), for Asia, and for different time horizons, demonstrate that the performance of financial analysts across countries of a same geographic region may be very contrasted.

These numerous studies tend to confirm the existence and the preponderance of country effects. We may wonder what their sources are. As shown by Allen et al. (1999) and Ang and Ciccone (2001), the level of development, as convincing as it may seem, is not the most relevant explanation. In fact, the country effect has many origins which we must specify.

Some of the factors related to the country effect are macroeconomic. In their study on the Pacific Basin markets in the early 90s, Allen et al. (1999) observe that forecast errors are lower for the countries with higher growth rates. Riahi-Belkaoui (1998), for a sample of 14 countries, shows that the level of forecast accuracy is positively related to the associated economic risk. Black and Carnes (2002), focusing on 12 Asian markets, denote that the level of forecast errors is directly correlated with the Global Competitiveness Index.[2] Forecast errors would be lower in countries with high competition. Moreover, they add that forecasts are all the more accurate since the

[2] Published in *The Global Competitiveness Report*.

countries show a significant openness to foreign business and foreign direct investments. On the contrary, forecasts tend to be less accurate in countries with a high level of governmental intervention, with a high level of corruption, and with a less competitive environment. Following Chopra (1998), we may add that financial analysts are more accurate in an environment defined by a stable growth than in the presence of sharp acceleration or deceleration of the business cycle.

The legal and institutional environments may also have a significant influence on *FAFs*. Chang et al. (2000) reveal that forecast errors are significantly smaller in countries with common and English legal systems and which offer a high protection for minority shareholders.[3] Besides, the existing financing structure and its consequences on the disclosure of information may tend to influence the accuracy of financial analysts. The use of debt to finance operating activities decreases the number of players on the markets and may stem the disclosure of information. In countries with high levels of intermediation, the circulation of information between the borrower and the lender is more encouraged, often to the detriment of shareholders and analysts.

According to a growing body of literature, the features of the accounting and fiscal systems tend to have a significant influence. Hope (2003) shows that there is a positive relation between the level of information disclosure and the level of the accuracy of FAFs. The improvement of information should decrease the dispersion of forecast errors. Basu et al. (1998) underline the fact that forecast errors are smaller in an environment offering a vast range of accounting methods. Black and Carnes (2002), following Hofstede (1980, 1983) and Gray (1988), argue that the development of accounting systems is influenced by the idiosyncratic cultural features of different countries. *FAFs*' forecasts are more accurate since the accounting system has been

[3] According to Ang and Ciccone (2001) the relative importance of these factors may be minimized. They also demonstrate that the structure of financing is not a significant determinant.

marked by a British inheritance (Australia, New Zealand, Hong Kong, India, Indonesia, Malaysia, Pakistan and Singapore).

The country effects have many origins, and stand as major determinants of the quality of *FAFs*. It would however be a mistake to neglect other effects, such as industry, type of earnings, or analyst following.

2. Industry Effects

In most studies devoted to the accuracy of FAFs within a country, the diversity of the industrial structure is taken into account as a control variable (see O'Brien (1990, 1998), and Sinha, Brown and Das (1997), among others). Paradoxically, many international studies neglect this feature (see Black and Carnes (2002) for Asia, or Ang and Ciccone (2001) for a larger sample of countries). The industrial structure sharply differs from a country to the next. This contrast is particularly striking on the Asian markets. In Hong Kong and Singapore, financial services are preponderant while the natural resource sector is totally absent. Differences in the quality of *FAFs* attributed to country effects may therefore be due to differences in industrial structures, and it is therefore important to control for industry effects in explaining cross-sectional differences in quality.

There exists indeed a large body of empirical evidence of the importance of the industry effect. For Europe during the period going from 1987 to 1994, Capstaff et al. (2001) observe that the forecasts for the public utilities and the health care sectors are more accurate, but less so for the transportation and the consumer durables sectors. Bashar and Morris (1984) and Patz (1989) reveal that it is more difficult to forecast earnings for the heavy industry sector than for the consumer durables and non-durables sectors. Brown (1997) confirms this contrast in the U.S. where analysts demonstrate a significant over-optimism in 11 out of 14 sectors. In Asia, the results of Jaggi and Jain (1998) prove that there are smaller forecast errors in the public service sectors than in the private industrial sectors. This observation can be attributed to the low earnings volatility in public service sectors. Despite the fact that this industry effect may not be significant over a long time horizon (Luttman and Silhan, 1995), and may be sensitive to the number of industries included in the sample (Patz, 1989), it could explain the superiority of FAFs on naive models (Wiedman, 1996; Brown et al., 1997; Coën and Desfleurs, 2004).

The influence of the industrial sector on financial analysts' performance may be related to the stability of firms. The earnings of firms evolving in stable sectors should be easier to forecast. On the other hand, sectors subject to external factors would be difficult to analyse. This is the case of the natural resources sector, where earnings are sensitive to the variability of prices.[4] According to Luttman and Silhan (1995), the level of competitiveness may affect earnings and the features of the information disclosed. To forecast earnings, analysts must consider the firm's strategy and its suitability with the evolution of competitiveness. As shown by Mc Arthur and Nystrom (1991), and Dess and Beard (1984), there is a sharp relationship between strategy and performance. Observing 52 industries, Dess and Beard underline the differences of strategies according to competitive environments. As suggested by Rivera (1991) and Katz et al. (2000), these differences in competitive environments may have repercussions on the ability of financial analysts to forecast the earnings of firms in contrasted sectors.

Accounting factors, already mentioned to justify the country effect, may also be interpreted as a sector or industry effect. As studied by DeFond and Hung (2003), the choice of accounting systems or methods available depends on the industry. For

[4] In the oil and mining sectors, DeFond and Hung (2003) consider that earnings are not appropriate for use in estimating the value of firms. Therefore, they suggest the use of cash flows from operations.

example, firms in the oil and mining sectors may use either the successful-effort method or the full-cost effort to account for exploration costs. Moreover, the level of information disclosure and transparency differs and has not the same evolution from one industry to another. For a sample of countries, including Asian emerging countries, Patel et al. (2002) encounter a 15% improvement in the level of disclosure from 1998 to 2000 for the industries sector, while the improvement reaches only 4% in the public service and information technology sectors. Such differences in evolution may explain the change seen in the quality of *FAFs* by sectors.

3. Firm-Specific Effects

While many studies on the determinants of the FAFs' quality focus almost exclusively on the different aspects of the country factor, especially differences in the accounting systems, industry factors and firm-specific factors are neglected. We concentrate on two firm-specific factors: the type of earnings (profits/losses, growth/fall) and analyst following.

Profits/Losses and Growth/Fall Effect

In the absence of any other motivations, a rational analyst should be able to forecast increases as well as decreases in earnings. Nevertheless, financial analysts may be constrained by different motivations or reasons to not maximize the accuracy of their forecasts. They tend to decrease their accuracy because of agency costs with their clients. To maintain good relationships with firms disclosing information, financial analysts are unwilling to forecast decreases in earnings. Conroy and Harris (1995) show that financial analysts who do not have to make buy recommendations, make more accurate forecasts, particularly for decreases in earnings. We may add that their task is all the more complicated since firms are inclined to manipulate their financial statements (Hope, 2003) when earnings decline ('big baths'). The results reported by Loh and Mian (2002) reveal that firms in Singapore have taken advantage of the financial crisis in 1997 to withdraw some assets from their balance sheet, leading to a significant gap between reported and forecast earnings.

Financial analysts are often over-optimistic in cases of decreases in earnings. They indeed tend to under-react, and are not able to take into account all negative information in making their forecasts. According to Daniel et al. (1998), agents are overconfident in their private information, and face difficulties in assimilating public information in cases of bad news.

Moreover, as mentioned by Ang and Ciccone (2001), the type of earnings (profits vs. losses) should be a major determinant of the accuracy of *FAFs*. The over-optimism of financial analysts is more important when firms report losses, leading to significant forecast errors. This bias in accuracy may be the consequence of the financial analysts' behaviour and of information manipulations.

Analyst Following Effect

Alford and Berger (1999) suggest that a significant number of analysts following a firm should induce an increase in competitiveness and an improvement in the accuracy of *FAFs*. They document a strong positive relation between the size effect and the analyst following. Brown, Richardson and Schwager (1987), and Brown (1998) show that *FAFs* are more accurate and rational in the U.S. for large cap firms. Allen et al. (1997) also observe a negative relation between the size and forecast errors on Pacific Asian markets from 1989 to 1991. We expect a positive relation between the performance of analysts and the number of analysts following the same firm.

Although the results of Hope (2003), Ang and Ciccone (2001) and Chang et al. (2000) lead us to believe that the factors related to earnings type (profits or losses) are the most important in explaining the features of *FAFs*, studies on the determinants of forecast errors focus almost exclusively on the different aspects of the country effect (on the differences in the accounting systems).

B. LEGAL, OWNERSHIP CONCENTRATION AND OPACITY EFFECTS

To analyse more precisely the role of country factors in explaining the quality of financial analysts' forecast, we introduce two accounting measures; the accounting system or legal system (British, French, German, and Scandinavian) and the measures of earnings opacity. Moreover, we take into account the effect of ownership concentration. Thus we decompose the country factor in four effects: the pure country effect, the legal effect, the ownership effect, and the earnings opacity effect. Some recent studies have analysed the impact of earnings management through the notion of opacity (Bhattacharya *et al.* (2003), Leuz *et al.* (2003), and Hope (2003)). Analyzing financial statements from 34 countries for the period 1985-1998, Bhattacharya *et al.* shed light on three dimensions of reported earnings: earnings aggressiveness, loss avoidance, and earnings smoothing. Their results show that these three dimensions are associated with uninformative and opaque earnings. The three definitions of earnings opacity acknowledged by this very recent literature may be given as follows.

-1- Earnings aggressiveness measure;

Using accruals to measure earnings aggressiveness, they define it as the "tendency to delay the recognition of losses and speed the recognition of gains". According to Ball, Kothari and Robin (2000), the opposite of aggressiveness is indeed, accounting conservatism, which is the more timely incorporation of economic losses versus economic gains into accounting earnings to reduce information asymmetry.

Bhattacharya *et al.* show that accruals increase as earnings aggressiveness increases. Aggressive accounting is characterized by fewer negative accruals which capture economic losses, and more positive accruals which capture economic gains, increasing the overall level of accruals.

-2- Loss avoidance measure;

As mentioned by Burgstahler and Dichev (1997), and DeGeorge *et al.* (1999) many U.S. firms engage in earnings management to avoid reporting negative earnings. Their results demonstrate that incentives to report positive earnings exist for some firms. As underlined by Bhattacharya *et al.* (2003) "*such loss avoidance behavior obscures the relationship between earnings and economic performance, thus increasing earnings opacity*". They define the loss avoidance measure as the ratio of the number of firms with small positive earnings minus the number of firms with small negative earnings divided by their sum. The higher is this ratio, the higher is loss avoidance.

-3- Earnings smoothing measure;

As well acknowledged in the accounting literature, if accounting earnings are artificially smooth, they fail to depict the true swings in underlying performance, thus decreasing the informativeness of reported earnings and, hence, increasing earnings opacity. Bhattacharya *et al.* (2003) and Leuz *et al.* (2003) define an earnings smoothing measure as the correlation between the change in accruals and the change in cash flows, both scaled by lagged total assets. "*The more negative this correlation, the more likely it is that earnings smoothing is obscuring the variability in underlying economic performance, and the greater is the earnings opacity*".

In this context we assume that an increase of one of these earnings opacity measures should lead to an increase of *FAFs'* errors.

II. SAMPLE SELECTION AND VARIABLE DEFINITIONS

A. MEASURES OF ERRORS

We define *FAFEs* as the difference between forecasted earnings and the actual reported earnings, standardized by the absolute value of actual reported earnings. We examine two types of forecast error across countries. The first metric used is the absolute forecast error, $|FERE_t|$, which does not consider the direction, but only the magnitude of the error. The mean of the absolute forecast error provides summary information on accuracy. The second metric, *FERE*, considers the direction of the error. The mean of the signed forecast errors provides information on financial analysts' forecast bias. For each firm *i* and each fiscal year *t* (*t=1 to T*), we compute the forecast error at various points in time, from 1 to *h (h = 1 to H)* months prior the earnings report date. We therefore obtain *H×T FAFEs* per firm. The definitions of absolute forecast error and signed forecast errors are shown in equations (1) and (2) below.

$$\left|FERE_{i,h,t}\right| = \left|\frac{F_{i,h,t} - RE_{i,t}}{RE_{i,t}}\right| \tag{1}$$

$$FERE_{i,h,t} = \frac{F_{i,h,t} - RE_{i,t}}{\left|RE_{i,t}\right|} \tag{2}$$

where $RE_{i,t}$ and $F_{i,h,t}$ are respectively the actual earnings of firm *i* for fiscal year *t* and the consensus analysts' forecast of the firm's year *t* earnings made *h* months before earnings report date.

B. DATA

We obtain analysts' earnings forecasts from the international Institutional Brokers Estimate System (I/B/E/S) data base. We select eighteen countries in our sample: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Italy, Japan, Netherlands, Norway, Singapore, Spain, Sweden, Switzerland and the United Kingdom. The sample period covers the fiscal years from 1991 to 2000. All the forecasts are of earnings per share for a current fiscal year, with I/B/E/S continuing to provide forecasts until a firm's annual financial results are announced. We compute forecast errors at several points in time – from one to nine months prior the earnings release date. The nine month horizon ensures that analysts know the previous year's earnings, when they make their forecasts. The mean forecast, where there are *at least three* analysts making earnings estimates, is used as the consensus forecast. All conclusions are similar if median forecasts are used instead of the mean forecasts.

Data have been adjusted to eliminate potential biased and/or extreme data. Extreme values on forecast errors may be caused by data errors or by transitory factors specific to a firm (for example takeovers, mergers and acquisitions or important restructuring). We use the truncations rule as developed by Brown et al. (1987a). Data are considered as extreme if they are off by 100%. In that case, they are eliminated from the sample. This choice is justified by the fact that we use simple OLS. To study the influence of this artificial truncation on results, we test using extreme data limited to 100%. We then eliminate extreme data from the sample using the dependent variable of each regression (absolute forecast error or forecast error with its sign): observations in the lower and in the higher percentiles are withdrawn.

Our sample includes 682178 observations from 1990 to 2001. After eliminating extreme data, our financial sample includes 595 826 observations from 1990 to 2001. The number of firms whose shares are covered by analysts varies during the decade, and differs from one country to another and from year to year. After eliminating forecasts made more than nine months before the end of the fiscal year, we obtain a sample of 433204 observations but only 298099 forecasts made by at least three financial analysts. We then treat extreme data (we test using extreme data limited to 100%), which reduces our sample to 259599 forecasts.

Table 1 shows descriptive statistics for absolute forecast errors |FEREs| and forecast errors with their signs, FEREs, for each country and each sector. The average absolute error |FERE| is large, 19.19%, for the world ex US. This level of error is high and casts doubts on the effective accuracy of financial analysts. The forecast bias is positive and equal to 5.94%, which is consistent with the over-optimism hypothesis of financial forecasts.

[Please insert Table 1]

Table 1, Panel A illustrates the differences in forecast accuracy and forecast bias for the countries considered. Financial analysts tend to be more accurate in the United Kingdom, with an average (median) level of absolute error, |FERE| of 12.6% (6%), followed by Australia and Netherlands. Finland is the market with the highest absolute forecast error (26.4% and 17.9%), followed by Norway, and Italy. The forecast bias, FERE, is the lowest in Finland (average: 1.3%; median: -0.4%), followed by Sweden, and the United Kingdom. At the opposite, the forecast bias is the highest in Japan (average: 9.3%; median: 3.9%) followed by Hong Kong and Germany.

Panel B sheds light on the differences among sectors. We observe a significant contrast between the eleven industries. The average (median) level of absolute error, |FERE|, is less important in Public utilities (average: 13.1%; median, 5.9%), followed by Health care and Consumer Services. On the contrary, the average (median) level of absolute error, is more important in Energy (average: 24.1%; median, 15.5%), followed by Transportation and Basic Industries. Financial analysts are most accurate in the finance sector and show a lower accuracy for the basic industries. The forecast bias, FERE, is lower in Public Utilities (average: 2.1%; median: 0%), Finance and Transportation, whereas, it is higher in Basic Industries (average: 8.5%; median, 2.7%), Technology and Consumer Non-durables.

These results are consistent with the previous literature and tend to improve it.

III. METHODOLOGY

To test both aforementioned hypotheses, we use and generalize a methodology initially developed by Heston and Rouwenhorst (1994), and Griffin and Karolyi (1998) to decompose financial returns in industry and country components. This two-step procedure allows us to analyse the relative importance of country (accounting), industry and firm-specific effects in explaining the cross-sectional variations in financial analysts' forecast errors (*FAFEs)*. In the first step, we estimate the model. In the second step, we decompose the variance to identify and measure the relative importance of each effect.

A. STEP 1: ESTIMATION OF COUNTRY, INDUSTRY, AND FIRM-SPECIFIC EFFECTS

We first define $FAFE_{i,h,,t}$ as the financial analysts' forecast error on reported earnings of firm *i* for horizon *h* and fiscal year *t*. Then, we regress the *FAFEs* on dummy variables standing for countries, industries, profits or losses, increases or decreases in earnings, and analyst following. Since our sample includes 18 countries and 11 industries, we define the following dummies: S_{ij} and C_{ik}. S_{ij} is equal to 1 if security *i* belongs to industry *j* (*j = 1,…,11*) and is 0 otherwise. C_{ik} is to equal 1 if security *i* belongs to country *k* (*k = 1,…,1*8) and is 0 otherwise. We introduce the dummy, RE_{ig}, for the type of reported earnings to be forecast. RE_{i1} is equal to 1 if the reported earnings for security i are positive, and is 0 otherwise. RE_{i2} is equal to 1 if the reported earnings for security i are negative, and is 0 otherwise. We add another series of dummies to take into account the direction of the earnings variations to be forecast, V_{if}. V_{i1} is equal to 1 if there is there is an increase in earnings, and is 0 otherwise. V_{i2} is equal to 1 if there is a decrease in earnings, and is 0 otherwise. We also introduce a dummy to take into account the size effect or number of analysts effect, N_{iy} ($y = 1, ..., 4$). N_{iy} is equal to 1 if security i is included in category y. We define four categories for all the securities in our sample: securities followed by three to five analysts, securities followed by six to nine analysts, securities followed by ten to fifteen analysts, and securities followed by sixteen analysts and more.

We use OLS to estimate the following model[5] for each fiscal year t and each horizon h:

$$FAFE_i = \alpha + \sum_{i=1}^{11} s_j S_{i,j} + \sum_{c=1}^{18} c_k C_{i,k} + \sum_{g=1}^{2} r_g RE_{i,g} + \sum_{f=1}^{2} v_f V_{i,f} + \sum_{y=1}^{4} \eta_y \mathrm{N}_{i,y} + e_i \qquad (3)$$

Because of perfect multicollinearity between the regressors, we cannot directly estimate equation (3). Following the method initiated by Heston and Rouwenhorst (1994), we impose, for each fiscal year t and each horizon h, restrictions to solve this over-identification problem.

$$\sum_{j=1}^{11} n_j s_j = 0 \qquad (4a)$$

$$\sum_{k=1}^{18} m_k c_k = 0 \qquad (4b)$$

$$\sum_{g=1}^{2} l_g r_g = 0 \qquad (4c)$$

[5] To simplify the notation subscripts related to forecast horizon h and fiscal year t have been neglected in this equation.

$$\sum_{f=1}^{2} w_f v_f = 0 \quad (4d)$$

$$\sum_{y=1}^{4} z_y \eta_y = 0 \quad (4e)$$

where n_j, m_k, l_g, w_f, and z_y stand respectively for the number of firms in industry *j* and in country *k*, the number of firms for which the type of reported earnings *g* (positive or negative) has encountered a variation *f* (increase or decrease), and the number of firms followed by a number of analysts belonging to category *y*.

These constraints make it easier to interpret the coefficients. Instead of arbitrarily choosing a country-, industry-, or firm-specific benchmark, the intercept $\hat{\alpha}$, stands as the average forecast error of our sample of developed countries, and each country- ,industry-, or firm-specific coefficient ($\hat{c}_k$, $\hat{s}_j$, $\hat{r}_g$, $\hat{v}_f$, and $\hat{\eta}_y$) is the deviation relative to the benchmark. The pure industry forecast error $\hat{\alpha} + \hat{s}_j$ is the least-squares estimate of the forecast error on a geographically-diversified group of firms in the j^{th} industry. This forecast error is free of country- and firm-specific effects. Similarly, $\hat{\alpha} + \hat{c}_k$ is an estimate of the pure country forecast error on an industrially-diversified group of firms in the country, *k*. As previously, this forecast error is free of industry- or firm-specific effects.

Following the same methodology, we decompose the pure country effect in three distinct effects: legal systems, ownership concentration, and earnings opacity measures. We use the all summary measure of earnings management developed by Leuz *et al.* (2003). They define four earnings management measures (*smoothing reported operating earnings using accruals*, *smoothing and the correlation between changes in accounting accruals and operating cash flows, the magnitude of accruals, and small* *loss avoidance).* For each measure, countries are ranked such that a higher score suggests a higher level of earnings management. Then they compute the aggregate earnings management score by averaging the country rankings for the four individual earnings management measures.

We introduce the dummy LE to take into account the legal system effect, LE_{il} ($l = 1, ..., 4$). LE_{il} is equal to 1 if security i is included in category l. We define four categories for all the securities in our sample: securities with British legal origin, securities with French legal origin, securities with German legal origin, and securities with Scandinavian legal origin. We use the measure of ownership developed by La Porta et al. (1998) to rank the countries in four categories from lower to higher level of ownership concentration, OC_{io} ($o = 1, ..., 4$). Then, using the measure of earnings opacity mentioned earlier, we rank the countries in five categories from lower to higher level of earnings management. Therefore, we introduce the dummy $E0_{iq}$ ($q = 1, ..., 5$) to take into account earnings opacity.

We substitute in equation (3) the country dummy variables by the legal and opacity dummy variables. We replace equation (4b) by the equations (4b'), (4b''), and (4b''')

$$\sum_{l=1}^{4} \gamma_l \lambda_l = 0 \tag{4b'}$$

$$\sum_{o=1}^{4} \kappa_o \chi_o = 0 \tag{4b''}$$

$$\sum_{q=1}^{5} \mu_q \omega_q = 0 \tag{4b'''}$$

where γ_l, κ_o , and μ_q stand respectively for the number of firms with legal origin l, the number of firms with ownership concentration measures belonging to category o, and the number of firms in country with earnings opacity measures belonging to category q.

Using the measures of earnings opacity introduced by Bhattacharya et al. (2003), we replace the dummy $E0_{iq}$ by AG_{iqa} ($qa = 1, ..., 5$), $L0_{iql}$ ($ql = 1, ..., 5$), SM_{iqs} ($qs = 1, ..., 5$), standing respectively for earnings aggressiveness measure, loss avoidance measure, and earnings smoothing measure. For each measure, we rank the countries in five categories and use the methodology described above.

B. STEP 2: ANALYSIS OF VARIANCE

We decompose the cross-sectional variance (VT) of forecast errors for our sample of developed countries to analyse the relative importance of the error determinants on the developed markets. Through the decomposition of (VT), we shed light on the proportion of variance caused by the country factors (VC/VT) (and then the legal origin, VLE/VT and earnings opacity, VEO/VT factors), the industry factors (VS/VT), the type of earnings and their evolution (VRE/VT and VV/VT, respectively), the number of analysts following a security (VN/VT), and the idiosyncratic features (VE/VT). We can underline the different sources of a potential explanation. The different components of the variance are computed for each fiscal year t and horizon h, as follows[6]:

$$\frac{VC_{h,t}}{VT_{h,t}} = \frac{Var(\sum_{k=1}^{18} \hat{c}_{k,h,t} C_k)}{VT_{h,t}} \tag{5a}$$

$$\frac{VS_{h,t}}{VT_{h,t}} = \frac{Var(\sum_{j=1}^{11} \hat{s}_{j,h,t} S_j)}{VT_{h,t}} \tag{5b}$$

$$\frac{VRE_{h,t}}{VT_{h,t}} = \frac{Var(\sum_{g=1}^{2} \hat{r}_{g,h,t} RE_{g,t})}{VT_{h,t}} \tag{5c}$$

[6] Observations are equally-weighted.

$$\frac{VV_{h,t}}{VT_{h,t}} = \frac{Var(\sum_{f=1}^{2} \hat{v}_{f,h,t} V_{f,t})}{VT_{h,t}} \tag{5d}$$

$$\frac{V\mathrm{N}_{h,t}}{VT_{h,t}} = \frac{Var(\sum_{y=1}^{4} \hat{\eta}_{y,h,t} \mathrm{N}_{y,h,t})}{VT_{t}} \tag{5e}$$

$$\frac{VE_{h,t}}{VT_{h,t}} = \frac{Var(e_{ih,t})}{VT_{h,t}} \tag{5f}$$

where $VT_{h,t} = VC_{h,t} + VS_{h,t} + VRE_{h,t} + VV_{h,t} + VN_{h,t} + VE_{h,t}$ is the total effect for fiscal year t and horizon h.[7]

We follow the same procedure for the legal origin, ownership concentration, and earnings opacity effects.

We decompose the total variance on the whole sample period (for each fiscal year t and analyse the evolution of each effect year by year) to underline the relative importance of each effect for the decade. We use a panel data analysis.

IV. EMPIRICAL RESULTS AND ANALYSIS

The analysis of the distribution of *FAFEs* reveals significant differences among countries and industries. What are the origins of these differences? Does the high number of analysts following equities explain this phenomenon, in countries where the forecasts are the most accurate or less biased? Is it due to the fact that these countries encounter industries where the earnings are easier to forecast with a greater degree of accuracy? An analysis of the variance of country effects, industry effects, types-of-earnings effects, and analyst following effects sheds light on the influence of each effect on the level of error and on the level of financial analysts' bias.

[7] The model offers an incomplete decomposition of the variance. As acknowledged in the literature, the covariance terms between country-, industry- and firm-specific effects are very small, and can be reasonably neglected (Heston and Rouwenhorst, 1994 and 1995; Griffin and Karolyi, 1998).

A. COUNTRY-, INDUSTRY- AND FIRM-SPECIFIC EFFECTS

STEP 1: ESTIMATION OF EFFECTS

Table 2A and 2B show the results of the first step of our methodology: the results of the regression of forecast errors, |*FERE*| and *FERE*, on dummies to capture the different effects, using equation (3) and constraints (4a) to (4e). The regression is run on the panel data ($T \times H$ observations by firms).

|*FEREs*|: Results from Table 2A on the relative importance of countries and industries are in line with those reported before. The adjusted R squared is 22.04%, and is much higher than those reported by other studies in the existing literature. We consequently focus on the types of earnings effects, and the analyst coverage effects[8]. Estimated coefficients reported in Table 2A show that |*FEREs*| are much more important when companies report losses than profits (25.92% vs -1.74%). When controlling for other effects, the mean absolute forecast error for companies reporting losses is consequently very large, 42.11%. Consistently also, they financial analysts tend to make more errors when earnings decrease then when earnings increase: +6.74% vs -3.84%. The total absolute forecast error is approximately 26% when companies report losses. As expected, the more important the analyst firm coverage, the smaller the absolute forecast errors. For firms followed by more than 15 analysts, the estimated coefficient is -3.17%, whereas for firms followed by less than 5 analysts the estimated coefficient is 2.53%.

[Please insert Table 2A]

[8] We have also analysed the forecast horizon effects. The results not reported here are available upon request. As expected, we observe a decreasing and monotonic relation between the average absolute error and the forecast horizon, as between the forecast bias and the forecast horizon.

FEREs: Results from Table 2B on the relative importance of countries and industries are in line with those reported in Table 1. The adjusted R squared is 25.50%, and as for the absolute forecast error model is much higher the ones reported by other studies in the existing literature. As for absolute forecast errors, we concentrate on the types of earnings effects, and the analyst coverage effects. Estimated coefficients reported in Table 2B show that while the forecast bias is low for companies reporting profits (-1.85%), it is very important for companies reporting losses (23.86%). When we control for other effects, the average forecast bias for companies reporting losses is huge, 30.10%. Financial analysts tend to be more positively biased when companies report earnings decreases (15.34%), than when reporting earnings increases (-8.64%). The total absolute forecast error is 21.32% when companies report losses. Unexpectedly, firms followed by 6 to 9 analysts post the less biased forecast, while the firms followed by 10 to 15 analysts post the most biased forecast.

[Please insert Table 2B]

STEP 2: DECOMPOSITION OF VARIANCE IN FORECAST ERRORS

The analysis of the decomposition of variances in forecast errors sheds light on the relative importance of each class of determinants. The variances of the different effects are reported in Tables 3A and 3B.

[Please insert Tables 3A and 3B]

|*FEREs*|: We show in Table 3A that the type of earnings, with almost 70% of the total explained effect is the most important determinant of the level of the accuracy of *FAFs* in the 18 considered developed countries. The type of reported earnings (profits or losses), and the reported earnings variation effect (earnings increases or earnings

decreases) respectively account for 40.18% and 28.66% of the variance of absolute forecast errors explained. The second determinant of *FAFs'* accuracy is the country incorporation, with 19.60%. Country effects largely dominate industry effects which is the less important factor (6%) with the number of analysts effect (5.6%). These results have significant consequences on the analysis and understanding of the behaviour of financial analysts. They tend to prove that the level of forecast accuracy is not primarily related to the quality and to the quantity of information disclosed. The country, industry and analysts following effects are not predominant. Rather, it is the level of complexity to forecast earnings that represents the main and preponderant effect on the level of forecast accuracy. Financial analysts make more accurate forecasts when the earnings increase and are positive, and have difficulties forecasting decreases and losses.

FEREs: We show in Table 3B that the type of earnings, with almost 90% of the total explained effect, is the most important determinant of the level of the signed forecast errors. The reported earnings variation effect (earnings increases or earnings decreases) and the type of reported earnings (profits or losses) respectively account for 64.38%, and 24.55% of the variance of forecast errors. We observe that the country effect explains very poorly the total variance (7.01%). The other determinants (industry-, and analyst coverage) count for almost nothing in the total explained effect.

B. LEGAL-, OPACITY-, OWNERSHIP-, INDUSTRY- AND FIRM-SPECIFIC EFFECTS

To analyse the impact of earnings management on FAF, we use the panel data of financial statements developed by Leuz et al. (2003) from the financial statements of 34 countries for the period 1985-1998. Following their approach, we measure four dimensions of reported earnings for each country as mentioned earlier. We rank the countries in five categories from lower to higher level of earnings management (Table

4A). We also rank countries in five categories using the three earnings opacity measures defined by Bhattacharya et al. (2003) (See Table 4B).

As we can see from Table 4A, there is a sharp contrast for the four measures of earnings opacity between the 18 countries of our sample. The same remark applies to Table 4B.

As mentioned earlier, we use the panel introduced by La Porta et al. (1998) to rank the countries in four categories from lower to higher level of ownership concentration. We also define four categories for legal systems.

[Please insert Tables 4A and 4B]

STEP 1: ESTIMATION OF EFFECTS

Table 5A and 5A', and 5B and 5B' report results relative to the estimation step, when we substitute country effect by legal, ownership concentration and opacity variables.

|*FEREs*|: The intercept is equal to 19.19% and the adjusted R squared is 21.39% when we focus on Leuz et al.'s (2003) measures of earnings opacity. These results are slightly the same as those with country effects. Considering Bhattacharya's measures, we obtain an intercept of 19.19% and an adjusted R squared of 21.87%. Variables that proxy for legal systems, ownership concentration and country opacity tend to obtain the same explaining power as dummy variables standing for the country of incorporation. The lowest forecast errors are observed for countries under a British legal system (-1.67%), while the highest forecast errors are observed for countries under a Scandinavian legal system (5.63%) or a German legal system (1.07%). Estimated coefficient is not significantly positive for countries under a French legal system. Let alone the countries identified as highly opaque, the relation between opacity and

forecast errors is positive. For the less opaque countries, the estimated coefficient is -1.4% while for the most opaque countries it is 1.27%. We focus now on earnings aggressiveness, loss avoidance and earnings smoothing. As expected, we may note a negative relationship between earnings aggressiveness and the |*FEREs*|, a positive one with loss avoidance, and finally a positive one with earnings smoothing. The results obtained from ownership concentration measures tend to confirm our expectations. The lowest forecast errors are observed for countries with low ownership concentration, while the highest forecast errors are observed for countries with high ownership concentration. We may add that the results for the type of earnings or analyst coverage are very consistent with our previous findings reported in Table 2A.

[Please insert Tables 5A and 5A']

FEREs: The intercept coefficient reported in Table 5B and 5B' are both 5.94%. The adjusted R squared are respectively 25.43% and 25.46% compared to 25.50% when country effects were considered. As for the absolute forecast errors, proxies for legal systems, ownership concentration and country opacity seem to explain as much of the variance in *FAF* errors as dummy variables standing for the country of incorporation. Contrary to the absolute forecast errors, the lowest estimated coefficient is posted by the countries adopting a Scandinavian legal system (-2.96% in Table 5B and -3.08% in Table 5B'). Countries under the French and German legal system have negative estimated coefficients. Unexpectedly countries under a British legal system post the highest forecast errors (0.69% in Table 5B and 2.03% in Table 5B'). Countries identified as transparent post the lowest estimated coefficients (-0.79% in Table 5A). For all other countries, the coefficient is positive underlining a positive relation between opacity and forecast errors.

[Please insert Tables 5B and 5B']

STEP 2: DECOMPOSITION OF VARIANCE IN FORECAST ERRORS

|*FEREs*|: We show in Tables 6A and 6A' that proxies for the type of legal system, the ownership concentration, and the opacity of country, stand for 17.28% of the total explained effect that is more than country effects (4.4%). The contribution is more striking when we consider the three measures of earnings opacity defined by Bhattacharya et al.(2003). The three proxies mentioned earlier explain 34.6% of the total effect. The variables standing for the opacity of the country stand for 6.7% (19.49% with Bhattacharya's measures) of the variance in *FAF* errors, followed by variables standing for the legal system with 7.8 % (and 8.68% in Table 6A'), and the variables for ownership concentration with 2.78% (and 6.43% in Table 6A'). We have to note that the predominant effect is still the variation of forecasted earnings with 8.27% in Table 6A.

[Please insert Tables 6A and 6A']

FEREs: Tables 6B and 6B' document that proxies for the type of legal system, and the opacity of country, and ownership concentration stand respectively for 10.02% and 30.89% of the total explained effect, that is much more than country effects (1.9%). The variables standing for the opacity of the country or the legal system stand respectively for 4.12% (17.38% in Table 6B') and 4.17% (8.51% in Table 6B') of the variance in *FAF* errors. Nevertheless, the variation of forecasted earnings effect is still the main effect to consider in understanding the performance of FAFs with 16.01% of the variance in forecast errors (and 12.31% in Table 6B').

[Please insert Tables 6B and 6B']

V CONCLUSION

We examine two hypotheses. Firstly, we analyse the relative importance of local, industrial and firm-specific factors in explaining the performance of *FAFs* on eighteen developed markets during the 1990-2000 period. We first document the importance of the differences in countries and industries in explaining the cross-sectional variance in *FAFs* errors. We then motivate the importance of the type of earnings – profits vs. losses; increases vs. Decreases – and analyst following as determinants of the quality of *FAFs*. Following a methodology initiated by Heston and Rouwenhorst (1994) for decomposing financial returns into country and industry effects, we adapt it to the analysis of *FAFs* errors. This framework allows us to propose a hierarchy of the determinants of the quality of *FAFs*, and to offer a better understanding of the differences existing among countries, account systems, earnings management measures, industries, and firm characteristics as determinants the performance of *FAFs*.

We analyse eighteen markets since they reveal different levels of development and sharp contrasts in industrial structures. We take into account the last decade marked by unprecedented financial crises. These crises induced a major volatility in earnings.

We document that the differences between countries, accounting systems, earnings management measures, industries, or coverage by analysts hardly account for the differences in forecast errors and biases. The type of earnings – profits vs. losses, and increases vs. decreases in earnings – are the main effects to consider in understanding the performance of *FAFs*. We conclude that it is neither the quantity nor the quality of information that determine the level of accuracy and the forecast bias, but the complexity to forecast earnings. Financial analysts face difficulties in forecasting losses and decreases in earnings. The different effects we examine account for only 20 to 30%

of the variance in forecast errors. Other effects must thus be considered. FAFs errors in these developed markets may be related to idiosyncratic features.

Secondly, to shed light on this point, we have chosen to study the role of accounting practices and thus decomposed the country effect in two accounting effects: legal system and earnings opacity. Our results tend to show that this accounting approach improves our understanding of the country effect and give a partial explanation of FAFs errors. We note a significant improvement of the variance in forecast errors. When we take into account legal systems and earnings opacity measures, we can explain 34% to 48% of the variance in forecast errors. The contribution of earnings opacity measures is striking.

The main conclusions we can draw from our results are that the debate between country and industry effects must be revised and reconsidered. Idiosyncratic features are the answer. Despite the contribution of legal system effect and earnings opacity effect firm-specific effects bring the most convincing explanation to FAFs errors whatever country and industry. We have restricted our approach to three specific effects: variation of forecasted earnings effect, type of forecasted earnings effect, and number of analysts effect. The two first are the most striking. It may be interesting to analyse specific earnings opacity effects.

Nevertheless, all results cast doubt on the real economic efficiency of financial analysts: their errors and the forecasts biases are still high. We leave this open question to future research. The accuracy and quality of financial analysts' forecast are still a puzzle.

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Table 1: Descriptive statistics of absolute forecast errors (|FEREs|, measure of financial analyst accuracy) and signed forecast errors (FEREs, measure of forecast bias) by country (panel A) and sector (Panel B)

Panel A: COUNTRIES	Number of observations		Mean		Median		Standard deviation		T-test, H0: mean=0	
	/FEREs/	*FEREs*	*/FEREs/*	*FEREs*	*/FEREs/*	*FEREs*	*/FEREs/*	*FEREs*	*/FEREs/*	*FEREs*
Australia	14 903	14 903	0.139	0.044	0.073	0.005	0.177	0.221	95.69**	24.55**
Austria	4 091	4 091	0.220	0.050	0.135	0.000	0.230	0.314	61.16**	10.26**
Belgium	4 221	4 221	0.186	0.033	0.109	0.006	0.205	0.275	58.94**	7.85**
Canada	26 217	26 217	0.232	0.082	0.133	0.015	0.250	0.331	150.13**	40.02**
Denmark	6 902	6 902	0.224	0.037	0.148	-0.004	0.228	0.318	81.73**	9.76**
Finland	3 702	3 702	0.264	0.013	0.179	-0.004	0.244	0.360	65.68**	2.19**
France	18 227	18 227	0.181	0.058	0.097	0.014	0.211	0.272	115.79**	28.96**
Germany	15 924	15 924	0.232	0.087	0.131	0.000	0.256	0.334	114.50**	33.01**
Hong Kong	11 684	11 684	0.190	0.088	0.098	0.024	0.225	0.282	91.35**	33.65**
Italy	8 414	8 414	0.249	0.081	0.157	0.021	0.250	0.344	91.17**	21.63**
Japan	40 760	40 760	0.243	0.093	0.153	0.039	0.240	0.329	203.71**	57.01**
Netherlands	11 069	11 069	0.142	0.035	0.059	-0.005	0.202	0.244	73.61**	15.11**
Norway	3 914	3 914	0.252	0.033	0.167	0.000	0.239	0.346	66.06**	5.96**
Singapore	8 958	8 958	0.195	0.067	0.119	0.020	0.212	0.280	87.00**	22.61**
Spain	7 877	7 877	0.176	0.068	0.091	0.017	0.211	0.267	74.00**	22.56**
Sweden	6 668	6 668	0.224	0.026	0.144	-0.004	0.226	0.317	80.82**	6.80**
Switzerland	9 997	9 997	0.188	0.046	0.107	0.005	0.218	0.284	85.95**	16.22**
United Kingdom	56 071	56 071	0.126	0.030	0.060	-0.008	0.172	0.211	173.07**	33.59**
18 countries	259 599	259 599	0.191	0.059	0.103	0.005	0.223	0.288	437.51**	104.88**

* T-test significant at 5%, ** T-test significant at 1%.

|FEREs| are absolute forecast errors = $|(F_{i,h,t} - RE_{i,h,t}) / RE_{i,h,t}|$ and *FERE*s are signed forecast error = $(F_{i,h,t} - RE_{i,h,t}) / |RE_{i,h,t}|$. $RE_{i,\,t}$ is reported earnings per share of firm *i* for fiscal year *t*. $F_{i,\,h,\,t}$ = consensus forecasted earning per share of firm *i* for fiscal year *t*, with a forecast horizon of *h* months before earnings report. We use forecasts made from one to 9 months before earnings report date.

Panel B: SECTORS	Number of observations	Mean		Median		Standard deviation		T-test	
		/FEREs/	*FEREs*	*/FEREs/*	*FEREs*	*/FEREs/*	*FEREs*	*/FEREs/*	*FEREs*
Basic Industries	33 298	0.229	0.085	0.138	0.027	0.240	0.321	173.85**	48.47**
Capital goods	53 965	0.196	0.066	0.108	0.007	0.225	0.291	202.36**	52.47**
Consumer durables	7 203	0.212	0.061	0.121	0.011	0.234	0.310	77.04**	16.77**
Consumer non-durables	26 661	0.176	0.073	0.092	0.015	0.214	0.268	134.17**	44.27**
Consumer services	47 779	0.169	0.059	0.085	0.004	0.209	0.262	176.39**	49.20**
Energy	10 051	0.241	0.053	0.155	0.000	0.238	0.334	101.25**	15.92**
Finance	39 800	0.178	0.033	0.094	-0.003	0.212	0.275	166.93**	23.96**
Health care	9 447	0.151	0.041	0.077	0.000	0.192	0.241	76.22**	16.65**
Public utilities	8 967	0.131	0.021	0.059	0.000	0.179	0.221	69.35**	9.21**
Technology	13 356	0.221	0.077	0.125	0.003	0.241	0.318	106.20**	28.07**
Transportation	9 072	0.235	0.036	0.138	0.000	0.248	0.340	90.36**	10.13**

* T-test significant at 5%, ** T-test significant at 1%.

$|FEREs|$ are absolute forecast errors = $|(F_{i,h,t} - RE_{i,h,t}) / RE_{i,h,t}|$ and *FERE*s are signed forecast error = $(F_{i,h,t} - RE_{i,h,t}) / |RE_{i,h,t}|$. $RE_{i,\,t}$ is reported earnings per share of firm *i* for fiscal year *t*. $F_{i,\,h,\,t}$ = consensus forecasted earning per share of firm *i* for fiscal year *t*, with a forecast horizon of *h* months before earnings report. We use forecasts made from one to 9 months before earnings report date.

Table 2A : OLS regressions of absolute forecast errors (|FEREs|) on country, industry, and firm specific factors using equation (3) and constraints (4a) to (4e)

Period: 1990-2000

Coefficients		**Estim. Param.**	**Std. Error**	**T-test H0 : Coef. =0**	**ChiSq.**
World Area	α	0.1919	0.0004	496,08**	245010,53**
Australia	c1	-0.0492	0.0016	-30,73**	1360,81**
Austria	c2	0.0204	0.0031	6,63**	37,16**
Belgium	c3	0.0074	0.0030	2,46**	6,27**
Canada	c4	0.0090	0.0012	7,33**	43,73**
Denmark	c5	0.0192	0.0024	8,15**	59,49**
Finland	c6	0.0656	0.0032	20,42**	286,97**
France	c7	-0.0007	0.0014	-0,49	0,26
Germany	c8	0.0423	0.0015	27,47**	582,14**
Hong Kong	c9	0.0324	0.0018	17,80**	302,05**
Italy	c10	0.0560	0.0021	26,27**	523,05**
Japan	c11	0.0233	0.0009	24,95**	502,04**
Netherlands	c12	-0.0268	0.0019	-14,47**	265,65**
Norway	c13	0.0401	0.0032	12,70**	126,41**
Singapore	c14	0.0302	0.0021	14,52**	218,63**
Spain	c15	0.0009	0.0022	0,42	0,19
Sweden	c16	0.0334	0.0024	14,00**	181,14**
Switzerland	c17	0.0105	0.0019	5,40**	28,26**
United Kingdom	c18	-0.0521	0.0007	-69,81**	6868,12**
Basic industries	s1	0.0176	0.0010	16,95**	248,95**
Capital goods	s2	-0.0014	0.0008	-1,85	3,36**
Consumer durables	s3	0.0104	0.0023	4,51**	18,34**
Consumer non-durables	s4	-0.0103	0.0012	-9,00**	91,90**
Consumer services	s5	-0.0070	0.0008	-8,53**	81,88**
Energy	s6	0.0520	0.0020	25,94**	552,83**
Finance	s7	-0.0040	0.0009	-4,35**	19,39**
Health care	s8	-0.0496	0.0020	-24,50**	743,80**
Public utilities	s9	-0.0493	0.0021	-23,82**	760,83**
Technology	s10	0.0183	0.0017	10,95**	107,87**
Transportation	s11	0.0201	0.0021	9,75**	72,90**
Positive Earnings: Profits	r1	-0.0174	0.0001	-156,04**	11581,86**
Negative Earnings: Losses	r2	0.2252	0.0014	156,04**	11581,86**
Increase in earnings	v1	-0.0380	0.0003	-127,52**	13100,79**
Decrease in earnings	v2	0.0674	0.0005	127,52**	13100,79**
Stocks followed by 3 to 5 analysts	η1	0.0253	0.0006	43,52**	1728,00**
Stocks followed by 6 to 9 analysts	η2	0.0044	0.0007	6,31**	38,42**
Stocks followed by 10 to 15 analysts	η3	-0.0102	0.0007	-13,70**	203,50**
Stocks followed by more than 15 analysts	η4	-0.0317	0.0008	-39,89**	1811,52**
Number of observations : 259,599					
Adjusted R^2 : 0.2204					

$|FEREs|$ are absolute forecast errors = $|(F_{i,h,t} - RE_{i,h,t}) / RE_{i,h,t}|$. $RE_{i,\ t}$ is reported earnings per share of firm i for fiscal year t. $F_{i,\ h,\ t}$ = consensus forecasted earning per share of firm i for fiscal year t, with a forecast horizon of h months before earnings report. We use forecasts made from one to 9 months before earnings report date.

Table 2B : **OLS regressions of signed forecast errors (FEREs) on country, industry, and firm specific factors using equation (3) and constraints (4a) to (4e)**

NB: Period: 1990-2000

Coefficients		**Estim. Param.**	**Std. Error**	**T-test H0 : coef. =0**	**ChiSq**
World Area	α	0.0594	0.0005	121,70**	14757,10**
Australia	c1	-0.0019	0.0020	-0,95	1,32
Austria	c2	-0.0124	0.0039	-3,20**	8,57**
Belgium	c3	-0.0023	0.0038	-0,60	0,34
Canada	c4	0.0071	0.0016	4,56**	16,45**
Denmark	c5	-0.0328	0.0030	-11,03**	100,76**
Finland	c6	-0.0466	0.0041	-11,48**	84,89**
France	c7	0.0012	0.0018	0,65	0,45
Germany	c8	0.0090	0.0019	4,66**	16,86**
Hong Kong	c9	0.0515	0.0023	22,42**	530,76**
Italy	c10	0.0096	0.0027	3,58**	9,10**
Japan	c11	0.0032	0.0012	2,68**	5,68**
Netherlands	c12	-0.0065	0.0023	-2,78**	10,07**
Norway	c13	-0.0278	0.0040	-6,96**	32,64**
Singapore	c14	0.0243	0.0026	9,29**	92,34**
Spain	c15	0.0111	0.0028	3,98**	18,50**
Sweden	c16	-0.0296	0.0030	-9,84**	83,51**
Switzerland	c17	-0.0019	0.0024	-0,77	0,61
United Kingdom	c18	-0.0104	0.0009	-11,07**	182,44**
Basic industries	s1	-0.0046	0.0013	-3,50**	10,30**
Capital goods	s2	0.0050	0.0010	5,19**	26,71**
Consumer durables	s3	-0.0025	0.0029	-0,86	0,64
Consumer non-durables	s4	0.0178	0.0015	12,28**	180,32**
Consumer services	s5	0.0107	0.0010	10,33**	126,07**
Energy	s6	-0.0075	0.0025	-2,96**	6,61**
Finance	s7	-0.0138	0.0012	-11,77**	145,61**
Health care	s8	-0.0175	0.0026	-6,85**	53,15**
Public utilities	s9	-0.0267	0.0026	-10,20**	137,71**
Technology	s10	0.0164	0.0021	7,75**	53,41**
Transportation	s11	-0.0364	0.0026	-13,97**	140,84**
Positive Earnings: Profits	r1	-0.0185	0.0001	-131,00**	7057,45**
Negative Earnings: Losses	r2	0.2386	0.0018	131,00**	7057,45**
Increase in earnings	v1	-0.0864	0.0004	-229,56**	43671,00**
Decrease in earnings	v2	0.1530	0.0007	229,56**	43671,00**
Stocks followed by 3 to 5 analysts	η1	-0.0007	0.0007	-0,99	0,88
Stocks followed by 6 to 9 analysts	η2	-0.0024	0.0009	-2,75**	7,35**
Stocks followed by 10 to 15 analysts	η3	0.0020	0.0009	2,14*	5,04*
Stocks followed by more than 15 analysts	η4	0.0017	0.0010	1,73	3,46
Number of observations : 259,599					
Adjusted R^2 : 0.2550					

FEREs are signed forecast errors = $(F_{i,h,t} - RE_{i,h,t}) / | RE_{i,h,t} |$. $RE_{i,t}$ is reported earnings per share of firm *i* for fiscal year *t*. $F_{i,h,t}$ = consensus forecasted earning per share of firm *i* for fiscal year *t*, with a forecast horizon of *h* months before earnings report. We use forecasts made from one to 9 months before earnings report date.

Table 3A: Decomposition of absolute forecast errors' (|FEREs|) variance

/FEREs/	1990-2000	
	Variance	**%**
Pure country effect	0.0021	4.44
Pure industry effect	0.0006	1.36
" Type of forecasted earnings" effect	0.0043	9.10
"Variation of forecasted earnings" effect	0.0030	6.49
"Number of analysts" effect	0.0006	1.27
Idiosyncratic effects	0.0362	77.35
Total variance of forecast errors in absolute mean	0.0468	100.00

Table 3B: Decomposition of signed forecast errors' (FEREs) variance

FEREs	1990-2000	
	Variance	**%**
Pure country effect	0.0015	1.90
Pure industry effect	0.0008	0.98
" Type of forecasted earnings" effect	0.0053	6.65
"Variation of forecasted earnings" effect	0.0138	17.44
"Number of analysts" effect	0.0001	0.14
Idiosyncratic effects	0.0578	72.91
Total variance of forecast errors in absolute mean	0.0793	100.00

<u>Table 4A</u>: Ownership concentration, legal origin, and earnings opacity ranking of countries.

	Ownership Concentration [a]	OW1	OW2	OW3	OW4	**Legal Origin** [b]	LE1	LE2	LE3	LE4	**Aggregate Earnings Management** [c]	EO1	EO2	EO3	EO4
Australia	0,28	0	1	0	0	British	1	0	0	0	4,8	1	0	0	0
Austria	0,51	0	0	1	0	German	0	0	0	1	28,3	0	0	0	0
Belgium	0,62	0	0	0	1	French	0	1	0	0	19,5	0	0	1	0
Canada	0,24	1	0	0	0	British	1	0	0	0	5,3	1	0	0	0
Denmark	0,40	0	0	1	0	Scandinavian	0	0	1	0	16,0	0	1	0	0
Finland	0,34	0	1	0	0	Scandinavian	0	0	1	0	12,0	0	1	0	0
France	0,24	1	0	0	0	French	0	1	0	0	13,5	0	1	0	0
Germany	0,50	0	0	1	0	German	0	0	0	1	21,5	0	0	0	1
Hong Kong	0,54	0	0	0	1	British	1	0	0	0	19,5	0	0	1	0
Italy	0,60	0	0	0	1	French	0	1	0	0	24,8	0	0	0	0
Japan	0,13	1	0	0	0	German	0	0	0	1	20,5	0	0	0	1
Netherlands	0,31	0	1	0	0	French	0	1	0	0	16,5	0	1	0	0
Norway	0,31	0	1	0	0	Scandinavian	0	0	1	0	5,8	1	0	0	0
Singapore	0,53	0	0	0	1	British	1	0	0	0	21,6	0	0	0	1
Spain	0,50	0	0	1	0	French	0	1	0	0	18,6	0	0	1	0
Sweden	0,28	0	1	0	0	Scandinavian	0	0	1	0	6,8	1	0	0	0
Switzerland	0,48	0	0	1	0	German	0	0	0	1	22,0	0	0	0	0
United Kingdom	0,15	1	0	0	0	British	1	0	0	0	7,0	1	0	0	0

[a] The "Ownership Concentration" measures come from La Porta, Lopez-de-Silanes, Shleifer and Visny (1999). This country-level measure of ownership concentration is measured as the mean fraction of the firms' voting rights owned by the controlling shareholder.
[b] The "Legal Origin" variable indicates the origin of code law systems (La Porta, Lopez-de-Silanes, Shleifer and Visny, 1997).
[c] The "Aggregate Earnings Management" score is the average rank across four earnings management measures from Leuz, Nanda and Wysocki (2003). A higher score suggests a higher level of earnings management.

Table 4/B: Earnings opacity ranking of countries following Bhattacharya et al. (2003).

	Earnings Aggressiveness [d]	AG1	AG2	AG3	AG4	Loss Avoidance [e]	LO1	LO2	LO3	LO4	Earnings Smoothing [f]	SM1	SM2	SM3	SM4
Australia	-0,0213	0	0	0	1	-0,0462	1	0	0	0	-0,8237	0	0	0	1
Austria	-0,0373	0	1	0	0	0,5004	0	0	1	0	-0,8791	0	1	0	0
Belgium	-0,0547	1	0	0	0	0,3178	0	1	0	0	-0,8787	0	0	1	0
Canada	-0,0343	0	0	1	0	0,4503	0	0	1	0	-0,8178	0	0	0	1
Denmark	-0,0394	1	0	0	0	0,2674	1	0	0	0	-0,9127	1	0	0	0
Finland	-0,0327	0	0	1	0	0,6211	0	0	0	1	-0,8822	0	1	0	0
France	-0,0383	0	1	0	0	0,3764	0	1	0	0	-0,8655	0	0	1	0
Germany	-0,0414	1	0	0	0	0,5865	0	0	0	1	-0,8978	0	1	0	0
Hong Kong	-0,0119	0	0	0	1	0,1701	1	0	0	0	-0,8579	0	0	1	0
Italy	-0,0273	0	0	1	0	0,5053	0	0	1	0	-0,9253	1	0	0	0
Japan	-0,0125	0	0	0	1	0,6429	0	0	0	1	-0,9214	1	0	0	0
Netherlands	-0,0451	1	0	0	0	0,3780	0	1	0	0	-0,9172	1	0	0	0
Norway	-0,0379	0	1	0	0	0,1788	1	0	0	0	-0,7291	0	0	0	1
Singapore	-0,0253	0	0	0	1	0,4849	0	0	1	0	-0,8858	0	1	0	0
Spain	-0,0379	0	1	0	0	0,5141	0	0	1	0	-0,8558	0	0	1	0
Sweden	-0,0226	0	0	0	1	0,3401	0	1	0	0	-0,8453	0	0	0	1
Switzerland	-0,0396	1	0	0	0	0,5900	0	0	0	1	-0,8792	0	1	0	0
United Kingdom	-0,0292	0	0	1	0	0,3730	0	1	0	0	-0,8683	0	0	1	0

"Earnings Aggressiveness", "Loss Avoidance" and "Eanings Smoothing" measures come from Bhattacharya, Daouk and Welker (2003, table 1, page 655).

[d] Bhattacharya, Daouk and Welker (2003) "scale accruals by lagged total assets for each firm, determine its median in the cross-section of rims per country per year, and then average across time to obtain the "earnings aggressiveness" variable per country".

[e] Bhattacharya, Daouk and Welker (2003) "define firms with small positive positive (small negative) earnings as firm with net income scaled by lagged total assets between 0 and 1% (between 0 and -1%)". They "subtract the number of firms with small negative earnings from the number of firms with small positive earnings per country per year, divide this difference by the sum of the two, and then average this ratio across time to obtain the "loss avoidance" variable per country".

[f] Daouk and Welker (2003) "find the correlation between the change in accruals and the change in operating cash flows (both scaled by lagged total assets) in the cross-section of firms per country per year, and then average across time to obtain the "earnings smoothing" variable per country".

Table 5A : **OLS regressions of absolute forecast errors (|FEREs|) on legal, opacity-, industry-,and firm specific factors using equation (3) and constraints (4a) to (4e)**
(Earnings opacity measures of Leuz et al. (2003))
NB: Period: 1990-2000

Coefficients		**Estim. Param.**	**Std. Error**	**T-test H0 : coef. =0**	**ChiSq**
World Area	α	0.1919	0.0004	494.06**	242991.52**
British	l1	-0.0167	0.0015	-11.14**	117.63**
French	l2	0.0004	0.0013	0.28	0.07
Scandinavian	l3	0.0563	0.0019	29.50**	806.50**
German	l4	0.0107	0.0028	3.79**	14.04**
Opacity: 1 (low)	Op1	-0.0140	0.0021	-6.76**	41.80**
Opacity: 2	Op2	-0.0058	0.0016	-3.59**	12.82**
Opacity: 3	Op3	0.0038	0.0021	1.82	3.03
Opacity: 4	Op4	0.0207	0.0024	8.58**	72.80**
Opacity: 5 (high)	Op5	0.0127	0.0033	3.90**	13.43**
Ownership concentration (low)	ow1	-0.0030	0.0007	-4.04**	14.19**
Ownership concentration	ow2	-0.0133	0.0013	-10.61**	123.60**
Ownership concentration	ow3	-0.0044	0.0012	-3.78**	11.46**
Ownership concentration (high)	ow4	0.0347	0.0032	10.99**	114.54**
Basic industries	s1	0.0220	0.0010	21.49**	389.39**
Capital goods	s2	-0.0042	0.0008	-5.54**	30.25**
Consumer durables	s3	0.0091	0.0023	3.97**	14.22**
Consumer non-durables	s4	-0.0131	0.0011	-11.36**	146.52**
Consumer services	s5	-0.0088	0.0008	-10.69**	128.39**
Energy	s6	0.0693	0.0020	35.47**	1018.95**
Finance	s7	-0.0050	0.0009	-5.34**	29.35**
Health care	s8	-0.0503	0.0020	-24.78**	760.57**
Public utilities	s9	-0.0420	0.0021	-20.30**	569.08**
Technology	s10	0.0172	0.0017	10.27**	95.06**
Transportation	s11	0.0186	0.0021	9.06**	62.83**
Positive Earnings: Profits	r1	-0.0180	0.0001	-161.49**	12502.63**
Negative Earnings: Losses	r2	0.2324	0.0014	161.49**	12502.63**
Increase in earnings	v1	-0.0380	0.0003	-126.82**	12982.44**
Decrease in earnings	v2	0.0672	0.0005	126.82**	12982.44**
Stocks followed by 3 to 5 analysts	η1	0.0245	0.0006	42.22**	1623.20**
Stocks followed by 6 to 9 analysts	η2	0.0045	0.0007	6.48**	40.60**
Stocks followed by 10 to 15 analysts	η3	-0.0103	0.0007	-13.90**	209.46**
Stocks followed by more than 15 analysts	η4	-0.0305	0.0008	-39.30**	1777.50**
Number of observations : 259.599					
Adjusted R^2 : 0.2139					

|*FEREs*| are absolute forecast errors = $|(F_{i.h.t} - RE_{i.h.t}) / RE_{i.h.t}|$. $RE_{i.\ t}$ is reported earnings per share of firm *i* for fiscal year *t*. $F_{i.\ h.\ t}$ = consensus forecasted earning per share of firm *i* for fiscal year *t*. with a forecast horizon of *h* months before earnings report. We use forecasts made from one to 9 months before earnings report date.

Table 5B : **OLS regressions of signed forecast errors (FEREs) on legal-, opacity-, industry- ,and firm specific factors using equation (3) and constraints (4a) to (4e)**

NB: Period: 1990-2000

Coefficients		**Estim. Param.**	**Std. Error**	**T-test H0 : coef. =0**	**ChiSq**
World Area	α	0.0594	0.0005	121.65**	14740.41**
British	l1	0.0069	0.0019	3.65**	12.31**
French	l2	-0.0062	0.0016	-3.85**	13.66**
Scandinavian	l3	-0.0296	0.0024	-12.34**	135.80**
German	l4	0.0018	0.0035	0.51	0.26
Opacity: 1 (low)	Op1	-0.0079	0.0026	-3.02**	8.17**
Opacity: 2	Op2	0.0031	0.0020	1.54	2.37
Opacity: 3	Op3	0.0186	0.0026	7.02**	45.80**
Opacity: 4	Op4	0.0052	0.0030	1.72	2.92**
Opacity: 5 (high)	Op5	-0.0028	0.0041	-0.68	0.40
Ownership concentration (low)	ow1	-0.0027	0.0009	-2.95**	7.47**
Ownership concentration	ow2	-0.0010	0.0016	-0.61	0.41
Ownership concentration	ow3	-0.0017	0.0014	-1.18	1.11
Ownership concentration (high)	ow4	0.0151	0.0040	3.82**	13.68**
Basic industries	s1	-0.0040	0.0013	-3.09**	7.86**
Capital goods	s2	0.0043	0.0010	4.44**	19.56**
Consumer durables	s3	-0.0029	0.0029	-0.99	0.85
Consumer non-durables	s4	0.0168	0.0014	11.62**	161.52**
Consumer services	s5	0.0106	0.0010	10.21**	122.45**
Energy	s6	-0.0033	0.0025	-1.34	1.35
Finance	s7	-0.0138	0.0012	-11.81**	146.54**
Health care	s8	-0.0175	0.0026	-6.86**	53.52**
Public utilities	s9	-0.0251	0.0026	-9.66**	124.65**
Technology	s10	0.0162	0.0021	7.70**	52.63**
Transportation	s11	-0.0358	0.0026	-13.84**	136.93**
Positive Earnings: Profits	r1	-0.0186	0.0001	-132.98**	7249.61**
Negative Earnings: Losses	r2	0.2406	0.0018	132.98**	7249.61**
Increase in earnings	v1	-0.0865	0.0004	-229.78**	43786.30**
Decrease in earnings	v2	0.1531	0.0007	229.78**	43786.30**
Stocks followed by 3 to 5 analysts	η1	-0.0013	0.0007	-1.72	2.61
Stocks followed by 6 to 9 analysts	η2	-0.0027	0.0009	-3.09**	9.30**
Stocks followed by 10 to 15 analysts	η3	0.0019	0.0009	2.07*	4.68*
Stocks followed by more than 15 analysts	η4	0.0029	0.0010	2.96**	10.31**
Number of observations : 259,599					
Adjusted R^2 : 0.2543					

FEREs are absolute forecast errors = $(F_{i.h.t} - RE_{i.h.t}) / |RE_{i.h.t}|$. $RE_{i.\,t}$ is reported earnings per share of firm *i* for fiscal year *t*. $F_{i.\,h.\,t}$ = consensus forecasted earning per share of firm *i* for fiscal year *t*. with a forecast horizon of *h* months before earnings report. We use forecasts made from one to 9 months before earnings report date.

Table 6A: Decomposition of absolute forecast errors' (|FEREs|) variance

/FEREs/	1990-2000	
	Variance	**%**
"Legal" effect	0.0043	7.80
"Opacity" effect	0.0037	6.70
"Ownership concentration" effect	0.0015	2.78
Pure industry effect	0.0007	1.28
" Type of forecasted earnings" effect	0.0046	8.27
"Variation of forecasted earnings" effect	0.0031	5.54
"Number of analysts" effect	0.0006	1.00
Idiosyncratic effects	0.0367	66.63
Total variance of forecast errors in absolute mean	0.0551	100.00

Table 6B: Decomposition of signed forecast errors' (FEREs) variance

/FEREs/	1990-2000	
	Variance	**%**
"Legal" effect	0.0036	4.17
"Opacity" effect	0.0036	4.12
"Ownership concentration" effect	0.0015	1.73
Pure industry effect	0.0008	0.87
" Type of forecasted earnings" effect	0.0053	6.12
"Variation of forecasted earnings" effect	0.0139	16.01
"Number of analysts" effect	0.0001	0.12
Idiosyncratic effects	0.0581	66.86
Total variance of forecast errors in absolute mean	0.0870	100.00

NB: decomposition after 99 regressions (11 years x 9 horizons)

<u>Table 5A'</u>: OLS regressions of absolute forecast errors (|FEREs|) on legal, opacity-, industry-,and firm specific factors using equation (3) and constraints (4a) to (4e)

(Earnings opacity measures of Bhattacharya et al. (2003))

NB: Period: 1990-2000

Coefficients		**Estim. Param.**	**Std. Error**	**T-test H0 : coef. =0**	**ChiSq**
World Area	α	0.1919	0.0004	495.55**	244520.78**
British	l1	-0.0361	0.0049	-7.42**	46.92**
French	l2	0.0178	0.0038	4.67**	18.71**
Scandinavian	l3	0.0624	0.0026	24.24**	484.65**
German	l4	0.0288	0.0056	5.13**	22.94**
Earnings aggressiveness: 1 (low)	eag1	0.0120	0.0026	4.57**	19.26**
Earnings aggressiveness: 2	eag2	-0.0107	0.0072	-1.49	1.82
Earnings aggressiveness: 3	eag3	-0.0017	0.0013	-1.28	1.44
Earnings aggressiveness: 4 (high)	eag4	-0.0006	0.0019	-0.31	0.08
Loss avoidance: 1 (low)	los1	0.0097	0.0058	1.68	2.45
Loss avoidance: 2	los2	-0.0277	0.0020	-14.11**	162.08**
Loss avoidance: 3	los3	0.0281	0.0055	5.16**	22.00**
Loss avoidance: 4 (high)	los4	0.0105	0.0053	2.00	3.40
Earnings smoothing: 1 (low)	smo1	-0.0221	0.0041	-5.37**	24.10**
Earnings smoothing: 2	smo2	0.0123	0.0035	3.51**	10.56**
Earnings smoothing: 3	smo3	0.0065	0.0035	1.85	2.86
Earnings smoothing: 4 (high)	smo4	0.0062	0.0035	1.78	2.54
Ownership concentration (low)	ow1	0.0090	0.0025	3.63**	10.89**
Ownership concentration	ow2	-0.0177	0.0024	-7.29**	48.47**
Ownership concentration	ow3	-0.0371	0.0051	-7.34**	45.30**
Ownership concentration (high)	ow4	0.0333	0.0054	6.21**	30.92**
Basic industries	s1	0.0165	0.0010	15.89**	218.80**
Capital goods	s2	-0.0012	0.0008	-1.60	2.53
Consumer durables	s3	0.0116	0.0023	5.05**	22.92**
Consumer non-durables	s4	-0.0101	0.0011	-8.81**	87.82**
Consumer services	s5	-0.0064	0.0008	-7.74**	67.41**
Energy	s6	0.0512	0.0020	25.49**	532.68**
Finance	s7	-0.0046	0.0009	-4.93**	24.82**
Health care	s8	-0.0493	0.0020	-24.33**	729.80**
Public utilities	s9	-0.0490	0.0021	-23.66**	754.30**
Technology	s10	0.0192	0.0017	11.49**	118.69**
Transportation	s11	0.0195	0.0021	9.44**	68.60**
Positive Earnings: Profits	r1	-0.0175	0.0001	-157.03**	11726.43**
Negative Earnings: Losses	r2	0.2267	0.0014	157.03**	11726.43**
Increase in earnings	v1	-0.0381	0.0003	-127.52**	13093.74**
Decrease in earnings	v2	0.0674	0.0005	127.52**	13093.74**
Stocks followed by 3 to 5 analysts	$\eta 1$	0.0246	0.0006	42.26**	1630.20**
Stocks followed by 6 to 9 analysts	$\eta 2$	0.0032	0.0007	4.71**	21.33**
Stocks followed by 10 to 15 analysts	$\eta 3$	-0.0110	0.0007	-14.80**	237.74**
Stocks followed by more than 15 analysts	$\eta 4$	-0.0286	0.0008	-36.44**	1516.80**
Number of observations : 259.599					
Adjusted R^2 : 0.2187					

|*FEREs*| are absolute forecast errors = $|(F_{i.h.t} - RE_{i.h.t}) / RE_{i.h.t}|$. $RE_{i.\ t}$ is reported earnings per share of firm *i* for fiscal year *t*. $F_{i.\ h.\ t}$ = consensus forecasted earning per share of firm *i* for fiscal year *t*. with a forecast horizon of *h* months before earnings report. We use forecasts made from one to 9 months before earnings report date.

Table 5B' : OLS regressions of signed forecast errors (FEREs) on legal-, opacity-, industry- ,and firm specific factors using equation (3) and constraints (4a) to (4e)

(Earnings opacity measures of Bhattacharya et al. (2003))

NB: Period: 1990-2000

Coefficients		**Estim. Param.**	**Std. Error**	**T-test H0 : coef. =0**	**ChiSq**
World Area	α	0.0594	0.0005	121.67**	14749.63**
British	l1	0.0203	0.0061	3.32**	8.89**
French	l2	-0.0104	0.0048	-2.16*	3.64*
Scandinavian	l3	-0.0308	0.0032	-9.50**	70.26**
German	l4	-0.0173	0.0071	-2.45*	5.06*
Earnings aggressiveness: 1 (low)	eag1	0.0083	0.0033	2.50*	5.54*
Earnings aggressiveness: 2	eag2	0.0245	0.0091	2.69**	5.47*
Earnings aggressiveness: 3	eag3	-0.0131	0.0017	-7.78**	51.40**
Earnings aggressiveness: 4 (high)	eag4	0.0000	0.0024	0.00	0.00
Loss avoidance: 1 (low)	los1	-0.0164	0.0073	-2.26*	4.19*
Loss avoidance: 2	los2	-0.0085	0.0025	-3.45**	9.23**
Loss avoidance: 3	los3	-0.0056	0.0069	-0.82	0.53
Loss avoidance: 4 (high)	los4	0.0248	0.0066	3.73**	11.27**
Earnings smoothing: 1 (low)	smo1	0.0047	0.0052	0.90	0.64
Earnings smoothing: 2	smo2	-0.0190	0.0044	-4.31**	14.86**
Earnings smoothing: 3	smo3	-0.0003	0.0044	-0.07	0.00
Earnings smoothing: 4 (high)	smo4	0.0102	0.0044	2.33*	4.12*
Ownership concentration (low)	ow1	-0.0073	0.0031	-2.36*	4.31*
Ownership concentration	ow2	-0.0084	0.0031	-2.72**	6.57**
Ownership concentration	ow3	0.0056	0.0064	0.88	0.63
Ownership concentration (high)	ow4	0.0337	0.0068	4.98**	18.40**
Basic industries	s1	-0.0054	0.0013	-4.15**	14.49**
Capital goods	s2	0.0052	0.0010	5.34**	28.21**
Consumer durables	s3	-0.0021	0.0029	-0.72	0.45
Consumer non-durables	s4	0.0179	0.0014	12.36**	182.55**
Consumer services	s5	0.0112	0.0010	10.78**	137.39**
Energy	s6	-0.0081	0.0025	-3.20**	7.75**
Finance	s7	-0.0141	0.0012	-12.02**	151.68**
Health care	s8	-0.0174	0.0026	-6.80**	52.34**
Public utilities	s9	-0.0264	0.0026	-10.10**	134.92**
Technology	s10	0.0171	0.0021	8.11**	58.40**
Transportation	s11	-0.0367	0.0026	-14.10**	143.38**
Positive Earnings: Profits	r1	-0.0185	0.0001	-131.57**	7111.00**
Negative Earnings: Losses	r2	0.2395	0.0018	131.57**	7111.00**
Increase in earnings	v1	-0.0864	0.0004	-229.53**	43638.29**
Decrease in earnings	v2	0.1530	0.0007	229.53**	43638.29**
Stocks followed by 3 to 5 analysts	η1	-0.0012	0.0007	-1.69	2.53
Stocks followed by 6 to 9 analysts	η2	-0.0031	0.0009	-3.52**	12.02**
Stocks followed by 10 to 15 analysts	η3	0.0015	0.0009	1.57	2.72
Stocks followed by more than 15 analysts	η4	0.0037	0.0010	3.78**	16.66**
Number of observations : 259.599					
Adjusted R^2 : 0.2546					

FEREs are absolute forecast errors = $(F_{i.h.t} - RE_{i.h.t}) / |RE_{i.h.t}|$. $RE_{i.\,t}$ is reported earnings per share of firm *i* for fiscal year *t*. $F_{i.\,h.\,t}$ = consensus forecasted earning per share of firm *i* for fiscal year *t*. with a forecast horizon of *h* months before earnings report. We use forecasts made from one to 9 months before earnings report date.

Table 6A': Decomposition of absolute forecast errors' (|FEREs|) variance

/FEREs/	1990-2000	
	Variance	**%**
"Legal" effect	0.0060	8.68
"Earnings aggressiveness" effect	0.0029	4.29
"Loss avoidance" effect	0.0061	8.87
"Earnings smoothing" effect	0.0044	6.33
"Ownership concentration" effect	0.0044	6.43
Pure industry effect	0.0006	0.91
" Type of forecasted earnings" effect	0.0043	6.26
"Variation of forecasted earnings" effect	0.0031	4.49
"Number of analysts" effect	0.0005	0.78
Idiosyncratic effects	0.0364	52.97
Total variance of forecast errors in absolute mean	0.0688	100.00

Table 6B' : Decomposition of signed forecast errors' (FEREs) variance

/FEREs/	1990-2000	
	Variance	**%**
"Legal" effect	0.0096	8.51
"Earnings aggressiveness" effect	0.0043	3.84
"Loss avoidance" effect	0.0086	7.59
"Earnings smoothing" effect	0.0067	5.95
"Ownership concentration" effect	0.0056	5.00
Pure industry effect	0.0008	0.70
" Type of forecasted earnings" effect	0.0053	4.69
"Variation of forecasted earnings" effect	0.0139	12.31
"Number of analysts" effect	0.0001	0.10
Idiosyncratic effects	0.0580	51.32
Total variance of forecast errors in absolute mean	0.1130	100.00

NB: decomposition after 99 regressions (11 years x 9 horizons)

Equity & Quant Strategy | United States
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Bank of America Merrill Lynch

A PM's guide to stock picking

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Low P/E has delivered 30ppt

Valuation strategies posted the best results in the second quarter, and also in the first half of the year. Three of the five top performing strategies in 1H13 were Value factors, with Forward Earnings Yield (Low P/E) in the lead (+29.6%). This was also the best performing Value factor in 2Q (+9.7%), followed by Low Price to Book Value (+8.9%). Quality strategies were the weakest group in the first half, with 1-yr debt-adjusted ROE (+12.5%) trailing its peers. Quality factors fared better in the second half, but were still among the worst performing groups.

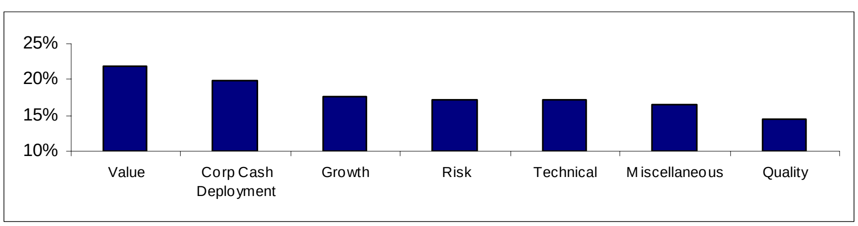
Share buybacks have been more rewarded than dividends YTD

While high dividend yield worked earlier this year and in June, rising rate risk has inhibited the sustained outperformance of yield-based strategies. Cash return remains an important theme for investors, and YTD, Corporate Cash Deployment strategies remain the second best performing group, but largely driven by our Share Repurchase strategy, which was the second best performing factor overall in the 1H (+29.1%) and the best-performing factor in the 2Q (+9.9%). High Dividend Yield also outperformed in the 1H (+16.6%), while High Dividend Growth lagged the benchmark slightly (+13.7%). However, we continue to prefer dividend growth over dividend yield, as these stocks remain relatively inexpensive and may provide income oriented investors a better hedge against rising interest rates.

Stocks with High Foreign Exposure rise from the ashes

After a multi-year period during which the US remained the area of relative strength amid a slowing global economic backdrop, companies with a high proportion of overseas sales appear to be reversing course. Although these stocks started the year on a weaker note, lagging in January-April after being the worst performing factor in 2012, more recently, High Foreign Exposure has outperformed in the past two months. YTD, this strategy is 1ppt ahead of the benchmark. We expect High Foreign Exposure to do well in the second half of the year as US-focused stocks have grown quite expensive and may become less defensive on heightened US policy concerns (see *Changing of the gurads*).

Chart 1: Strategy Group performance in the first half of 2013



Source: BofA Merrill Lynch US Equity & US Quant Strategy

Top 5 screens in 1H13	Perf.
Forward Earnings Yield	29.6%
Share Repurchase	29.1%
Low Price to Sales	27.5%
Low Price	27.5%
Low EV/EBITDA	24.9%
S&P 500 (Equal weighted)	15.3%

Source: BofA Merrill Lynch US Equity and US Quant Strategy

Btm 5 screens in 1H13	Perf.
Institutional Neglect	10.7%
High EPS Estimate Dispersion	12.3%
ROE (1-Yr Avg. Adj. by Debt)	12.5%
High Duration	12.6%
EPS Momentum	12.8%
S&P 500 (Equal weighted)	15.3%

Source: BofA Merrill Lynch US Equity and US Quant Strategy

Disclaimer: The valuations and screens contained herein are useful in assessing comparative valuations and comparative earnings prospects and are not intended to recommend transactions relating to any specific security. These indicators should be used in investment decisions only with other factors including financial risk, investment risk, management strategies and operating and financial outlooks.

Refer to important disclosures on page 63 to 65. Link to Definitions on page 62.

Contents

Table 1: Quantitative Strategies Performance as of 6/28/2013

Strategies (Universe based on the S&P 500)		1 M	3 M	6 M	12 M	YTD	2 Yr Perf. Gross	2 Yr Perf. Anlzd	3 Yr Perf. Gross	3 Yr Perf. Anlzd	5 Yr Perf. Gross	5 Yr Perf. Anlzd	Inception Date
Forward Earnings Yield	Value	-0.4	9.7	29.6	45.6	29.6	25.7	12.1	68.6	19.0	84.2	13.0	12/31/1988
Share Repurchase	Corp Cash Deployment	0.8	9.9	29.1	39.3	29.1	47.6	21.5	87.8	23.4	70.6	11.3	12/31/2004
Low Price to Sales	Value	-0.7	8.3	27.5	47.9	27.5	34.7	16.1	91.0	24.1	146.9	19.8	12/31/1988
Low Price	Risk	-0.5	9.8	27.5	43.4	27.5	23.6	11.2	64.4	18.0	127.2	17.8	12/31/1988
Low EV/EBITDA	Value	-1.3	7.0	24.9	38.1	24.9	29.8	13.9	79.1	21.4	65.9	10.7	9/30/2001
Alpha Surprise Model	GARP	-0.3	4.9	23.4	29.6	23.4	28.7	13.4	77.0	21.0	50.1	8.5	12/31/1988
Low Price to Book Value	Value	-0.5	8.9	23.1	43.8	23.1	30.1	14.1	64.7	18.1	94.7	14.3	12/31/1988
Small Size	Miscellaneous	0.1	9.4	21.7	38.6	21.7	27.1	12.7	75.3	20.6	149.6	20.1	12/31/1988
Positive Earnings Surprise	Growth	-0.6	3.3	20.7	32.7	20.7	22.8	10.8	71.6	19.7	50.8	8.6	12/31/1988
High Free Cash Flow to EV	Value	-1.8	6.4	19.9	30.7	19.9	30.4	14.2					7/31/2010
Most Active	Technical	-1.3	6.1	19.7	29.2	19.7	21.0	10.0	58.1	16.5	48.9	8.3	8/31/2003
DDM Valuation	Value	-0.9	4.3	19.2	25.8	19.2	34.5	16.0	73.1	20.1	25.7	4.7	12/31/1988
Relative Strength (10wk/40wk)	Technical	-1.8	4.7	19.1	27.1	19.1	19.2	9.2	49.1	14.2			1/31/2010
Low Price to Free Cash Flow	Value	-1.8	4.9	19.1	32.6	19.1	28.2	13.2	74.7	20.4	92.8	14.0	7/30/2003
High Projected 5-Yr Growth	Growth	-3.1	4.4	19.0	29.7	19.0	21.1	10.1	76.3	20.8	27.5	5.0	12/31/1988
Price Returns (9-Month)	Technical	-2.8	4.5	18.7	27.2	18.7	26.5	12.5	60.2	17.0			1/31/2010
ROE (5-Yr Average)	Quality	-1.7	3.8	18.6	21.0	18.6	22.1	10.5	67.9	18.9	65.8	10.6	4/30/1997
Price Returns (12-Month plus 1-Month)	Technical	-2.2	2.3	18.1	26.3	18.1	28.4	13.3	67.5	18.8			1/31/2010
Upward Estimate Revisions	Growth	-1.7	3.4	18.1	29.0	18.1	22.0	10.5	61.3	17.3	2.4	0.5	12/31/1988
Price Returns (12-Month)	Technical	-2.3	2.5	17.3	24.9	17.3	24.4	11.5	62.6	17.6			1/31/2010
Earnings Yield	Value	-2.4	5.5	17.1	32.9	17.1	25.4	12.0	65.0	18.2	67.5	10.9	12/31/1988
Price Returns (11-Month since 1 year ago)	Technical	-2.9	2.6	17.1	26.0	17.1	20.3	9.7	57.6	16.4			1/31/2010
Low PE to GROWTH	GARP	-2.0	5.8	17.0	30.5	17.0	17.3	8.3	70.6	19.5	43.5	7.5	4/30/1997
Analyst Coverage Neglect	Miscellaneous	-1.1	2.8	17.0	25.0	17.0	20.6	9.8	62.6	17.6	54.7	9.1	12/31/1988
Dividend Yield (Total Return)	Corp Cash Deployment	0.4	3.5	16.6	21.4	16.6	40.5	18.5	86.0	23.0	82.1	12.7	12/31/1988
Price Returns (3-Month)	Technical	-0.5	-0.3	16.6	29.7	16.6	28.7	13.5	70.3	19.4			1/31/2010
Low Price to Cash Flow	Value	-1.6	3.5	16.4	31.3	16.4	14.9	7.2	57.1	16.2	67.7	10.9	12/31/1988
S&P 500 Equal Weighted (Total Return)	Benchmark	-1.0	3.5	16.4	26.9	16.4	27.1	12.7	73.6	20.2	66.9	10.8	
Relative Strength (5wk/30wk)	Technical	-2.0	0.6	16.4	29.7	16.4	24.3	11.5	63.4	17.8			1/31/2010
High Foreign Exposure	Miscellaneous	-1.0	4.6	16.3	21.3	16.3	6.8	3.4	50.6	14.6	39.9	6.9	12/31/1988
Relative Strength (Price/200-Day Moving Avg)	Technical	-1.7	1.3	16.3	25.1	16.3	19.5	9.3	53.7	15.4			1/31/2010
Negative Earnings Surprise	Growth (Negative)	-0.8	5.9	16.3	20.3	16.3	16.5	7.9	53.9	15.4	38.7	6.8	12/31/1988
Low EPS Torpedo	Growth (Negative)	-2.9	3.7	16.0	19.7	16.0	17.4	8.3	58.1	16.5	100.5	14.9	12/31/1988
Price Returns (12-Month plus 1-Month Reversal)	Technical	-1.9	2.7	15.3	24.7	15.3	13.5	6.5	54.9	15.7			1/31/2010
S&P 500 Equal Weighted (Price Return)	Benchmark	-1.2	3.0	15.3	24.2	15.3	21.8	10.4	63.1	17.7	50.0	8.4	
High Beta	Risk	-1.6	4.8	15.1	30.3	15.1	9.8	4.8	53.4	15.3	66.3	10.7	12/31/1988
ROE (1-Yr Average)	Quality	-1.0	4.9	15.0	18.8	15.0	20.0	9.6	62.8	17.6	43.0	7.4	4/30/1997
Dividend Yield (Price Return)	Corp Cash Deployment	-0.2	2.2	13.8	15.3	13.8	26.8	12.6	59.5	16.8	37.3	6.5	12/31/1988
High Dividend Growth (Total Return)	Corp Cash Deployment	-2.0	2.3	13.7	25.9	13.7	31.6	14.7	88.1	23.5	72.4	11.5	12/31/2004
High Variability of EPS	Risk	-1.7	1.7	13.7	24.6	13.7	10.6	5.2	52.0	15.0	34.0	6.0	12/31/1988
Relative Strength (30wk/75wk)	Technical	-4.4	0.6	13.6	20.9	13.6	15.0	7.2	52.0	15.0	-25.8	-5.8	8/31/1995
ROC	Quality	-2.0	3.6	13.4	16.6	13.4	19.1	9.1	63.4	17.8	40.3	7.0	4/30/1997
ROA	Quality	-1.5	3.2	13.4	16.3	13.4	22.7	10.8	65.7	18.3	34.2	6.1	4/30/1997
ROE (5-Yr Avg. Adj. by Debt)	Quality	-1.7	2.6	13.4	19.1	13.4	14.0	6.8	62.7	17.6	40.1	7.0	4/30/1997
EPS Momentum	Growth	-3.2	0.8	12.8	27.5	12.8	15.8	7.6	48.7	14.1	25.0	4.6	12/31/1988
High Dividend Growth (Price Return)	Corp Cash Deployment	-2.2	1.8	12.7	22.9	12.7	25.3	12.0	74.2	20.3	51.6	8.7	12/31/2004
S&P 500 Index (Price Return)	Benchmark	-1.5	2.4	12.6	17.9	12.6	21.6	10.3	55.8	15.9	25.5	4.7	
High Duration	Growth	-1.9	1.2	12.6	15.0	12.6	14.8	7.2	58.0	16.5	29.6	5.3	12/31/1988
ROE (1-Yr Avg. Adj. by Debt)	Quality	-2.5	2.7	12.5	17.3	12.5	23.3	11.0	68.7	19.0	34.8	6.2	4/30/1997
High EPS Estimate Dispersion	Risk	-3.9	1.7	12.3	32.2	12.3	19.0	9.1	51.9	15.0	44.7	7.7	12/31/1988
Institutional Neglect	Miscellaneous	-1.5	1.4	10.7	15.4	10.7	18.0	8.6	46.4	13.6	47.6	8.1	12/31/1988

Source: BofA Merrill Lynch US Equity and US Quant Strategy

The performance does not reflect transaction costs or tax withholdings or any applicable advisory fees. Had these costs been reflected, the performance would have been lower. Performance is calculated on the basis of price return unless noted. Total return performance calculations assume that dividends paid on securities in a portfolio are deposited in a cash account on the ex-dividend date, and are not reinvested. Please see Performance Calculation methodology on page 59 for a full explanation.

†For screens that have less than 5 years history, the performance is since inception.

Past performance should not and cannot be viewed as an indicator of future performance. A complete performance record is available upon request.

Table 2: Advances and Declines as of 6/28/2013

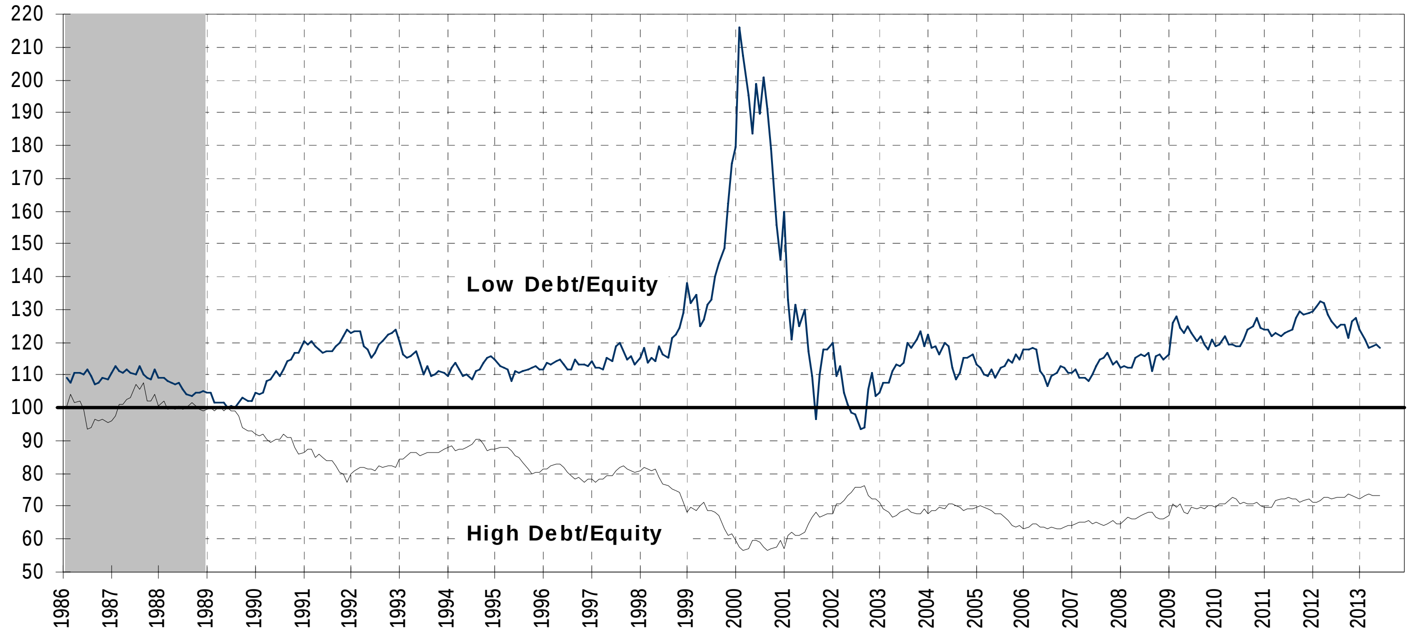
	1M		3M		6M		12M		YTD		2Yr		3Yr		5Yr	
Quantitative Strategies	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.	Adv.	Dec.
Share Repurchase	25	25	98	52	219	81	407	193	219	81	728	471	1106	693	1757	1241
Low Price	20	29	88	60	190	104	368	224	190	104	646	544	987	801	1613	1369
Forward Earnings Yield	28	21	104	45	216	83	403	194	216	83	660	536	1021	772	1641	1345
Small Size	21	27	85	63	184	113	366	230	184	113	646	550	991	804	1614	1378
Low Price to Book Value	27	23	102	47	215	82	409	194	215	82	698	511	1051	762	1691	1324
Low Price to Sales	24	26	90	59	204	93	393	203	204	93	664	530	1040	753	1676	1312
Low EV/EBITDA	21	28	88	61	201	98	380	218	201	98	664	534	1035	762	1660	1334
High Free Cash Flow to EV	16	25	78	46	164	76	311	171	164	76	573	441	911	652	1498	1117
Most Active	21	29	91	58	200	96	377	217	200	96	675	518	1032	758	1633	1347
Negative Earnings Surprise	28	29	119	73	262	124	488	295	262	124	894	660	1363	953	2103	1679
Low PE to GROWTH	23	27	96	54	198	101	381	217	198	101	653	545	1028	769	1660	1333
Earnings Yield	20	29	97	52	200	98	404	192	200	98	692	504	1064	731	1706	1284
ROE (1-Yr Average)	22	27	88	61	194	104	372	226	194	104	684	512	1060	736	1684	1311
Alpha Surprise Model	27	21	92	55	201	85	358	204	201	85	637	476	997	681	1513	1150
Low Price to Free Cash Flow	20	29	91	58	201	97	395	202	201	97	688	509	1067	726	1724	1264
High Beta	19	32	85	65	187	111	378	224	187	111	650	561	1009	802	1606	1413
Relative Strength (10wk/40wk)	19	30	82	67	188	111	375	223	188	111	690	508	1055	743	1612	1374
High Foreign Exposure	16	33	81	68	192	106	368	229	192	106	632	565	1018	777	1612	1380
Price Returns (9-Month)	14	35	86	63	192	106	378	219	192	106	704	491	1070	724	1617	1363
High Projected 5-Yr Growth	18	32	91	59	199	101	382	219	199	101	678	529	1071	742	1815	1423
DDM Valuation	29	29	98	75	226	111	417	259	226	111	843	586	1324	851	1971	1479
ROE (5-Yr Average)	19	30	83	66	196	103	361	237	196	103	673	524	1060	736	1695	1301
Low EPS Torpedo	15	34	75	74	175	122	335	260	175	122	629	565	1003	790	1632	1358
ROC	18	32	84	66	191	108	363	236	191	108	674	525	1052	747	1674	1325
Low Price to Cash Flow	19	30	78	70	178	116	362	230	178	116	625	565	999	790	1625	1359
Dividend Yield (Total Return)	26	23	90	59	213	85	383	215	213	85	757	440	1178	617	1848	1142
Upward Estimate Revisions	21	29	84	66	197	101	390	207	197	101	690	506	1052	742	1616	1378
Positive Earnings Surprise	36	36	128	93	282	134	545	296	282	134	916	708	1398	1003	2179	1738
ROA	21	29	84	66	192	108	360	240	192	108	671	529	1047	753	1653	1345
Analyst Coverage Neglect	17	28	74	63	185	93	335	201	185	93	616	504	933	703	1636	1335
ROE (1-Yr Avg. Adj. by Debt)	16	34	84	66	195	105	380	220	195	105	699	501	1076	722	1659	1338
Price Returns (12-Month plus 1-Month Reversal)	16	34	77	73	184	115	372	226	184	115	666	532	1049	748	1606	1381
Price Returns (11-Month since 1 year ago)	14	36	80	70	189	110	372	227	189	110	689	509	1051	745	1596	1383
ROE (5-Yr Avg. Adj. by Debt)	19	31	82	68	192	108	372	228	192	108	679	521	1063	736	1650	1349
Price Returns (12-Month)	14	35	79	70	188	110	364	234	188	110	685	512	1057	738	1602	1380
High Dividend Growth (Total Return)	19	31	89	61	203	97	389	210	203	97	713	484	1108	688	1721	1269
Price Returns (12-Month plus 1-Month)	15	34	79	70	196	102	374	224	196	102	703	494	1093	704	1649	1333
Dividend Yield (Price Return)	25	24	87	62	206	92	365	232	206	92	717	479	1115	677	1758	1228
High Dividend Growth (Price Return)	19	31	88	62	202	98	385	215	202	98	704	495	1094	704	1698	1296
High Variability of EPS	24	42	111	86	256	136	496	283	256	136	863	687	1335	974	2123	1769
High EPS Estimate Dispersion	13	31	61	69	143	114	339	228	143	114	633	550	1021	843	1843	1638
Institutional Neglect	19	30	79	69	199	97	364	231	199	97	698	497	1071	725	1685	1310
Relative Strength (Price/200-Day Moving Avg)	16	33	79	70	186	112	373	223	186	112	686	508	1062	733	1601	1383
High Duration	14	36	80	69	188	110	358	240	188	110	676	522	1046	752	1646	1352
EPS Momentum	14	36	79	71	182	117	374	224	182	117	664	533	1023	774	1628	1366
Relative Strength (30wk/75wk)	9	41	77	73	184	116	362	238	184	116	666	533	1040	756	1583	1413
Relative Strength (5wk/30wk)	19	30	76	73	183	114	377	218	183	114	696	497	1071	720	1623	1359
Price Returns (3-Month)	20	29	68	81	180	117	360	235	180	117	682	512	1073	720	1638	1345

†For screens that have less than 5 years history, the advance/decline data is since inception.

Source: BofA Merrill Lynch US Equity and US Quant Strategy

MLQS Financial Confidence & Thematic Indicators

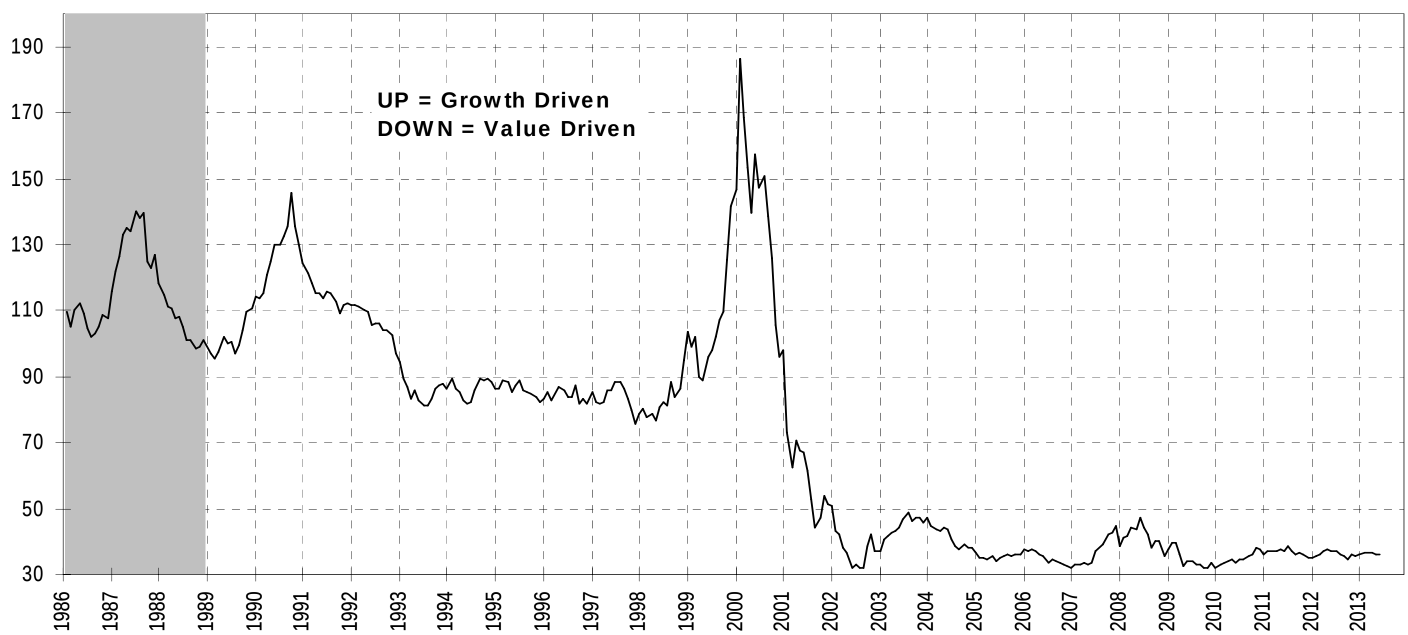
Financial Confidence



Source: BofA Merrill Lynch US Quantitative Strategy

The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Thematic (High 5-Year Projected Growth vs. High EPS Yield)



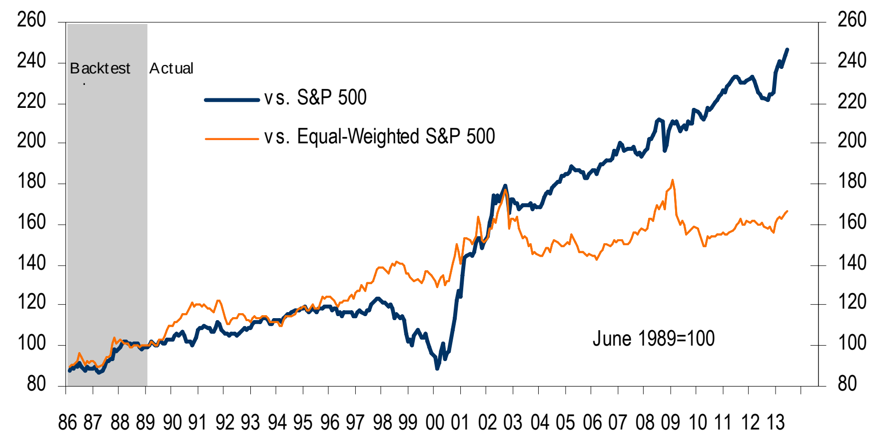
Source: BofA Merrill Lynch US Quantitative Strategy

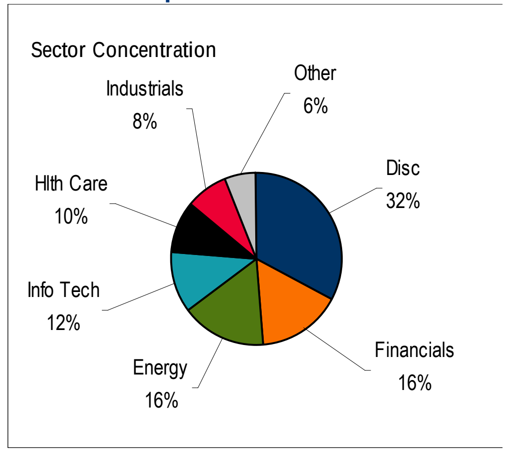
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Alpha Surprise Model

Top 50 S&P 500 Companies By Alpha Surprise Model

Alpha Surprise Model: a 25%/75% combination of the DDM "Alpha" and the Positive EPS "Surprise" Models.





Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance.

Absolute Returns	
Last 1 Month	-0.26%
Last 3 Months	4.92%
Last 6 Months	23.40%
Last 12 Months	29.56%
2013 YTD	23.40%

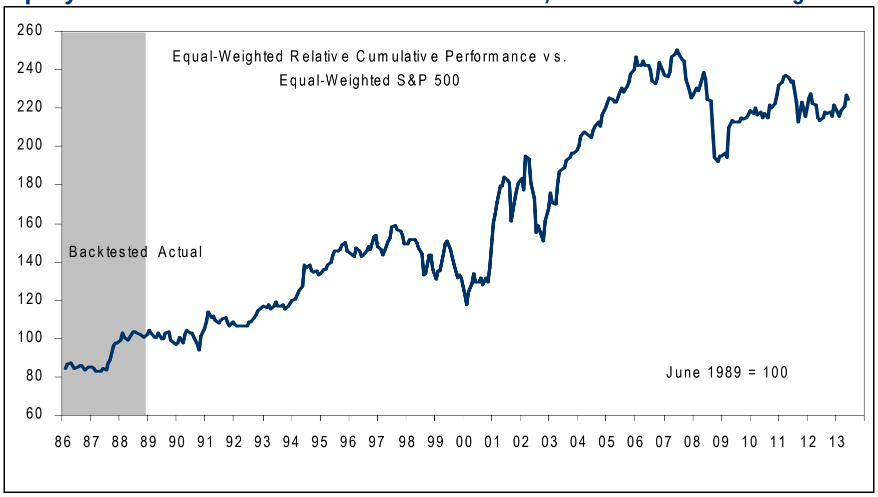
Screen for July

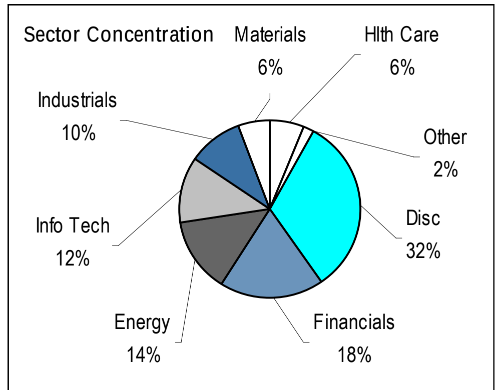
Mo. In Scrn	Company	Ticker	Alpha Surprise Score	Price 06/28/2013	S&P
17	DOLLAR TREE INC	DLTR	1.00	50.84	B+
5	BIOGEN IDEC INC	BIIB	1.25	215.20	B
3	COMCAST CORP	CMCSA	1.25	41.75	A-
9	STERICYCLE INC	SRCL	1.25	110.43	B+
6	U S BANCORP	USB	1.25	36.15	B+
6	AMAZON.COM INC	AMZN	1.50	277.69	B-
5	DIAMOND OFFSHRE DRILLING INC	DO	1.50	68.79	B
4	MARATHON OIL CORP	MRO	1.50	34.58	B
21	AUTONATION INC	AN	1.75	43.39	B
New	AUTOZONE INC	AZO	1.75	423.69	B+
10	CHESAPEAKE ENERGY CORP	CHK	1.75	20.38	B-
New	DARDEN RESTAURANTS INC	DRI	1.75	50.48	A
2	DIRECTV	DTV	1.75	61.64	B
New	GAMESTOP CORP	GME	1.75	42.03	B
8	HOME DEPOT INC	HD	1.75	77.47	A
12	O'REILLY AUTOMOTIVE INC	ORLY	1.75	112.62	B+
4	BB&T CORP	BBT	2.00	33.88	B+
2	KELLOGG CO	K	2.00	64.23	A+
4	LSI CORP	LSI	2.00	7.14	B-
19	NETFLIX INC	NFLX	2.00	211.09	B
New	SOUTHERN CO	SO	2.00	44.13	A-
6	SYMANTEC CORP	SYMC	2.00	22.48	B
2	THERMO FISHER SCIENTIFIC INC	TMO	2.00	84.63	B
12	AMGEN INC	AMGN	2.25	98.66	B+
New	HUDSON CITY BANCORP INC	HCBK	2.25	9.18	A-
2	PERKINELMER INC	PKI	2.25	32.50	B
New	SCHWAB (CHARLES) CORP	SCHW	2.25	21.23	B
New	TRAVELERS COS INC	TRV	2.25	79.92	A-
New	VALERO ENERGY CORP	VLO	2.25	34.77	B
2	APACHE CORP	APA	2.50	83.83	B+
2	BOEING CO	BA	2.50	102.44	B+
3	COMERICA INC	CMA	2.50	39.83	B
5	DOLLAR GENERAL CORP	DG	2.50	50.43	NA
2	GARMIN LTD	GRMN	2.50	36.17	NA
5	GENERAL DYNAMICS CORP	GD	2.50	78.33	A
3	GOODYEAR TIRE & RUBBER CO	GT	2.50	15.30	C
New	GENUINE PARTS CO	GPC	2.50	78.07	A
New	HALLIBURTON CO	HAL	2.50	41.72	B
9	HESS CORP	HES	2.50	66.49	A-
3	HUNTINGTON BANCSHARES	HBAN	2.50	7.87	B-
9	MYLAN INC	MYL	2.50	31.03	A-
2	PARKER-HANNIFIN CORP	PH	2.50	95.40	A
9	PETSMART INC	PETM	2.50	66.99	A
New	PHILIP MORRIS INTERNATIONAL	PM	2.50	86.62	NA
9	SANDISK CORP	SNDK	2.50	61.10	B-
New	TESORO CORP	TSO	2.50	52.32	B
2	ALTERA CORP	ALTR	2.75	32.99	B+
2	CAPITAL ONE FINANCIAL CORP	COF	2.75	62.81	B+
2	URBAN OUTFITTERS INC	URBN	2.75	40.22	B+
5	WESTERN UNION CO	WU	2.75	17.11	NA
New	YAHOO INC	YHOO	2.75	25.13	B

P/E-to-Growth

Top 50 S&P 500 Companies By Low PE to GROWTH

P/E-to-Growth: Trailing twelve months P/E divided by the five-year EPS growth rate estimated by BofAML Fundamental Equity Research. If no BofAML estimate exist, then IBES Mean Long Term Growth Estimate is used.





Absolute Returns	
Last 1 Month	-2.04%
Last 3 Months	5.77%
Last 6 Months	16.97%
Last 12 Months	30.53%
2013 YTD	16.97%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

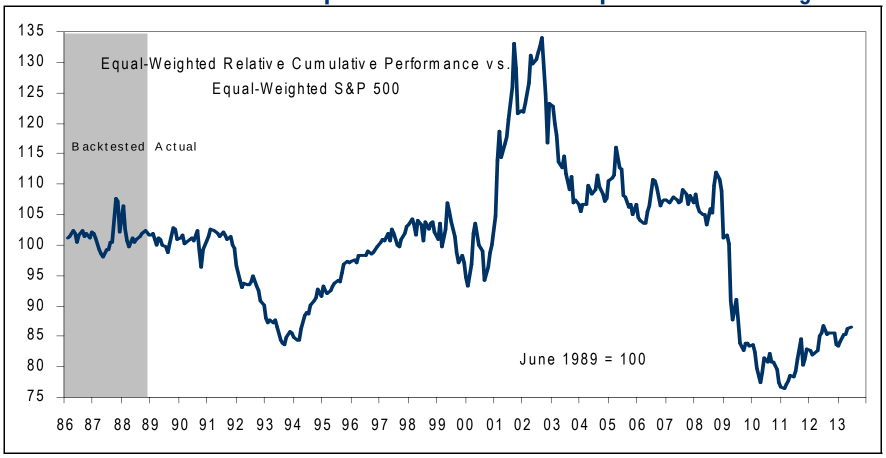
Mo. In Scrn.	Company	Ticker	PE/ Growth	Price 06/28/2013
6	D R HORTON INC	DHI	0.10	21.28
11	TESORO CORP	TSO	0.12	52.32
9	YAHOO INC	YHOO	0.36	25.13
27	COMERICA INC	CMA	0.36	39.83
3	PULTEGROUP INC	PHM	0.40	18.97
21	GOODYEAR TIRE & RUBBER CO	GT	0.41	15.30
21	SUNTRUST BANKS INC	STI	0.45	31.57
22	WYNN RESORTS LTD	WYNN	0.46	127.97
27	FIFTH THIRD BANCORP	FITB	0.48	18.05
27	M & T BANK CORP	MTB	0.55	111.75
5	ABERCROMBIE & FITCH -CL A	ANF	0.58	45.25
11	DIRECTV	DTV	0.59	61.64
18	AUTONATION INC	AN	0.60	43.39
4	WHIRLPOOL CORP	WHR	0.62	114.36
7	APPLE INC	AAPL	0.63	396.53
12	ENSCO PLC	ESV	0.67	58.12
New	FREEPORT-MCMORAN COP&GOLD	FCX	0.67	27.61
3	PHILLIPS 66	PSX	0.70	58.91
21	U S BANCORP	USB	0.71	36.15
3	VALERO ENERGY CORP	VLO	0.72	34.77
New	GENERAL MOTORS CO	GM	0.73	33.31
21	BB&T CORP	BBT	0.75	33.88
4	INTL PAPER CO	IP	0.76	44.31
27	KEYCORP	KEY	0.77	11.04
8	PETSMART INC	PETM	0.77	66.99

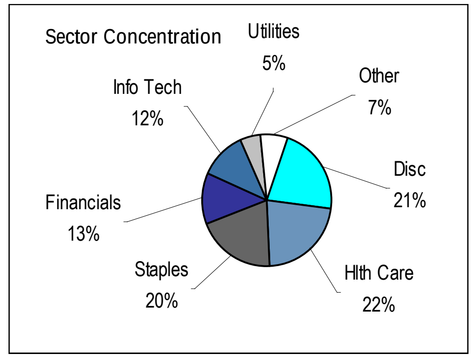
Mo. In Scrn.	Company	Ticker	PE/ Growth	Price 06/28/2013
5	JOY GLOBAL INC	JOY	0.78	48.53
6	MARATHON OIL CORP	MRO	0.79	34.58
3	F5 NETWORKS INC	FFIV	0.80	68.80
13	WELLPOINT INC	WLP	0.80	81.84
3	SOUTHWEST AIRLINES	LUV	0.80	12.89
3	GILEAD SCIENCES INC	GILD	0.82	51.27
3	SAFEWAY INC	SWY	0.84	23.66
45	DIAMOND OFFSHRE DRILLING INC	DO	0.84	68.79
13	BED BATH & BEYOND INC	BBBY	0.84	70.95
9	NATIONAL OILWELL VARCO INC	NOV	0.86	68.90
3	NORFOLK SOUTHERN CORP	NSC	0.86	72.65
New	ORACLE CORP	ORCL	0.89	30.71
7	AUTOZONE INC	AZO	0.89	423.69
12	WELLS FARGO & CO	WFC	0.90	41.27
8	DOLLAR TREE INC	DLTR	0.90	50.84
2	QUANTA SERVICES INC	PWR	0.92	26.46
2	HUMANA INC	HUM	0.94	84.38
New	CF INDUSTRIES HOLDINGS INC	CF	0.96	171.50
2	COGNIZANT TECH SOLUTIONS	CTSH	0.96	62.64
New	FOSSIL GROUP INC	FOSL	0.96	103.31
2	COMCAST CORP	CMCSA	0.96	41.75
5	LINCOLN NATIONAL CORP	LNC	0.98	36.47
2	SCRIPPS NETWORKS INTERACTIVE	SNI	0.98	66.76
New	DEERE & CO	DE	0.99	81.25
New	CORNING INC	GLW	1.00	14.23

Dividend Discount Model Alpha

Top S&P 500 Companies By DDM ALPHA

Dividend Discount Model Alpha: The implied return from the BofAML Quantitative Strategy three-stage dividend discount model less the required return from a Capital Asset Pricing Model. Presented as a decile rank.





Absolute Returns	
Last 1 Month	-0.91%
Last 3 Months	4.29%
Last 6 Months	19.19%
Last 12 Months	25.76%
2013 YTD	19.19%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

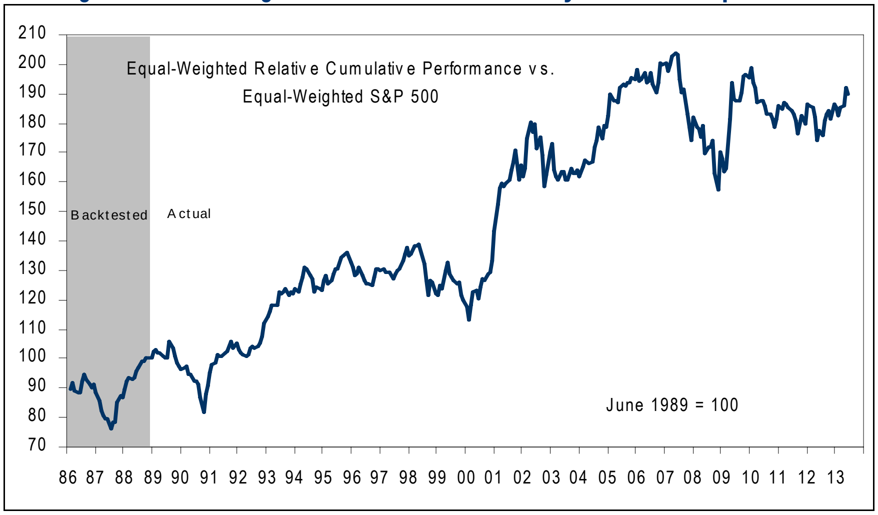
Mo. In Scrn	Company	Ticker	DDM Alpha	Price 06/28/2013
24	ABBOTT LABORATORIES	ABT	1	34.88
5	AMERICAN TOWER CORP	AMT	1	73.17
19	AUTOZONE INC	AZO	1	423.69
16	APPLE INC	AAPL	1	396.53
24	BAXTER INTERNATIONAL INC	BAX	1	69.27
5	CHESAPEAKE ENERGY CORP	CHK	1	20.38
27	COMERICA INC	CMA	1	39.83
6	D R HORTON INC	DHI	1	21.28
11	DIRECTV	DTV	1	61.64
7	DOLLAR GENERAL CORP	DG	1	50.43
19	DOLLAR TREE INC	DLTR	1	50.84
19	FAMILY DOLLAR STORES	FDO	1	62.31
3	FOREST LABORATORIES -CL A	FRX	1	41.00
New	GAMESTOP CORP	GME	1	42.03
42	GILEAD SCIENCES INC	GILD	1	51.27
17	GOODYEAR TIRE & RUBBER CO	GT	1	15.30
21	LORILLARD INC	LO	1	43.68
2	LEGG MASON INC	LM	1	31.01
27	M & T BANK CORP	MTB	1	111.75
19	O'REILLY AUTOMOTIVE INC	ORLY	1	112.62
9	PETSMART INC	PETM	1	66.99
New	PULTEGROUP INC	PHM	1	18.97
11	TESORO CORP	TSO	1	52.32
27	XILINX INC	XLNX	1	39.61
5	ALEXION PHARMACEUTICALS INC	ALXN	2	92.24
4	ALTERA CORP	ALTR	2	32.99
21	ALTRIA GROUP INC	MO	2	34.99
24	BARD (C.R.) INC	BCR	2	108.68
6	BB&T CORP	BBT	2	33.88
2	BIOGEN IDEC INC	BIIB	2	215.20

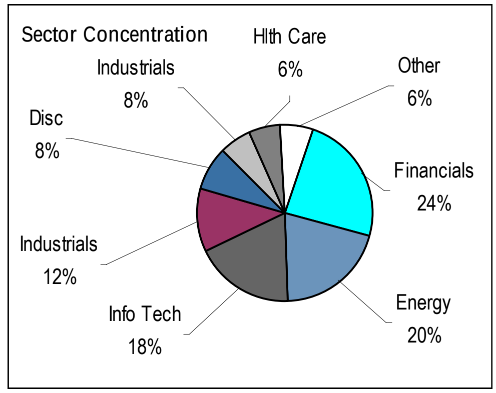
Mo. In Scrn	Company	Ticker	DDM Alpha	Price 06/28/2013
3	BRISTOL-MYERS SQUIBB CO	BMY	2	44.69
5	C H ROBINSON WORLDWIDE INC	CHRW	2	56.31
32	CELGENE CORP	CELG	2	116.98
42	CHUBB CORP	CB	2	84.65
New	CLOROX CO/DE	CLX	2	83.14
117	COLGATE-PALMOLIVE CO	CL	2	57.29
2	COMCAST CORP	CMCSA	2	41.75
New	CONSOLIDATED EDISON INC	ED	2	58.31
4	EDWARDS LIFESCIENCES CORP	EW	2	67.20
54	GENERAL MILLS INC	GIS	2	48.53
31	HEWLETT-PACKARD CO	HPQ	2	24.80
46	INTL BUSINESS MACHINES CORP	IBM	2	191.11
50	JOHNSON & JOHNSON	JNJ	2	85.86
3	KEYCORP	KEY	2	11.04
47	KIMBERLY-CLARK CORP	KMB	2	97.14
43	KROGER CO	KR	2	34.54
2	KELLOGG CO	K	2	64.23
50	LABORATORY CP OF AMER HLDGS	LH	2	100.10
4	LSI CORP	LSI	2	7.14
10	PEPSICO INC	PEP	2	81.79
New	PG&E CORP	PCG	2	45.73
148	PROCTER & GAMBLE CO	PG	2	76.99
52	QUEST DIAGNOSTICS INC	DGX	2	60.63
3	SAFEWAY INC	SWY	2	23.66
New	SOUTHERN CO	SO	2	44.13
14	STERICYCLE INC	SRCL	2	110.43
7	U S BANCORP	USB	2	36.15
60	WAL-MART STORES INC	WMT	2	74.49
17	WYNN RESORTS LTD	WYNN	2	127.97
New	YAHOO INC	YHOO	2	25.13

Earnings Yield

Top 50 S&P 500 Companies By EARNINGS YIELD

Earnings Yield: Trailing 12-month EPS divided by month-end price.





Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Absolute Returns	
Last 1 Month	-2.42%
Last 3 Months	5.52%
Last 6 Months	17.14%
Last 12 Months	32.89%
2013 YTD	17.14%

Screen for July

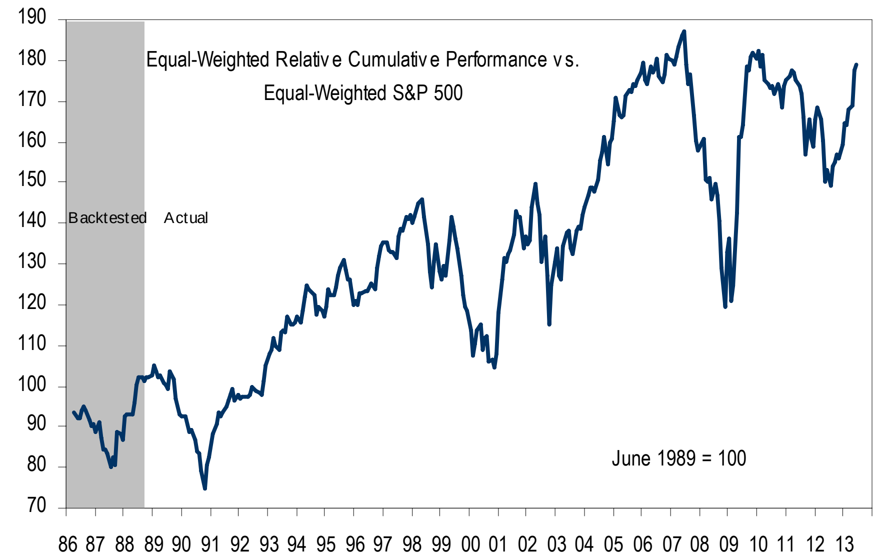
Mo. In Scrn	Company	Ticker	Earnings Yield	Price 06/28/2013
20	CF INDUSTRIES HOLDINGS INC	CF	17.41%	171.50
3	VALERO ENERGY CORP	VLO	16.48%	34.77
12	D R HORTON INC	DHI	15.65%	21.28
23	MARATHON PETROLEUM CORP	MPC	14.71%	71.06
12	SEAGATE TECHNOLOGY PLC	STX	14.37%	44.83
14	JOY GLOBAL INC	JOY	14.18%	48.53
16	APOLLO GROUP INC -CL A	APOL	14.05%	17.72
9	YAHOO INC	YHOO	13.73%	25.13
11	PHILLIPS 66	PSX	13.21%	58.91
15	WESTERN DIGITAL CORP	WDC	13.00%	62.09
5	LINCOLN NATIONAL CORP	LNC	12.72%	36.47
16	PITNEY BOWES INC	PBI	12.47%	14.68
9	SUNTRUST BANKS INC	STI	12.04%	31.57
3	HESS CORP	HES	11.79%	66.49
21	CHEVRON CORP	CVX	11.26%	118.34
5	FREEPORT-MCMORAN COP&GOLD	FCX	11.16%	27.61
5	UNUM GROUP	UNM	11.03%	29.37
3	NEWMONT MINING CORP	NEM	11.02%	29.95
15	AFLAC INC	AFL	10.94%	58.12
11	SLM CORP	SLM	10.89%	22.86
11	EXXON MOBIL CORP	XOM	10.87%	90.35
3	TESORO CORP	TSO	10.70%	52.32
8	HUMANA INC	HUM	10.69%	84.38
27	JPMORGAN CHASE & CO	JPM	10.68%	52.79
6	APPLE INC	AAPL	10.66%	396.53

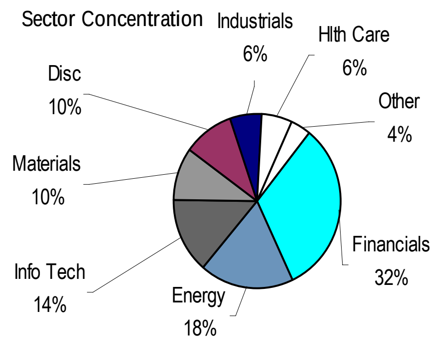
Mo. In Scrn	Company	Ticker	Earnings Yield	Price 06/28/2013
2	EDISON INTERNATIONAL	EIX	10.63%	48.16
3	SAFEWAY INC	SWY	10.61%	23.66
New	FIRST SOLAR INC	FSLR	10.58%	44.81
19	WELLPOINT INC	WLP	10.47%	81.84
17	ASSURANT INC	AIZ	10.37%	50.91
18	XEROX CORP	XRX	10.36%	9.07
4	SAIC INC	SAI	10.12%	13.93
2	DEERE & CO	DE	10.12%	81.25
6	GOLDMAN SACHS GROUP INC	GS	10.04%	151.25
New	LEUCADIA NATIONAL CORP	LUK	9.92%	26.22
39	FORD MOTOR CO	F	9.89%	15.47
24	L-3 COMMUNICATIONS HLDGS INC	LLL	9.80%	85.74
6	CONOCOPHILLIPS	COP	9.75%	60.50
17	WESTERN UNION CO	WU	9.70%	17.11
21	NORTHROP GRUMMAN CORP	NOC	9.70%	82.80
12	ALLSTATE CORP	ALL	9.68%	48.12
9	HARRIS CORP	HRS	9.58%	49.25
2	ABBOTT LABORATORIES	ABT	9.52%	34.88
15	FIFTH THIRD BANCORP	FITB	9.47%	18.05
2	ENTERGY CORP	ETR	9.37%	69.68
New	GENERAL MOTORS CO	GM	9.31%	33.31
New	ENSCO PLC	ESV	9.29%	58.12
New	CATERPILLAR INC	CAT	9.23%	82.49
3	HELMERICH & PAYNE	HP	9.16%	62.45
8	CAPITAL ONE FINANCIAL CORP	COF	9.15%	62.81

Forward Earnings Yield

Top 50 S&P 500 Companies By FORWARD EARNINGS YIELD

Earnings Yield: Rolling 12-month Forward EPS divided by month-end price.





Absolute Returns	
Last 1 Month	-0.41%
Last 3 Months	9.70%
Last 6 Months	29.56%
Last 12 Months	45.56%
2013 YTD	29.56%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end May1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

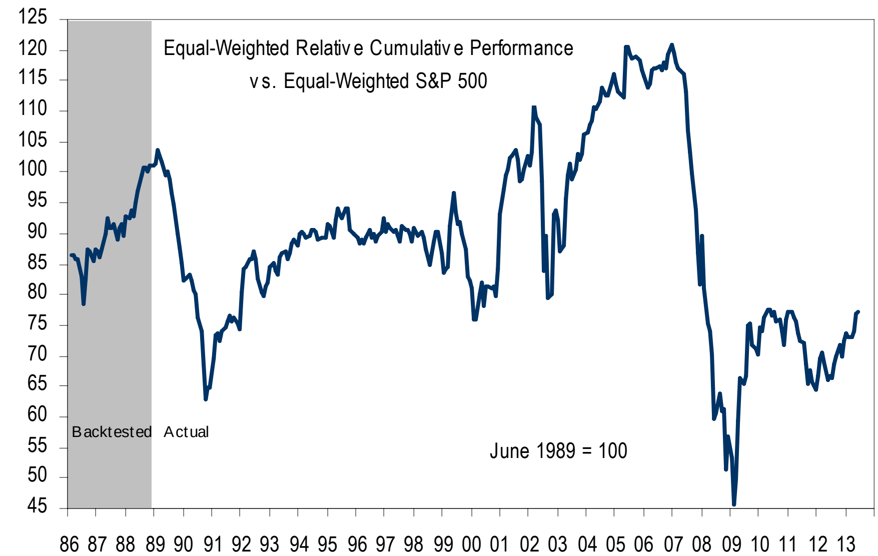
Mo. In Scrn	Company	Ticker	Forward Earnings Yield	Price 06/28/2013
28	VALERO ENERGY CORP	VLO	15.46%	34.77
23	GOODYEAR TIRE & RUBBER CO	GT	15.06%	15.30
35	HEWLETT-PACKARD CO	HPQ	14.65%	24.80
24	MARATHON PETROLEUM CORP	MPC	14.15%	71.06
11	CF INDUSTRIES HOLDINGS INC	CF	13.82%	171.50
3	CLIFFS NATURAL RESOURCES INC	CLF	13.70%	16.25
14	PHILLIPS 66	PSX	13.03%	58.91
67	LINCOLN NATIONAL CORP	LNC	12.92%	36.47
19	WESTERN DIGITAL CORP	WDC	12.84%	62.09
16	JABIL CIRCUIT INC	JBL	12.79%	20.38
5	PITNEY BOWES INC	PBI	12.75%	14.68
30	XEROX CORP	XRX	12.56%	9.07
10	ENSCO PLC	ESV	12.32%	58.12
45	METLIFE INC	MET	12.24%	45.76
12	SEAGATE TECHNOLOGY PLC	STX	12.23%	44.83
9	FREEPORT-MCMORAN COP&GOLD	FCX	12.14%	27.61
26	TESORO CORP	TSO	12.01%	52.32
35	PRUDENTIAL FINANCIAL INC	PRU	11.78%	73.03
4	JOY GLOBAL INC	JOY	11.60%	48.53
54	UNUM GROUP	UNM	11.57%	29.37
New	GENERAL MOTORS CO	GM	11.53%	33.31
9	APOLLO GROUP INC -CL A	APOL	11.30%	17.72
57	ASSURANT INC	AIZ	11.14%	50.91
24	SLM CORP	SLM	11.08%	22.86
27	GENWORTH FINANCIAL INC	GNW	11.07%	11.41

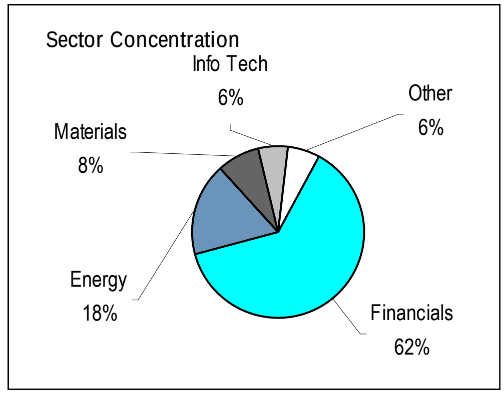
Mo. In Scrn	Company	Ticker	Forward Earnings Yield	Price 06/28/2013
15	JPMORGAN CHASE & CO	JPM	11.07%	52.79
2	AES CORP	AES	11.02%	11.99
100	HARTFORD FINANCIAL SERVICES	HIG	10.96%	30.92
34	AFLAC INC	AFL	10.93%	58.12
25	OWENS-ILLINOIS INC	OI	10.77%	27.79
New	APPLE INC	AAPL	10.74%	396.53
2	DEERE & CO	DE	10.63%	81.25
20	APACHE CORP	APA	10.62%	83.83
26	CITIGROUP INC	C	10.57%	47.97
11	CAPITAL ONE FINANCIAL CORP	COF	10.54%	62.81
4	CHEVRON CORP	CVX	10.50%	118.34
2	ALLSTATE CORP	ALL	10.24%	48.12
7	DISCOVER FINANCIAL SVCS INC	DFS	10.17%	47.64
8	HUMANA INC	HUM	10.17%	84.38
3	LYONDELLBASELL INDUSTRIES NV	LYB	10.03%	66.26
3	SAFEWAY INC	SWY	10.01%	23.66
6	FORD MOTOR CO	F	9.96%	15.47
13	WELLPOINT INC	WLP	9.95%	81.84
New	MURPHY OIL CORP	MUR	9.86%	60.89
4	MYLAN INC	MYL	9.82%	31.03
2	CA INC	CA	9.80%	28.62
New	GOLDMAN SACHS GROUP INC	GS	9.80%	151.25
New	XL GROUP PLC	XL	9.80%	30.32
New	NOBLE CORP	NE	9.72%	37.58
71	GANNETT CO	GCI	9.64%	24.46

Price/Book Value

Top 50 S&P 500 Companies By LOW PRICE/BOOK

Price/Book Value: Month-end price divided by latest reported book value per share.





Absolute Returns	
Last 1 Month	-0.47%
Last 3 Months	8.92%
Last 6 Months	23.12%
Last 12 Months	43.82%
2013 YTD	23.12%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

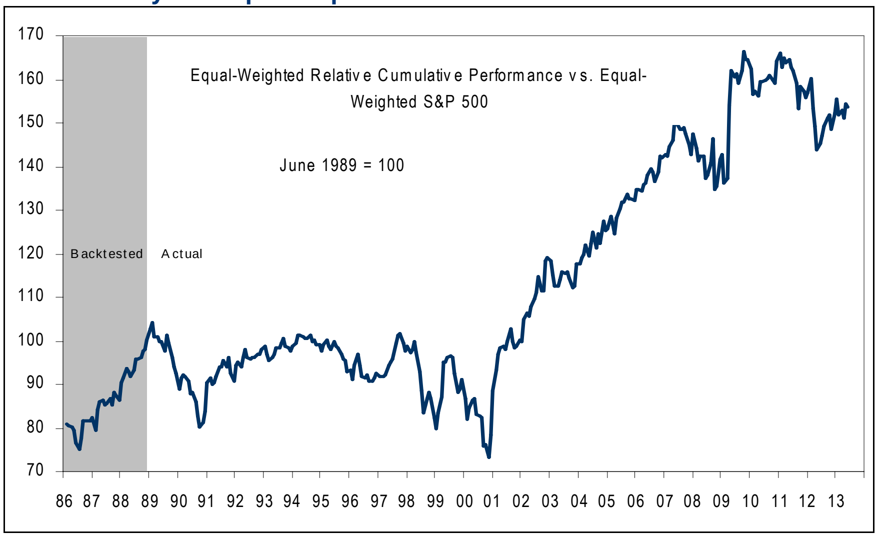
Screen for July

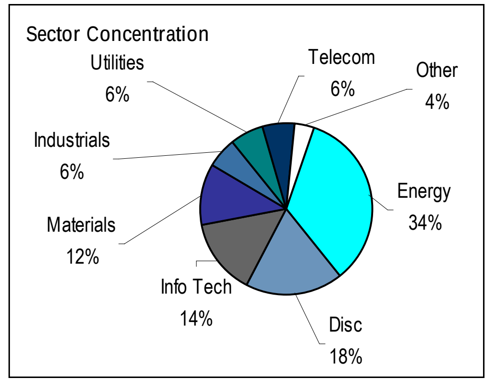
Mo. In Scrn	Company	Ticker	Price/ Book	Price 06/28/2013
91	GENWORTH FINANCIAL INC	GNW	0.35	11.41
11	CLIFFS NATURAL RESOURCES INC	CLF	0.50	16.25
24	ALCOA INC	AA	0.63	7.82
56	BANK OF AMERICA CORP	BAC	0.64	12.86
30	AMERICAN INTERNATIONAL GROUI	AIG	0.66	44.70
58	HARTFORD FINANCIAL SERVICES	HIG	0.66	30.92
57	LINCOLN NATIONAL CORP	LNC	0.66	36.47
37	E TRADE FINANCIAL CORP	ETFC	0.73	12.66
14	UNITED STATES STEEL CORP	X	0.73	17.53
18	WPX ENERGY INC	WPX	0.74	18.94
16	NABORS INDUSTRIES LTD	NBR	0.76	15.31
51	ASSURANT INC	AIZ	0.77	50.91
26	CITIGROUP INC	C	0.77	47.97
45	METLIFE INC	MET	0.78	45.76
42	MORGAN STANLEY	MS	0.78	24.43
62	LEGG MASON INC	LM	0.81	31.01
3	PEABODY ENERGY CORP	BTU	0.81	14.64
54	SUNTRUST BANKS INC	STI	0.83	31.57
36	XL GROUP PLC	XL	0.84	30.32
38	PRUDENTIAL FINANCIAL INC	PRU	0.85	73.03
80	REGIONS FINANCIAL CORP	RF	0.88	9.53
80	CAPITAL ONE FINANCIAL CORP	COF	0.89	62.81
50	LOEWS CORP	L	0.89	44.40
42	NRG ENERGY INC	NRG	0.89	26.70
10	ROWAN COMPANIES PLC	RDC	0.92	34.07
50	UNUM GROUP	UNM	0.92	29.37
27	BANK OF NEW YORK MELLON COR	BK	0.94	28.05
2	LEUCADIA NATIONAL CORP	LUK	0.95	26.22
23	XEROX CORP	XRX	0.97	9.07
13	CORNING INC	GLW	0.98	14.23
41	PEOPLE'S UNITED FINL INC	PBCT	0.98	14.90
5	FRONTIER COMMUNICATIONS COF	FTR	1.00	4.05
39	JPMORGAN CHASE & CO	JPM	1.01	52.79
55	KEYCORP	KEY	1.01	11.04
13	WELLPOINT INC	WLP	1.01	81.84
23	GOLDMAN SACHS GROUP INC	GS	1.02	151.25
2	HESS CORP	HES	1.02	66.49
30	HUDSON CITY BANCORP INC	HCBK	1.03	9.18
New	VALERO ENERGY CORP	VLO	1.04	34.77
19	NASDAQ OMX GROUP INC	NDAQ	1.05	32.79
55	ZIONS BANCORPORATION	ZION	1.05	28.92
28	COMERICA INC	CMA	1.06	39.83
5	APACHE CORP	APA	1.07	83.83
New	DEVON ENERGY CORP	DVN	1.07	51.88
New	FIRST SOLAR INC	FSLR	1.07	44.81
New	NEWMONT MINING CORP	NEM	1.07	29.95
12	PNC FINANCIAL SVCS GROUP INC	PNC	1.07	72.92
New	CHESAPEAKE ENERGY CORP	CHK	1.08	20.38
6	ACE LTD	ACE	1.09	89.48
2	ALLSTATE CORP	ALL	1.09	48.12

Price/Cash Flow

Top 50 S&P 500 (ex. Financials) Companies By LOW PRICE/CASH FLOW

Price/Cash Flow: Month-end price divided by latest reported cash flow. Cash flow is defined as earnings post extraordinary items plus depreciation.





Source: BofA Merrill Lynch US Quantitative Strategy
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Absolute Returns	
Last 1 Month	-1.61%
Last 3 Months	3.48%
Last 6 Months	16.37%
Last 12 Months	31.30%
2013 YTD	16.37%

Screen for July

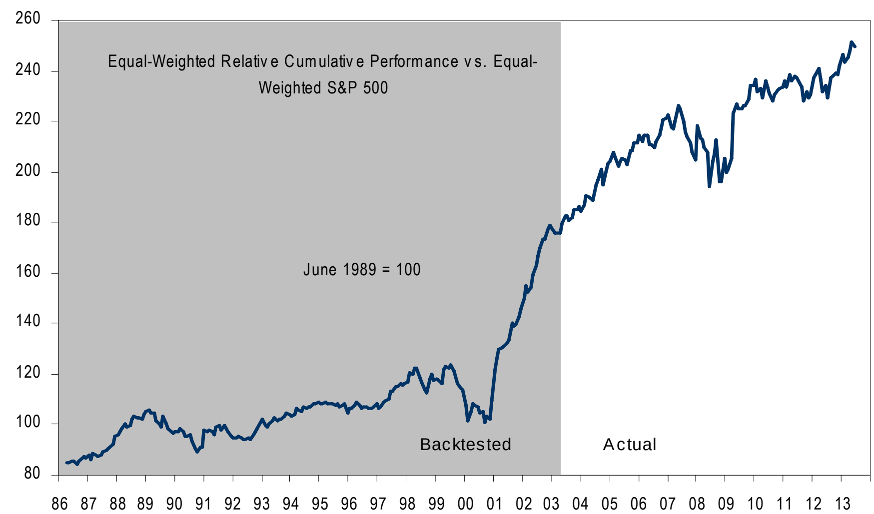
Mo. In Scrn.	Company	Ticker	Price / Cash Flo	Price 06/28/2013
179	RYDER SYSTEM INC	R	2.66	60.79
30	FRONTIER COMMUNICATIONS COF	FTR	2.93	4.05
15	WINDSTREAM CORP	WIN	3.08	7.71
29	SAFEWAY INC	SWY	3.20	23.66
5	COMPUTER SCIENCES CORP	CSC	3.32	43.77
39	HESS CORP	HES	3.58	66.49
25	CABLEVISION SYS CORP -CL A	CVC	3.58	16.82
6	UNITED STATES STEEL CORP	X	3.66	17.53
24	NABORS INDUSTRIES LTD	NBR	3.68	15.31
116	CENTURYLINK INC	CTL	3.93	35.35
4	VALERO ENERGY CORP	VLO	4.01	34.77
23	GOODYEAR TIRE & RUBBER CO	GT	4.10	15.30
12	APOLLO GROUP INC -CL A	APOL	4.24	17.72
8	NRG ENERGY INC	NRG	4.37	26.70
17	WPX ENERGY INC	WPX	4.46	18.94
16	MURPHY OIL CORP	MUR	4.46	60.89
23	APACHE CORP	APA	4.48	83.83
23	XEROX CORP	XRX	4.60	9.07
15	WESTERN DIGITAL CORP	WDC	4.69	62.09
5	CF INDUSTRIES HOLDINGS INC	CF	4.69	171.50
New	GENERAL MOTORS CO	GM	4.76	33.31
18	CONOCOPHILLIPS	COP	4.87	60.50
52	FORD MOTOR CO	F	4.87	15.47
17	PITNEY BOWES INC	PBI	4.88	14.68
6	ALCOA INC	AA	4.89	7.82

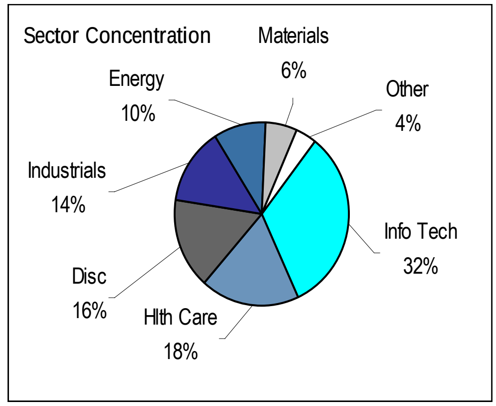
Mo. In Scrn.	Company	Ticker	Price / Cash Flo	Price 06/28/2013
11	ENTERGY CORP	ETR	4.93	69.68
12	SEAGATE TECHNOLOGY PLC	STX	5.16	44.83
19	QEP RESOURCES INC	QEP	5.20	27.78
6	MARATHON PETROLEUM CORP	MPC	5.23	71.06
3	NEWMONT MINING CORP	NEM	5.31	29.95
8	KROGER CO	KR	5.61	34.54
57	MARATHON OIL CORP	MRO	5.61	34.58
3	PPG INDUSTRIES INC	PPG	5.73	146.41
10	JABIL CIRCUIT INC	JBL	5.81	20.38
18	CHEVRON CORP	CVX	5.81	118.34
New	FIRST SOLAR INC	FSLR	5.91	44.81
New	TESORO CORP	TSO	5.93	52.32
3	JOY GLOBAL INC	JOY	6.06	48.53
8	TIME WARNER CABLE INC	TWC	6.24	112.48
9	YAHOO INC	YHOO	6.25	25.13
New	D R HORTON INC	DHI	6.26	21.28
New	FREEPORT-MCMORAN COP&GOLD	FCX	6.26	27.61
17	NETFLIX INC	NFLX	6.28	211.09
2	CHESAPEAKE ENERGY CORP	CHK	6.30	20.38
New	PHILLIPS 66	PSX	6.32	58.91
4	HELMERICH & PAYNE	HP	6.35	62.45
8	KOHL'S CORP	KSS	6.37	50.51
10	PG&E CORP	PCG	6.52	45.73
New	DENBURY RESOURCES INC	DNR	6.61	17.32
5	OCCIDENTAL PETROLEUM CORP	OXY	6.66	89.23

Price/Free Cash Flow

Top 50 S&P 500 (ex. Financials) Companies By LOW PRICE/FREE CASH FLOW

Price/Free Cash Flow: Month-end price divided by latest reported free cash flow. Free Cash Flow is defined as the earnings after extraordinary items plus depreciation minus capital expenditures.





Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end May 1986 to month end July 2003. The unshaded portion represents actual performance since August 2003. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Absolute Returns	
Last 1 Month	-1.78%
Last 3 Months	4.91%
Last 6 Months	19.07%
Last 12 Months	32.61%
2013 YTD	19.07%

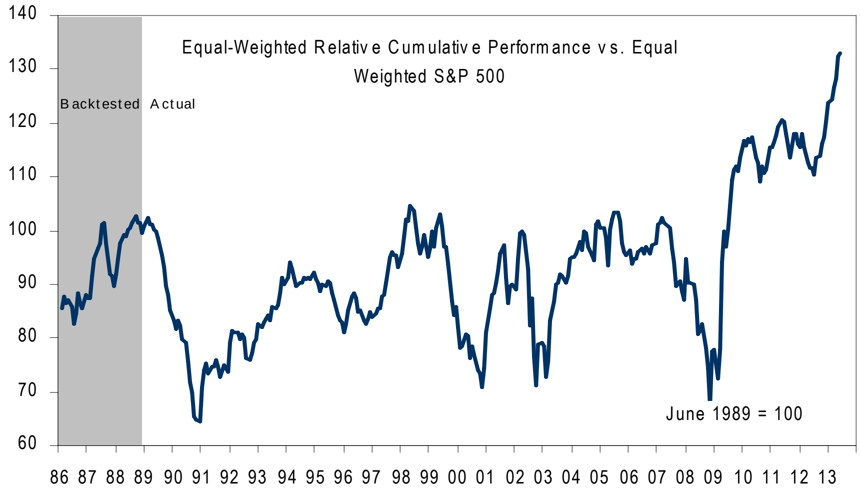
Screen for July

Mo. In Scrn.	Company	Ticker	Price / Free Cash Flo	Price 06/28/2013	Mo. In Scrn.	Company	Ticker	Price / Free Cash Flo	Price 06/28/2013
5	COMPUTER SCIENCES CORP	CSC	4.12	43.77	13	HUMANA INC	HUM	9.70	84.38
27	XEROX CORP	XRX	5.42	9.07	41	GANNETT CO	GCI	9.97	24.46
11	SAFEWAY INC	SWY	5.65	23.66	13	WELLPOINT INC	WLP	10.18	81.84
16	APOLLO GROUP INC -CL A	APOL	5.78	17.72	41	MACY'S INC	M	10.46	48.00
20	CF INDUSTRIES HOLDINGS INC	CF	6.38	171.50	3	LILLY (ELI) & CO	LLY	10.55	49.12
3	PPG INDUSTRIES INC	PPG	6.41	146.41	18	RAYTHEON CO	RTN	10.61	66.12
12	D R HORTON INC	DHI	6.58	21.28	3	TESORO CORP	TSO	10.64	52.32
21	NETFLIX INC	NFLX	6.65	211.09	6	APPLE INC	AAPL	10.66	396.53
21	PITNEY BOWES INC	PBI	6.72	14.68	4	ABBVIE INC	ABBV	10.73	41.34
12	SEAGATE TECHNOLOGY PLC	STX	6.78	44.83	8	KOHL'S CORP	KSS	10.75	50.51
9	YAHOO INC	YHOO	6.94	25.13	3	DU PONT (E I) DE NEMOURS	DD	11.00	52.50
16	MARATHON PETROLEUM CORP	MPC	7.22	71.06	New	ORACLE CORP	ORCL	11.05	30.71
15	WESTERN DIGITAL CORP	WDC	7.23	62.09	3	ADT CORP (THE)	ADT	11.18	39.85
2	PHILLIPS 66	PSX	7.62	58.91	New	FIRST SOLAR INC	FSLR	11.68	44.81
14	JOY GLOBAL INC	JOY	8.10	48.53	10	CISCO SYSTEMS INC	CSCO	11.73	24.34
11	CENTURYLINK INC	CTL	8.17	35.35	3	INTL GAME TECHNOLOGY	IGT	11.83	16.71
17	WESTERN UNION CO	WU	8.70	17.11	9	TOTAL SYSTEM SERVICES INC	TSS	11.91	24.48
4	SAIC INC	SAI	8.76	13.93	11	LOCKHEED MARTIN CORP	LMT	12.03	108.46
7	ABBOTT LABORATORIES	ABT	9.04	34.88	12	UNITEDHEALTH GROUP INC	UNH	12.08	65.48
32	DELL INC	DELL	9.15	13.33	10	DUN & BRADSTREET CORP	DNB	12.14	97.45
48	FORD MOTOR CO	F	9.39	15.47	5	NATIONAL OILWELL VARCO INC	NOV	12.20	68.90
12	CA INC	CA	9.52	28.62	New	FIDELITY NATIONAL INFO SVCS	FIS	12.30	42.84
18	NORTHROP GRUMMAN CORP	NOC	9.52	82.80	39	AETNA INC	AET	12.31	63.54
2	VALERO ENERGY CORP	VLO	9.61	34.77	4	CARDINAL HEALTH INC	CAH	12.33	47.20
10	PFIZER INC	PFE	9.62	28.01	New	INTL BUSINESS MACHINES CORP	IBM	12.43	191.11

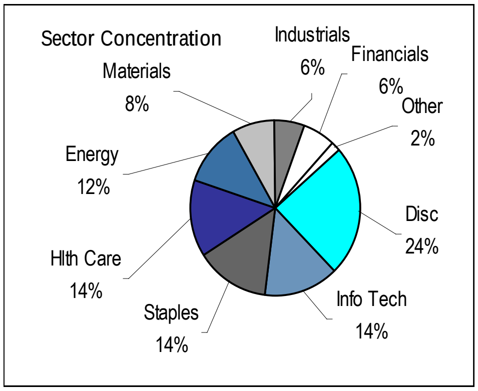
Price/Sales

Top 50 S&P 500 Companies By LOW PRICE/SALES

Price/Sales: Month-end market value divided by reported sales.



Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance



Absolute Returns	
Last 1 Month	-0.68%
Last 3 Months	8.25%
Last 6 Months	27.54%
Last 12 Months	47.87%
2013 YTD	27.54%

Screen for July

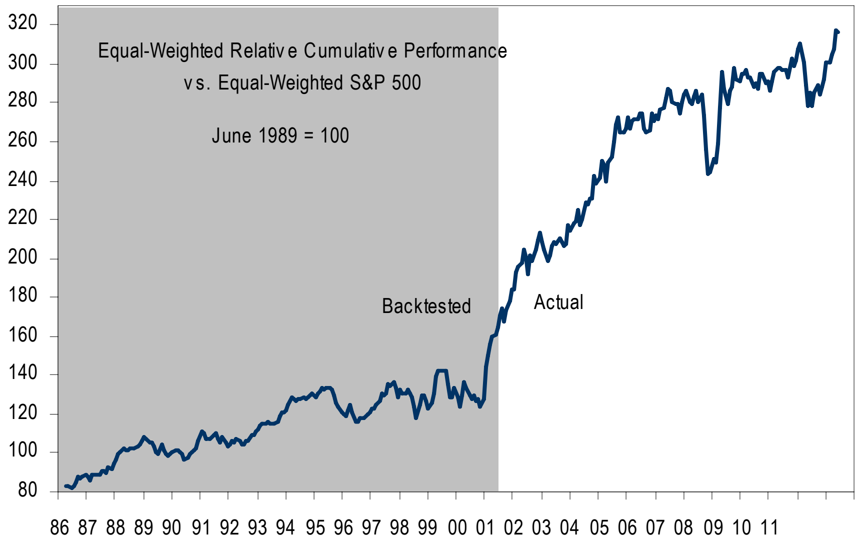
Mo. In Scrn.	Company	Ticker	Mkt Val / Sales	Price 06/28/2013
125	AUTONATION INC	AN	0.10	43.39
124	SAFEWAY INC	SWY	0.13	23.66
30	UNITED STATES STEEL CORP	X	0.13	17.53
111	VALERO ENERGY CORP	VLO	0.14	34.77
4	BEST BUY CO INC	BBY	0.15	27.33
108	CARDINAL HEALTH INC	CAH	0.16	47.20
126	AMERISOURCEBERGEN CORP	ABC	0.16	55.83
New	GENERAL MOTORS CO	GM	0.17	33.31
55	KROGER CO	KR	0.18	34.54
163	GOODYEAR TIRE & RUBBER CO	GT	0.18	15.30
44	PENNEY (J C) CO	JCP	0.20	17.08
79	JABIL CIRCUIT INC	JBL	0.21	20.38
171	MCKESSON CORP	MCK	0.21	114.50
70	TESORO CORP	TSO	0.22	52.32
95	TYSON FOODS INC -CL A	TSN	0.22	25.68
11	PHILLIPS 66	PSX	0.23	58.91
12	WAL-MART STORES INC	WMT	0.26	74.49
23	MARATHON PETROLEUM CORP	MPC	0.29	71.06
53	HUMANA INC	HUM	0.34	84.38
20	FLUOR CORP	FLR	0.34	59.31
20	ALCOA INC	AA	0.36	7.82
35	SAIC INC	SAI	0.36	13.93
21	WELLPOINT INC	WLP	0.38	81.84
26	MURPHY OIL CORP	MUR	0.39	60.89
5	PRUDENTIAL FINANCIAL INC	PRU	0.40	73.03

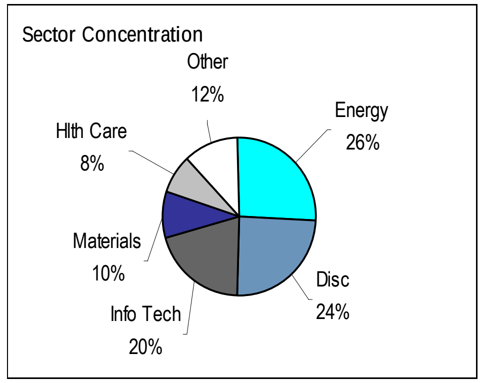
Mo. In Scrn.	Company	Ticker	Mkt Val / Sales	Price 06/28/2013
21	DELL INC	DELL	0.41	13.33
19	HEWLETT-PACKARD CO	HPQ	0.41	24.80
10	AES CORP	AES	0.42	11.99
2	CLIFFS NATURAL RESOURCES INC	CLF	0.43	16.25
15	STAPLES INC	SPLS	0.44	15.87
32	COMPUTER SCIENCES CORP	CSC	0.44	43.77
155	FORD MOTOR CO	F	0.44	15.47
14	ASSURANT INC	AIZ	0.46	50.91
7	COSTCO WHOLESALE CORP	COST	0.46	110.57
8	SYSCO CORP	SYY	0.46	34.16
6	APOLLO GROUP INC -CL A	APOL	0.46	17.72
4	EXPRESS SCRIPTS HOLDING CO	ESRX	0.47	61.74
10	XEROX CORP	XRX	0.50	9.07
3	WHIRLPOOL CORP	WHR	0.50	114.36
17	RYDER SYSTEM INC	R	0.50	60.79
12	ADVANCED MICRO DEVICES	AMD	0.50	4.08
New	PEABODY ENERGY CORP	BTU	0.51	14.64
24	HARTFORD FINANCIAL SERVICES	HIG	0.51	30.92
3	TENET HEALTHCARE CORP	THC	0.52	46.10
New	WALGREEN CO	WAG	0.53	44.20
4	KOHL'S CORP	KSS	0.54	50.51
New	SOUTHWEST AIRLINES	LUV	0.54	12.89
9	WASHINGTON POST -CL B	WPO	0.54	483.77
6	CABLEVISION SYS CORP -CL A	CVC	0.55	16.82
2	LYONDELLBASELL INDUSTRIES NV	LYB	0.57	66.26

EV / EBITDA

Top 50 S&P Industrials Companies By LOW EV/EBITDA

EV/EBITDA: Enterprise Value (Equity Market Capitalization + Long Term Debt + Short Term Debt + Preferred Stock + Minority Interest - Cash & Cash Equivalents) divided by the latest 4-quarter EBITDA.





Absolute Returns	
Last 1 Month	-1.33%
Last 3 Months	6.96%
Last 6 Months	24.87%
Last 12 Months	38.12%
2013 YTD	24.87%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end May 1986 to month end September 2001. The unshaded portion represents actual performance since October 2001. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

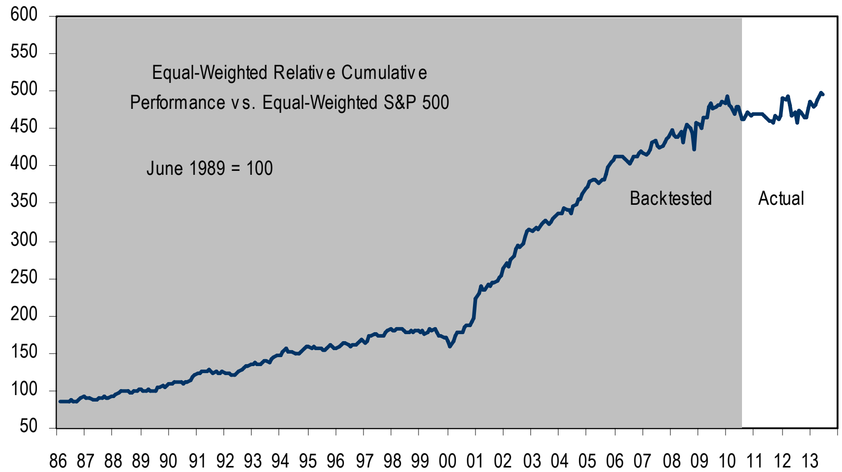
Mo. In Scrn	Company	Ticker	EV / EBITDA	Price 06/28/2013
39	APOLLO GROUP INC -CL A	APOL	1.13	17.72
11	HUMANA INC	HUM	2.31	84.38
20	CF INDUSTRIES HOLDINGS INC	CF	2.93	171.50
44	HESS CORP	HES	3.30	66.49
6	VALERO ENERGY CORP	VLO	3.34	34.77
23	MARATHON PETROLEUM CORP	MPC	3.35	71.06
14	WESTERN DIGITAL CORP	WDC	3.38	62.09
59	MARATHON OIL CORP	MRO	3.41	34.58
30	WELLPOINT INC	WLP	3.47	81.84
48	COMPUTER SCIENCES CORP	CSC	3.61	43.77
16	MURPHY OIL CORP	MUR	3.70	60.89
2	CHEVRON CORP	CVX	3.84	118.34
26	TESORO CORP	TSO	3.88	52.32
118	CONOCOPHILLIPS	COP	3.92	60.50
42	MOLEX INC	MOLX	4.09	29.34
23	APACHE CORP	APA	4.26	83.83
17	COMCAST CORP	CMCSA	4.35	41.75
10	JABIL CIRCUIT INC	JBL	4.38	20.38
3	PHILLIPS 66	PSX	4.40	58.91
7	HEWLETT-PACKARD CO	HPQ	4.47	24.80
4	MOSAIC CO	MOS	4.59	53.81
12	SEAGATE TECHNOLOGY PLC	STX	4.62	44.83
16	FIRST SOLAR INC	FSLR	4.64	44.81
38	WASHINGTON POST -CL B	WPO	4.66	483.77
23	VIACOM INC	VIAB	4.66	68.03

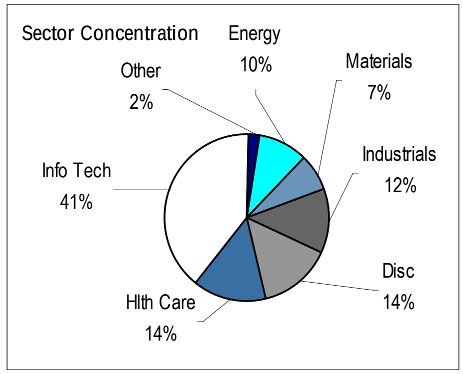
Mo. In Scrn	Company	Ticker	EV / EBITDA	Price 06/28/2013
2	EXXON MOBIL CORP	XOM	4.76	90.35
New	DELL INC	DELL	4.79	13.33
2	ABBOTT LABORATORIES	ABT	4.80	34.88
15	HELMERICH & PAYNE	HP	4.81	62.45
30	BEST BUY CO INC	BBY	4.86	27.33
7	FREEPORT-MCMORAN COP&GOLD	FCX	4.89	27.61
4	JOY GLOBAL INC	JOY	4.91	48.53
14	NABORS INDUSTRIES LTD	NBR	5.00	15.31
41	TIME WARNER INC	TWX	5.01	57.82
7	FRONTIER COMMUNICATIONS COF	FTR	5.04	4.05
13	TYSON FOODS INC -CL A	TSN	5.11	25.68
New	ABERCROMBIE & FITCH -CL A	ANF	5.18	45.25
12	SAFEWAY INC	SWY	5.25	23.66
5	CORNING INC	GLW	5.27	14.23
New	GENERAL MOTORS CO	GM	5.34	33.31
10	INTEL CORP	INTC	5.38	24.23
New	NEWMONT MINING CORP	NEM	5.39	29.95
3	DISCOVERY COMMUNICATIONS INC	DISCA	5.40	77.24
8	SCRIPPS NETWORKS INTERACTIVE	SNI	5.41	66.76
2	CENTURYLINK INC	CTL	5.48	35.35
4	CIGNA CORP	CI	5.53	72.49
7	KOHL'S CORP	KSS	5.57	50.51
12	STAPLES INC	SPLS	5.57	15.87
5	NORTHROP GRUMMAN CORP	NOC	5.57	82.80
2	UNITED STATES STEEL CORP	X	5.61	17.53

Free Cash Flow / EV

Top Decile S&P 500 (ex. Financials) Companies By HIGH Free Cash Flow / EV

Free Cash Flow / EV: Free Cash Flow divided by Enterprise Value (Equity Market Capitalization + Long Term Debt + Short Term Debt + Preferred Stock + Minority Interest - Cash & Cash Equivalents). Free Cash Flow is defined as the earnings after extraordinary items plus depreciation minus capital expenditures.





Absolute Returns	
Last 1 Month	-1.75%
Last 3 Months	6.36%
Last 6 Months	19.88%
Last 12 Months	30.70%
2013 YTD	19.88%

Source: BofA Merrill Lynch US Quantitative Strategy

The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end July 2010. The unshaded portion represents actual performance since November 2010. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

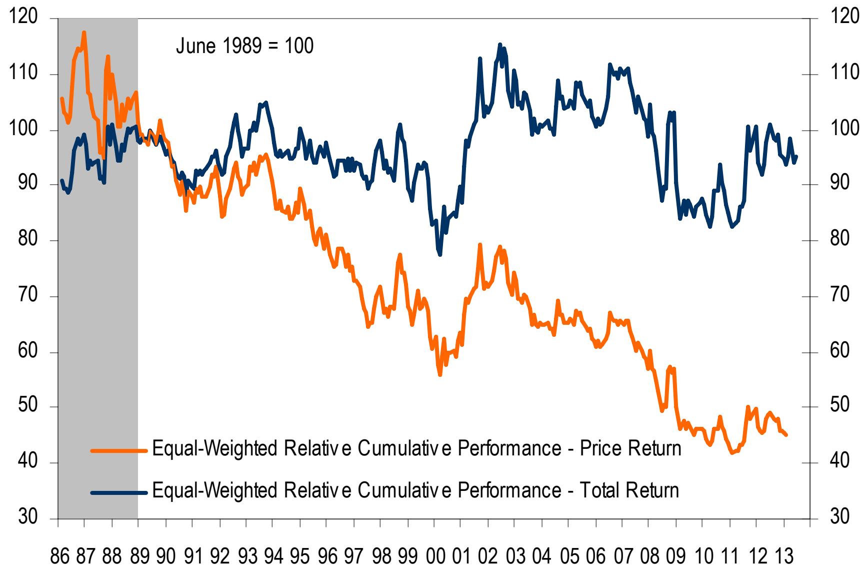
Mo. In Scrn.*	Company	Ticker	FCF/EV	Price 06/28/2013
18	APOLLO GROUP INC -CL A	APOL	0.40	17.72
5	COMPUTER SCIENCES CORP	CSC	0.23	43.77
11	HUMANA INC	HUM	0.22	84.38
20	CF INDUSTRIES HOLDINGS INC	CF	0.17	171.50
32	WESTERN DIGITAL CORP	WDC	0.17	62.09
12	SEAGATE TECHNOLOGY PLC	STX	0.16	44.83
21	NETFLIX INC	NFLX	0.15	211.09
2	PPG INDUSTRIES INC	PPG	0.15	146.41
5	MARATHON PETROLEUM CORP	MPC	0.15	71.06
32	WELLPOINT INC	WLP	0.14	81.84
16	NVIDIA CORP	NVDA	0.13	14.04
32	DELL INC	DELL	0.13	13.33
2	PHILLIPS 66	PSX	0.13	58.91
29	DISCOVERY COMMUNICATIONS	DISCA	0.12	77.24
26	CA INC	CA	0.12	28.62
12	D R HORTON INC	DHI	0.12	21.28
5	ABBOTT LABORATORIES	ABT	0.12	34.88
18	XEROX CORP	XRX	0.11	9.07
19	CISCO SYSTEMS INC	CSCO	0.11	24.34
20	NORTHROP GRUMMAN CORP	NOC	0.10	82.80
6	Apple Inc	AAPL	0.10	396.53
5	PFIZER INC	PFE	0.10	28.01
5	Oracle Corp	ORCL	0.10	30.71
4	JOY GLOBAL INC	JOY	0.10	48.53
4	SAIC INC	SAI	0.10	13.93
17	WESTERN UNION CO	WU	0.10	17.11
11	KLA-TENCOR CORP	KLAC	0.09	55.73
7	GARMIN LTD	GRMN	0.09	36.17
24	RAYTHEON CO	RTN	0.09	66.12
2	LILLY (ELI) & CO	LLY	0.09	49.12
New	TESORO CORP	TSO	0.09	52.32
2	ILLINOIS TOOL WORKS	ITW	0.09	69.17
2	SAFEWAY INC	SWY	0.09	23.66
2	BMC SOFTWARE INC	BMC	0.09	45.13
New	FIRST SOLAR INC	FSLR	0.09	44.81
23	MOLEX INC	MOLX	0.08	29.34
2	ABBVIE INC	ABBV	0.08	41.34
New	VALERO ENERGY CORP	VLO	0.08	34.77
3	TOTAL SYSTEM SERVICES INC	TSS	0.08	24.48
2	PALL CORP	PLL	0.08	66.43
New	DU PONT (E I) DE NEMOURS	DD	0.08	52.50
2	SCRIPPS NETWORKS INTERAC	SNI	0.08	66.76

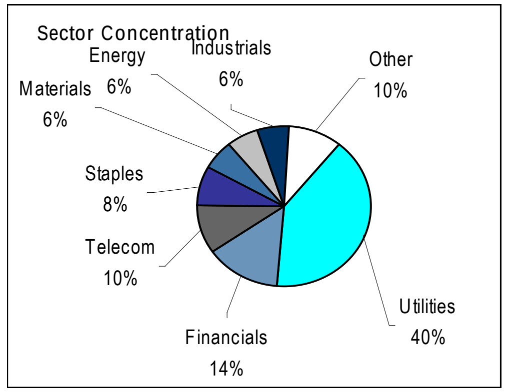
* Months in screen since inception

Dividend Yield

Top 50 S&P 500 Companies By DIVIDEND YIELD

Dividend Yield: Indicated dividend divided by month-end price.





Absolute Returns	
Last 1 Month	-0.20%
Last 3 Months	2.20%
Last 6 Months	13.80%
Last 12 Months	15.30%
2013 YTD	13.80%

Source: BofA Merrill Lynch US Quantitative Strategy
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Screen for July

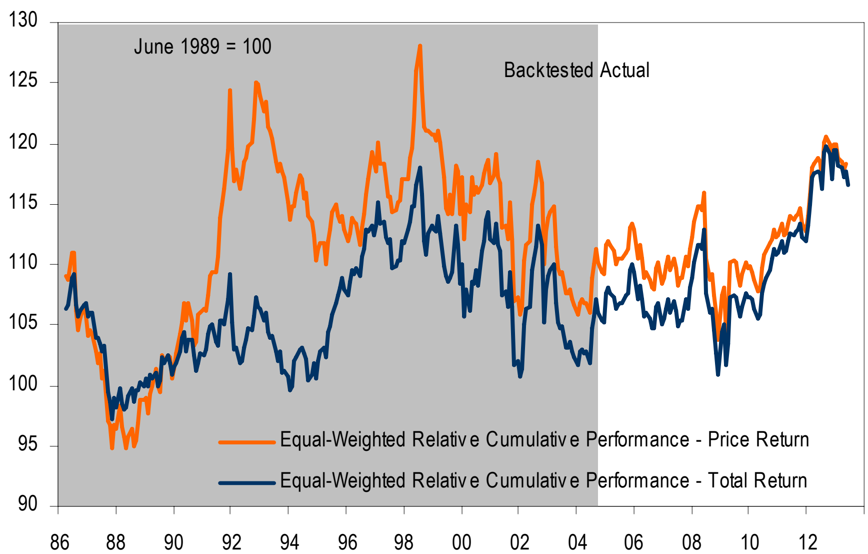
Mo. In Scrn	Company	Ticker	Yield	Price 06/28/2013
84	WINDSTREAM CORP	WIN	12.97%	7.71
60	FRONTIER COMMUNICATIONS COF	FTR	9.88%	4.05
60	CENTURYLINK INC	CTL	6.11%	35.35
50	FIRSTENERGY CORP	FE	5.89%	37.34
52	PEPCO HOLDINGS INC	POM	5.36%	20.16
107	REYNOLDS AMERICAN INC	RAI	5.21%	48.37
53	TECO ENERGY INC	TE	5.12%	17.19
53	PITNEY BOWES INC	PBI	5.11%	14.68
52	AT&T INC	T	5.08%	35.40
51	LORILLARD INC	LO	5.04%	43.68
64	ALTRIA GROUP INC	MO	5.03%	34.99
7	GARMIN LTD	GRMN	4.98%	36.17
47	PPL CORP	PPL	4.86%	30.26
34	ENTERGY CORP	ETR	4.76%	69.68
5	NEWMONT MINING CORP	NEM	4.67%	29.95
53	INTEGRYS ENERGY GROUP INC	TEG	4.65%	58.53
52	AMEREN CORP	AEE	4.65%	34.44
12	DUKE ENERGY CORP	DUK	4.62%	67.50
57	HCP INC	HCP	4.62%	45.44
51	SOUTHERN CO	SO	4.60%	44.13
54	HEALTH CARE REIT INC	HCN	4.57%	67.03
4	FREEPORT-MCMORAN COP&GOLD	FCX	4.53%	27.61
20	PUBLIC SERVICE ENTRP GRP INC	PEG	4.41%	32.66
19	AGL RESOURCES INC	GAS	4.39%	42.86
52	AMERICAN ELECTRIC POWER CO	AEP	4.38%	44.78

Mo. In Scrn	Company	Ticker	Yield	Price 06/28/2013
15	CONOCOPHILLIPS	COP	4.36%	60.50
38	PEOPLE'S UNITED FINL INC	PBCT	4.36%	14.90
7	DARDEN RESTAURANTS INC	DRI	4.36%	50.48
2	WILLIAMS COS INC	WMB	4.34%	32.47
22	LOCKHEED MARTIN CORP	LMT	4.24%	108.46
8	CONSOLIDATED EDISON INC	ED	4.22%	58.31
8	SCANA CORP	SCG	4.13%	49.10
51	VERIZON COMMUNICATIONS INC	VZ	4.09%	50.34
New	IRON MOUNTAIN INC	IRM	4.06%	26.61
2	EXELON CORP	EXC	4.02%	30.88
New	LILLY (ELI) & CO	LLY	3.99%	49.12
5	KINDER MORGAN INC	KMI	3.98%	38.15
11	PG&E CORP	PCG	3.98%	45.73
5	DOW CHEMICAL	DOW	3.98%	32.17
6	DOMINION RESOURCES INC	D	3.96%	56.82
2	XCEL ENERGY INC	XEL	3.95%	28.34
2	PINNACLE WEST CAPITAL CORP	PNW	3.93%	55.47
2	PHILIP MORRIS INTERNATIONAL	PM	3.93%	86.62
2	KIMCO REALTY CORP	KIM	3.92%	21.43
2	DTE ENERGY CO	DTE	3.91%	67.01
2	ABBVIE INC	ABBV	3.87%	41.34
2	VENTAS INC	VTR	3.86%	69.46
New	MACERICH CO	MAC	3.81%	60.97
4	MICROCHIP TECHNOLOGY INC	MCHP	3.80%	37.25
New	PLUM CREEK TIMBER CO INC	PCL	3.77%	46.67

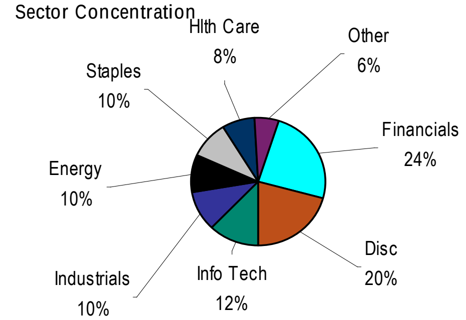
Dividend Growth

Top 50 S&P 500 Companies By Dividend Growth

Dividend Growth: The growth between trailing 4-quarter total common dividends and year-ago trailing 4-quarter total common dividends.



Sector Concentration



Absolute Returns	
Last 1 Month	-2.16%
Last 3 Months	1.80%
Last 6 Months	12.66%
Last 12 Months	22.92%
2013 YTD	12.66%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end Mary 1986 to month end December 2004. The unshaded portion represents actual performance since January 2005. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

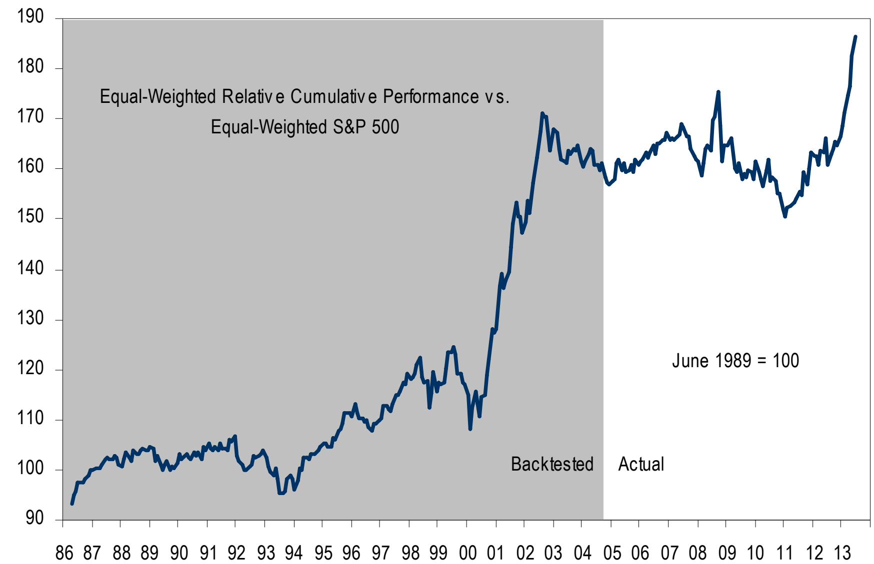
Mo. In Scrn	Company	Ticker	Dividend Growth	Price 06/28/2013
4	COSTCO WHOLESALE CORP	COST	1600.3%	110.57
5	WHOLE FOODS MARKET INC	WFM	515.0%	51.48
2	GAMESTOP CORP	GME	461.5%	42.03
4	BROWN-FORMAN -CL B	BF.B	456.0%	67.55
5	IRON MOUNTAIN INC	IRM	428.0%	26.61
3	FORD MOTOR CO	F	408.6%	15.47
9	MOSAIC CO	MOS	327.1%	53.81
3	THERMO FISHER SCIENTIFIC INC	TMO	322.6%	84.63
2	AGILENT TECHNOLOGIES INC	A	319.0%	42.76
3	ZIMMER HOLDINGS INC	ZMH	300.9%	74.94
New	SAIC INC	SAI	300.0%	13.93
5	MCGRAW HILL FINANCIAL	MHFI	241.8%	53.19
6	MURPHY OIL CORP	MUR	233.2%	60.89
6	PROGRESSIVE CORP-OHIO	PGR	211.9%	25.42
15	AMPHENOL CORP	APH	174.5%	77.94
5	AMERICAN TOWER CORP	AMT	158.1%	73.17
30	STARWOOD HOTELS&RESORTS WF	HOT	146.4%	63.19
14	CA INC	CA	139.0%	28.62
5	PROLOGIS INC	PLD	135.4%	37.72
15	FIDELITY NATIONAL INFO SVCS	FIS	131.7%	42.84
5	NORTHEAST UTILITIES	NU	121.3%	42.02
5	AVALONBAY COMMUNITIES INC	AVB	118.0%	134.91
8	SOUTHWEST AIRLINES	LUV	108.8%	12.89
5	XYLEM INC	XYL	108.2%	26.94
37	CLIFFS NATURAL RESOURCES INC	CLF	107.0%	16.25

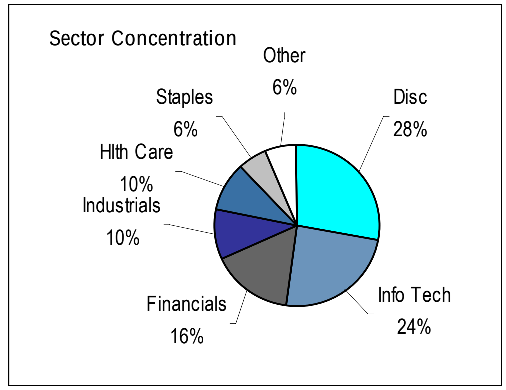
Mo. In Scrn	Company	Ticker	Dividend Growth	Price 06/28/2013
6	FASTENAL CO	FAST	106.0%	45.79
15	HARMAN INTERNATIONAL INDS	HAR	102.8%	54.20
14	CISCO SYSTEMS INC	CSCO	100.9%	24.34
5	PENTAIR LTD	PNR	98.2%	57.69
5	EXPEDIA INC	EXPE	97.8%	60.15
13	RALPH LAUREN CORP	RL	97.1%	173.74
12	KINDER MORGAN INC	KMI	95.5%	38.15
6	MASTERCARD INC	MA	94.9%	574.50
17	HOST HOTELS & RESORTS INC	HST	94.8%	16.87
18	GANNETT CO	GCI	94.4%	24.46
6	PRICE (T. ROWE) GROUP	TROW	90.6%	73.20
6	D R HORTON INC	DHI	77.3%	21.28
5	MARATHON PETROLEUM CORP	MPC	76.9%	71.06
5	WASHINGTON POST -CL B	WPO	73.3%	483.77
14	VALERO ENERGY CORP	VLO	73.0%	34.77
2	LAUDER (ESTEE) COS INC -CL A	EL	71.2%	65.77
3	TYSON FOODS INC -CL A	TSN	68.5%	25.68
15	CME GROUP INC	CME	64.4%	75.95
24	KEYCORP	KEY	62.9%	11.04
3	BB&T CORP	BBT	59.1%	33.88
3	TORCHMARK CORP	TMK	59.1%	65.14
9	AMGEN INC	AMGN	57.1%	98.66
27	WELLS FARGO & CO	WFC	56.8%	41.27
17	WILLIAMS COS INC	WMB	55.7%	32.47
2	NEWELL RUBBERMAID INC	NWL	55.2%	26.25

Share Repurchase

Top 50 S&P 500 Companies By Large Share Repurchase

Share Repurchase: The year-to-year change in shares outstanding.





Absolute Returns	
Last 1 Month	0.79%
Last 3 Months	9.85%
Last 6 Months	29.07%
Last 12 Months	39.30%
2013 YTD	29.07%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 2004. The unshaded portion represents actual performance since January 2005. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

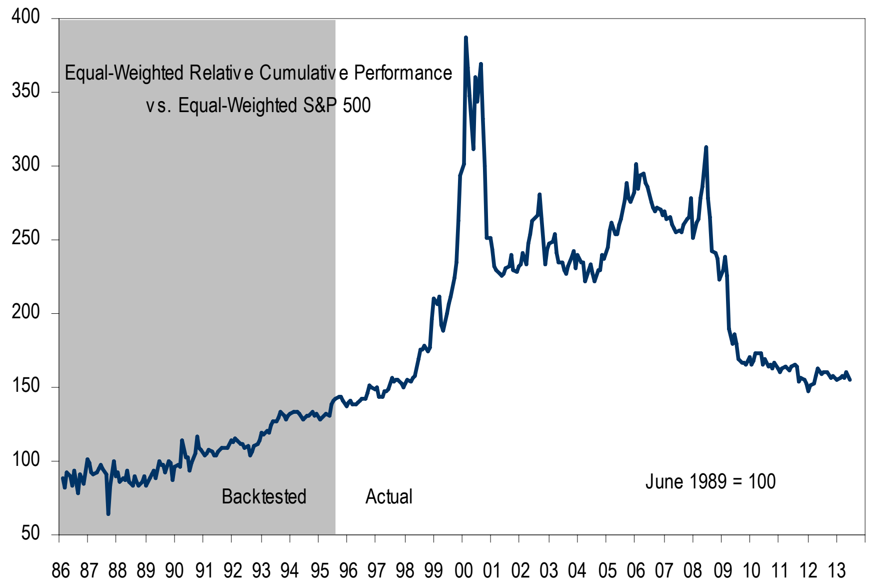
Mo. In Scrn	Company	Ticker	Share Repurchase	Price 06/28/2013
11	AMERICAN INTERNATIONAL GROUP	AIG	-14.6%	44.70
New	LAM RESEARCH CORP	LRCX	-13.3%	44.34
New	GENERAL MOTORS CO	GM	-12.2%	33.31
11	DIRECTV	DTV	-11.6%	61.64
11	DUN & BRADSTREET CORP	DNB	-10.9%	97.45
11	GAMESTOP CORP	GME	-9.8%	42.03
14	BMC SOFTWARE INC	BMC	-9.8%	45.13
5	ST JUDE MEDICAL INC	STJ	-9.8%	45.63
8	SEAGATE TECHNOLOGY PLC	STX	-9.5%	44.83
4	YAHOO INC	YHOO	-9.2%	25.13
9	O'REILLY AUTOMOTIVE INC	ORLY	-9.0%	112.62
25	KOHL'S CORP	KSS	-8.7%	50.51
11	LOWE'S COMPANIES INC	LOW	-8.3%	40.90
8	AMERISOURCEBERGEN CORP	ABC	-8.1%	55.83
64	WELLPOINT INC	WLP	-7.5%	81.84
5	WESTERN UNION CO	WU	-7.5%	17.11
4	MACY'S INC	M	-7.5%	48.00
7	LEGG MASON INC	LM	-7.2%	31.01
9	COCA-COLA ENTERPRISES INC	CCE	-6.9%	35.16
7	AUTOZONE INC	AZO	-6.8%	423.69
12	FLOWSERVE CORP	FLS	-6.8%	54.01
10	BLOCK H & R INC	HRB	-6.7%	27.75
2	NVIDIA CORP	NVDA	-6.6%	14.04
3	AT&T INC	T	-6.6%	35.40
3	PPG INDUSTRIES INC	PPG	-6.6%	146.41

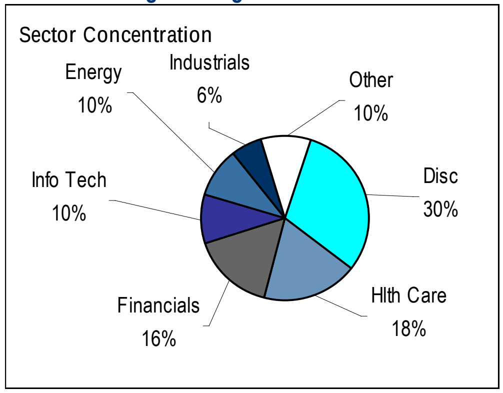
Mo. In Scrn	Company	Ticker	Share Repurchase	Price 06/28/2013
2	NORDSTROM INC	JWN	-6.5%	59.94
2	FLIR SYSTEMS INC	FLIR	-6.4%	26.97
10	KROGER CO	KR	-6.4%	34.54
3	DOVER CORP	DOV	-6.4%	77.66
5	L-3 COMMUNICATIONS HLDGS	LLL	-6.3%	85.74
7	APPLIED MATERIALS INC	AMAT	-6.3%	14.92
4	MYLAN INC	MYL	-6.1%	31.03
New	MONSTER BEVERAGE CORP	MNST	-6.1%	60.83
6	XEROX CORP	XRX	-6.1%	9.07
17	VIACOM INC	VIAB	-5.9%	68.03
3	PEOPLE'S UNITED FINL INC	PBCT	-5.8%	14.90
12	SLM CORP	SLM	-5.4%	22.86
New	ORACLE CORP	ORCL	-5.3%	30.71
3	NORTHROP GRUMMAN CORF	NOC	-5.2%	82.80
New	ABERCROMBIE & FITCH -CL /	ANF	-5.1%	45.25
15	MOTOROLA SOLUTIONS INC	MSI	-5.1%	57.73
New	GAP INC	GPS	-5.1%	41.73
New	AIRGAS INC	ARG	-5.1%	95.46
New	PFIZER INC	PFE	-5.0%	28.01
3	TIME WARNER CABLE INC	TWC	-5.0%	112.48
New	ELECTRONIC ARTS INC	EA	-5.0%	22.99
4	STATE STREET CORP	STT	-4.9%	65.21
New	FIFTH THIRD BANCORP	FITB	-4.8%	18.05
21	AMERIPRISE FINANCIAL INC	AMP	-4.8%	80.88
38	ASSURANT INC	AIZ	-4.8%	50.91

Relative Strength – 30wk/75wk Moving Average

Top 50 S&P 500 Companies By RELATIVE STRENGTH

Relative Strength: The ratio of the 30-week moving average of price to the 75-week moving average.





Absolute Returns	
Last 1 Month	-4.36%
Last 3 Months	0.61%
Last 6 Months	13.59%
Last 12 Months	20.87%
2013 YTD	13.59%

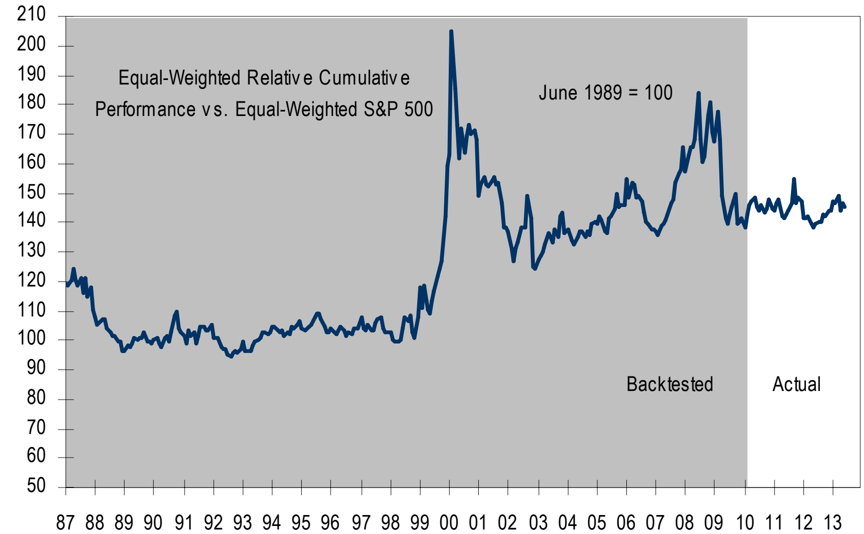
Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end August 1995. The unshaded portion represents actual performance since September 1995. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

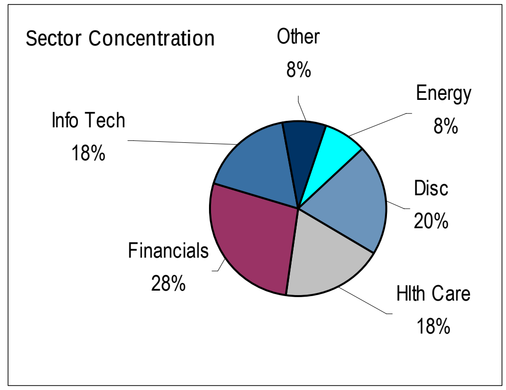
Screen for July

Mo. In Scrn.	Company	Ticker	Relative Strength	Price 06/28/2013
4	NETFLIX INC	NFLX	1.45	211.09
6	TENET HEALTHCARE CORP	THC	1.39	46.10
13	PULTEGROUP INC	PHM	1.34	18.97
9	TESORO CORP	TSO	1.33	52.32
8	SPRINT NEXTEL CORP	S	1.33	7.02
8	MARATHON PETROLEUM CORP	MPC	1.31	71.06
10	CONSTELLATION BRANDS	STZ	1.31	52.12
12	GILEAD SCIENCES INC	GILD	1.31	51.27
6	CABOT OIL & GAS CORP	COG	1.29	71.02
2	FIRST SOLAR INC	FSLR	1.29	44.81
7	WHIRLPOOL CORP	WHR	1.27	114.36
2	REGENERON PHARMACEUTICALS	REGN	1.27	224.88
6	VALERO ENERGY CORP	VLO	1.26	34.77
3	BLOCK H & R INC	HRB	1.26	27.75
5	COMPUTER SCIENCES CORP	CSC	1.26	43.77
2	GENWORTH FINANCIAL INC	GNW	1.25	11.41
3	CELGENE CORP	CELG	1.24	116.98
6	BANK OF AMERICA CORP	BAC	1.23	12.86
3	YAHOO INC	YHOO	1.23	25.13
4	PHILLIPS 66	PSX	1.23	58.91
4	DELPHI AUTOMOTIVE PLC	DLPH	1.21	50.69
10	MASCO CORP	MAS	1.21	19.49
4	CITIGROUP INC	C	1.21	47.97
10	DISCOVERY COMMUNICATIONS IN(	DISCA	1.21	77.24
New	GAMESTOP CORP	GME	1.21	42.03
New	MICRON TECHNOLOGY INC	MU	1.20	14.33
2	TRIPADVISOR INC	TRIP	1.20	60.87
2	SOUTHWEST AIRLINES	LUV	1.20	12.89
New	NYSE EURONEXT	NYX	1.20	41.40
2	LIFE TECHNOLOGIES CORP	LIFE	1.20	74.00
5	TIME WARNER INC	TWX	1.20	57.82
2	KANSAS CITY SOUTHERN	KSU	1.20	105.96
4	NRG ENERGY INC	NRG	1.19	26.70
9	TWENTY-FIRST CENTURY FOX INC	FOXA	1.19	28.77
3	THERMO FISHER SCIENTIFIC INC	TMO	1.19	84.63
8	LYONDELLBASELL INDUSTRIES NV	LYB	1.19	66.26
2	CARMAX INC	KMX	1.19	46.16
2	HARTFORD FINANCIAL SERVICES	HIG	1.19	30.92
4	MOODY'S CORP	MCO	1.19	60.93
New	MORGAN STANLEY	MS	1.19	24.43
New	WESTERN DIGITAL CORP	WDC	1.19	62.09
17	EXPEDIA INC	EXPE	1.18	60.15
New	GANNETT CO	GCI	1.18	24.46
New	CIGNA CORP	CI	1.18	72.49
9	PPG INDUSTRIES INC	PPG	1.18	146.41
New	BIOGEN IDEC INC	BIIB	1.18	215.20
15	LENNAR CORP	LEN	1.18	36.04
New	ACTAVIS INC	ACT	1.18	126.22
New	CBS CORP	CBS	1.18	48.87
New	BLACKROCK INC	BLK	1.18	256.85

Relative Strength – 5wk/30wk Moving Average

Top 50 S&P 500 Companies By 5W/30W Price Moving Average





Absolute Returns	
Last 1 Month	-1.96%
Last 3 Months	0.58%
Last 6 Months	16.36%
Last 12 Months	29.66%
2013 YTD	16.36%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end January 2010. The unshaded portion represents actual performance since February 2010. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

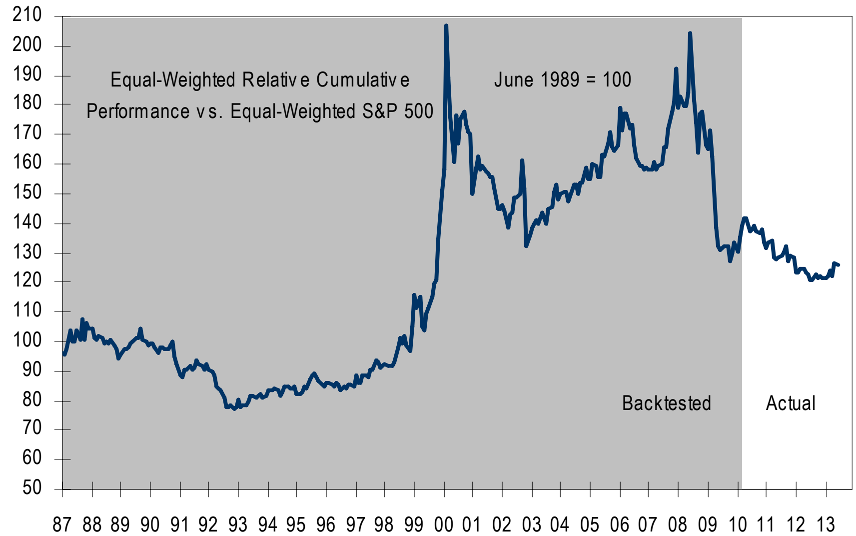
Screen for July

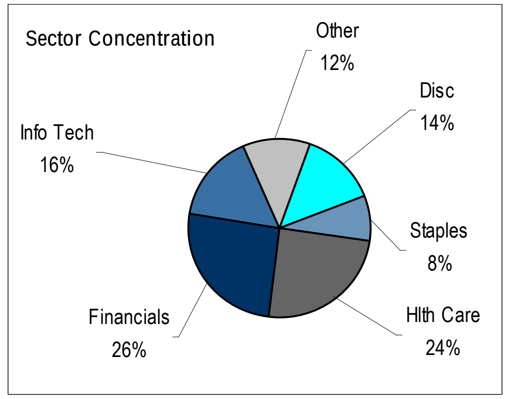
Mo. In Scrn.	Company	Ticker	5W/30W	Price 06/28/2013
6	MICRON TECHNOLOGY INC	MU	1.4	14.33
2	ADVANCED MICRO DEVICES	AMD	1.4	4.08
4	BEST BUY CO INC	BBY	1.4	27.33
3	FIRST SOLAR INC	FSLR	1.3	44.81
8	NETFLIX INC	NFLX	1.3	211.09
4	HEWLETT-PACKARD CO	HPQ	1.3	24.80
2	ELECTRONIC ARTS INC	EA	1.3	22.99
2	ACTAVIS INC	ACT	1.3	126.22
3	WESTERN DIGITAL CORP	WDC	1.3	62.09
3	GAMESTOP CORP	GME	1.3	42.03
6	TRIPADVISOR INC	TRIP	1.2	60.87
5	BOSTON SCIENTIFIC CORP	BSX	1.2	9.27
2	SEAGATE TECHNOLOGY PLC	STX	1.2	44.83
New	CME GROUP INC	CME	1.2	75.95
New	BRISTOL-MYERS SQUIBB CO	BMY	1.2	44.69
2	EQT CORP	EQT	1.2	79.37
2	REGENERON PHARMACEUTICALS	REGN	1.2	224.88
4	CONSTELLATION BRANDS	STZ	1.2	52.12
3	BIOGEN IDEC INC	BIIB	1.2	215.20
New	SCHWAB (CHARLES) CORP	SCHW	1.2	21.23
2	BOEING CO	BA	1.2	102.44
7	DELPHI AUTOMOTIVE PLC	DLPH	1.2	50.69
New	WPX ENERGY INC	WPX	1.2	18.94
New	SLM CORP	SLM	1.2	22.86
New	PRUDENTIAL FINANCIAL INC	PRU	1.2	73.03

Mo. In Scrn.	Company	Ticker	5W/30W	Price 06/28/2013
7	GENWORTH FINANCIAL INC	GNW	1.2	11.41
New	PIONEER NATURAL RESOURCE:	PXD	1.2	144.75
3	ASSURANT INC	AIZ	1.2	50.91
3	AETNA INC	AET	1.2	63.54
4	AVON PRODUCTS	AVP	1.2	21.03
New	METLIFE INC	MET	1.2	45.76
New	MICROSOFT CORP	MSFT	1.2	34.55
2	WELLPOINT INC	WLP	1.2	81.84
4	CABOT OIL & GAS CORP	COG	1.2	71.02
3	LIFE TECHNOLOGIES CORP	LIFE	1.2	74.00
New	STATE STREET CORP	STT	1.2	65.21
New	STAPLES INC	SPLS	1.2	15.87
2	HARTFORD FINANCIAL SERVICE	HIG	1.2	30.92
5	BLOCK H & R INC	HRB	1.2	27.75
New	AMERICAN EXPRESS CO	AXP	1.2	74.76
New	MORGAN STANLEY	MS	1.2	24.43
New	NORTHROP GRUMMAN CORP	NOC	1.2	82.80
2	MOODY'S CORP	MCO	1.2	60.93
4	YAHOO INC	YHOO	1.1	25.13
New	GAP INC	GPS	1.1	41.73
2	PRINCIPAL FINANCIAL GRP INC	PFG	1.1	37.45
New	Ford Motor Co	F	1.1	15.47
11	GILEAD SCIENCES INC	GILD	1.1	51.27
2	INVESCO LTD	IVZ	1.1	31.80
New	GENERAL MOTORS CO	GM	1.1	33.31

Relative Strength – 10wk/40wk Moving Average

Top 50 S&P 500 Companies By 10W/40W Price Moving Average





Absolute Returns	
Last 1 Month	-1.84%
Last 3 Months	4.68%
Last 6 Months	19.13%
Last 12 Months	27.06%
2013 YTD	19.13%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end January 2010. The unshaded portion represents actual performance since February 2010. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

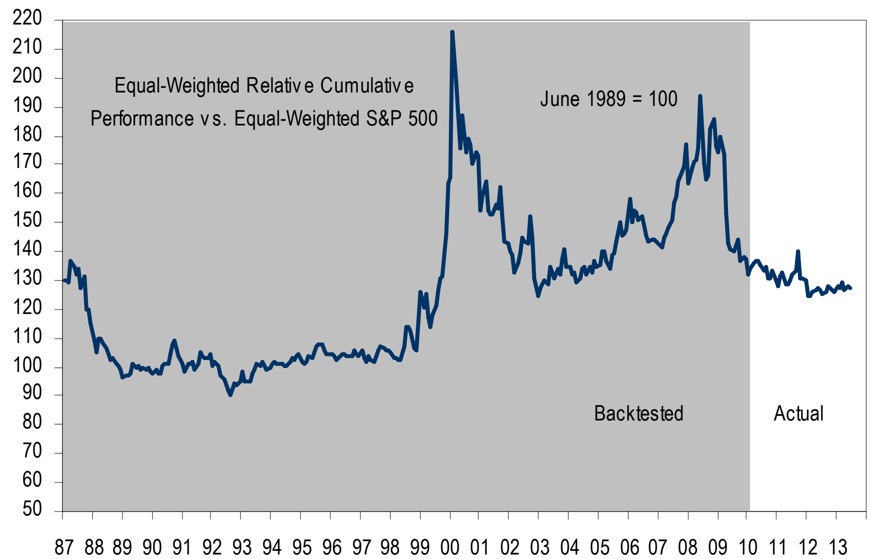
Screen for July

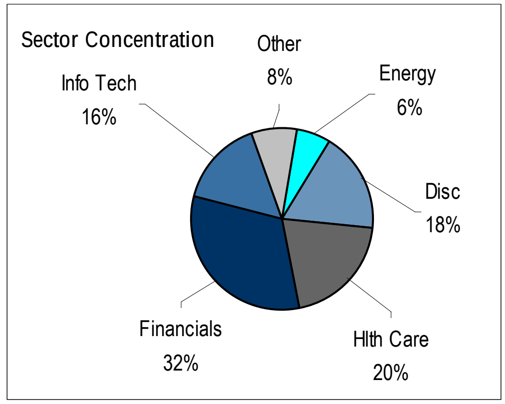
Mo. In Scrn.	Company	Ticker	10W/40W	Price 06/28/2013
6	NETFLIX INC	NFLX	1.5	211.09
7	FIRST SOLAR INC	FSLR	1.5	44.81
5	MICRON TECHNOLOGY INC	MU	1.4	14.33
3	BEST BUY CO INC	BBY	1.4	27.33
3	GAMESTOP CORP	GME	1.3	42.03
New	ADVANCED MICRO DEVICES	AMD	1.3	4.08
2	REGENERON PHARMACEUTICALS	REGN	1.3	224.88
3	TRIPADVISOR INC	TRIP	1.3	60.87
2	WESTERN DIGITAL CORP	WDC	1.3	62.09
6	GENWORTH FINANCIAL INC	GNW	1.3	11.41
4	ELECTRONIC ARTS INC	EA	1.3	22.99
2	BIOGEN IDEC INC	BIIB	1.3	215.20
4	BOSTON SCIENTIFIC CORP	BSX	1.3	9.27
8	TENET HEALTHCARE CORP	THC	1.2	46.10
11	GILEAD SCIENCES INC	GILD	1.2	51.27
New	ACTAVIS INC	ACT	1.2	126.22
3	HEWLETT-PACKARD CO	HPQ	1.2	24.80
5	BLOCK H & R INC	HRB	1.2	27.75
3	AVON PRODUCTS	AVP	1.2	21.03
5	LIFE TECHNOLOGIES CORP	LIFE	1.2	74.00
11	CONSTELLATION BRANDS	STZ	1.2	52.12
6	CELGENE CORP	CELG	1.2	116.98
7	YAHOO INC	YHOO	1.2	25.13
5	NYSE EURONEXT	NYX	1.2	41.40
New	SEAGATE TECHNOLOGY PLC	STX	1.2	44.83

Mo. In Scrn.	Company	Ticker	10W/40W	Price 06/28/2013
11	CABOT OIL & GAS CORP	COG	1.2	71.02
4	SOUTHWEST AIRLINES	LUV	1.2	12.89
6	DELPHI AUTOMOTIVE PLC	DLPH	1.2	50.69
2	AETNA INC	AET	1.2	63.54
2	HARTFORD FINANCIAL SERVICE	HIG	1.2	30.92
2	MOODY'S CORP	MCO	1.2	60.93
New	BOEING CO	BA	1.2	102.44
New	EQT CORP	EQT	1.2	79.37
3	KROGER CO	KR	1.2	34.54
2	CARMAX INC	KMX	1.2	46.16
4	STATE STREET CORP	STT	1.2	65.21
2	ASSURANT INC	AIZ	1.2	50.91
2	Walgreen Co	WAG	1.2	44.20
New	SCHWAB (CHARLES) CORP	SCHW	1.2	21.23
5	BLACKROCK INC	BLK	1.2	256.85
4	LINCOLN NATIONAL CORP	LNC	1.2	36.47
New	SPRINT NEXTEL CORP	S	1.2	7.02
New	SLM CORP	SLM	1.2	22.86
4	SEALED AIR CORP	SEE	1.2	23.95
New	PRINCIPAL FINANCIAL GRP INC	PFG	1.2	37.45
New	BRISTOL-MYERS SQUIBB CO	BMY	1.2	44.69
2	THERMO FISHER SCIENTIFIC IN(	TMO	1.2	84.63
3	Unum Group	UNM	1.2	29.37
New	INVESCO LTD	IVZ	1.2	31.80
New	WELLPOINT INC	WLP	1.2	81.84

Price to Moving Average (200-Day)

Top 50 S&P 500 Companies By Price to 200-Day Moving Average





Absolute Returns	
Last 1 Month	-1.74%
Last 3 Months	1.32%
Last 6 Months	16.30%
Last 12 Months	25.11%
2013 YTD	16.30%

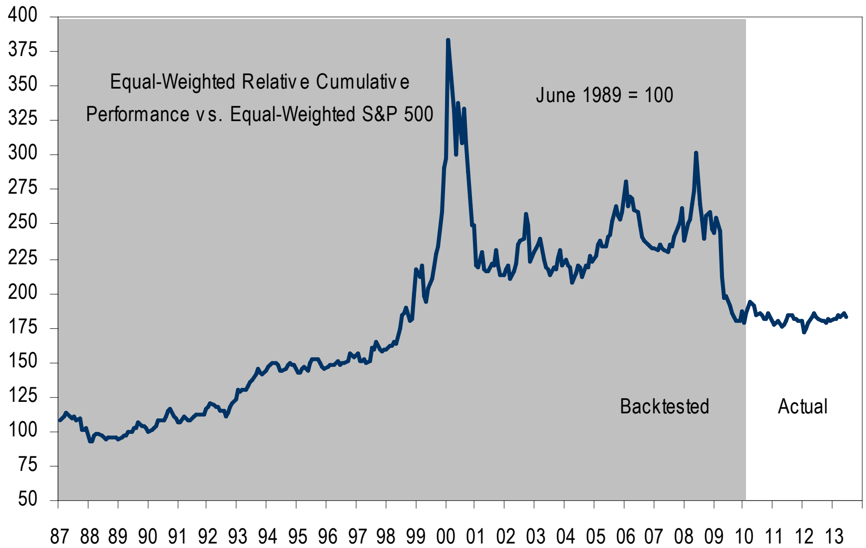
Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end January 2010. The unshaded portion represents actual performance since February 2010. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

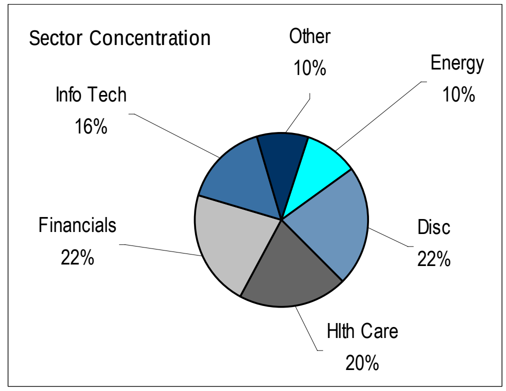
Screen for July

Mo. In Scrn.	Company	Ticker	Price/200D	Price 06/28/2013	Mo. In Scrn.	Company	Ticker	Price/200D	Price 06/28/2013
5	MICRON TECHNOLOGY INC	MU	1.7	14.33	10	CABOT OIL & GAS CORP	COG	1.2	71.02
3	GAMESTOP CORP	GME	1.5	42.03	4	LINCOLN NATIONAL CORP	LNC	1.2	36.47
7	NETFLIX INC	NFLX	1.5	211.09	4	BIOGEN IDEC INC	BIIB	1.2	215.20
4	BEST BUY CO INC	BBY	1.4	27.33	New	PRUDENTIAL FINANCIAL INC	PRU	1.2	73.03
2	ADVANCED MICRO DEVICES	AMD	1.4	4.08	New	GANNETT CO	GCI	1.2	24.46
2	ELECTRONIC ARTS INC	EA	1.4	22.99	New	CIGNA CORP	CI	1.2	72.49
7	GENWORTH FINANCIAL INC	GNW	1.4	11.41	4	LIFE TECHNOLOGIES CORP	LIFE	1.2	74.00
3	FIRST SOLAR INC	FSLR	1.4	44.81	New	ZIONS BANCORPORATION	ZION	1.2	28.92
2	HEWLETT-PACKARD CO	HPQ	1.4	24.80	New	SANDISK CORP	SNDK	1.2	61.10
2	BOSTON SCIENTIFIC CORP	BSX	1.3	9.27	New	STAPLES INC	SPLS	1.2	15.87
2	SCHWAB (CHARLES) CORP	SCHW	1.3	21.23	New	METLIFE INC	MET	1.2	45.76
2	ACTAVIS INC	ACT	1.3	126.22	New	Unum Group	UNM	1.2	29.37
3	WESTERN DIGITAL CORP	WDC	1.3	62.09	New	REGIONS FINANCIAL CORP	RF	1.2	9.53
4	TRIPADVISOR INC	TRIP	1.3	60.87	New	ASSURANT INC	AIZ	1.2	50.91
2	SEAGATE TECHNOLOGY PLC	STX	1.3	44.83	2	Ford Motor Co	F	1.2	15.47
3	AETNA INC	AET	1.3	63.54	2	STATE STREET CORP	STT	1.2	65.21
7	DELPHI AUTOMOTIVE PLC	DLPH	1.3	50.69	New	PIONEER NATURAL RESOURCE:	PXD	1.2	144.75
New	CME GROUP INC	CME	1.3	75.95	3	EQT CORP	EQT	1.2	79.37
8	TENET HEALTHCARE CORP	THC	1.3	46.10	5	SEALED AIR CORP	SEE	1.2	23.95
New	E TRADE FINANCIAL CORP	ETFC	1.3	12.66	2	SLM CORP	SLM	1.2	22.86
5	CONSTELLATION BRANDS	STZ	1.3	52.12	New	PRECISION CASTPARTS CORP	PCP	1.2	226.01
2	BOEING CO	BA	1.3	102.44	12	GILEAD SCIENCES INC	GILD	1.2	51.27
7	NYSE EURONEXT	NYX	1.3	41.40	New	INTERCONTINENTALEXCHANGE	ICE	1.2	177.76
3	HARTFORD FINANCIAL SERVICES	HIG	1.3	30.92	New	PRICELINE.COM INC	PCLN	1.2	826.67
New	WELLPOINT INC	WLP	1.3	81.84	2	REGENERON PHARMACEUTICAI	REGN	1.2	224.88

Price Return – 12-Month Performance

Top 50 S&P 500 Companies By 12-month price return





Absolute Returns	
Last 1 Month	-2.34%
Last 3 Months	2.48%
Last 6 Months	17.30%
Last 12 Months	24.90%
2013 YTD	17.30%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end January 2010. The unshaded portion represents actual performance since February 2010. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

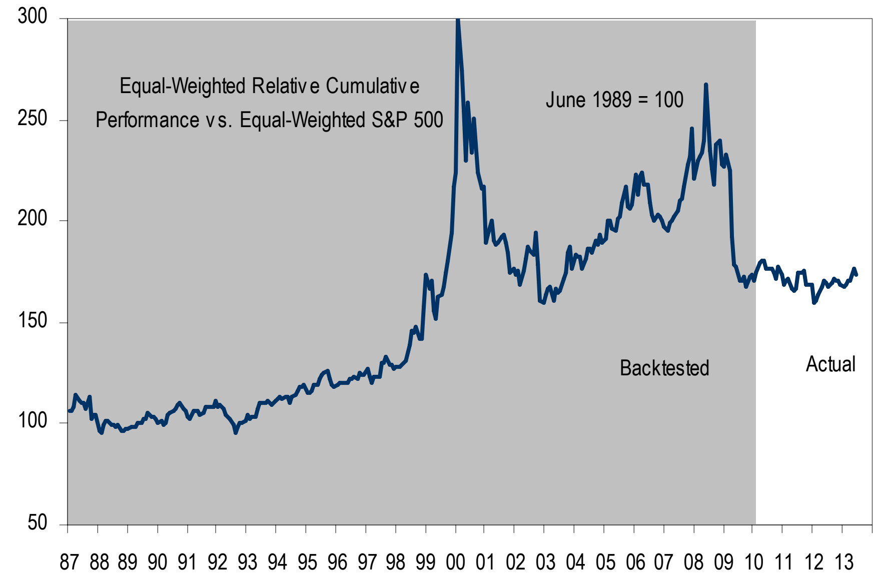
Mo. In Scrn.*	Company	Ticker	Price Return	Price 06/28/2013
5	NETFLIX INC	NFLX	208.2%	211.09
3	FIRST SOLAR INC	FSLR	197.5%	44.81
3	GAMESTOP CORP	GME	128.9%	42.03
2	MICRON TECHNOLOGY INC	MU	127.1%	14.33
8	TENET HEALTHCARE CORP	THC	119.9%	46.10
10	SPRINT NEXTEL CORP	S	115.3%	7.02
11	TESORO CORP	TSO	109.6%	52.32
2	WESTERN DIGITAL CORP	WDC	103.7%	62.09
3	GENWORTH FINANCIAL INC	GNW	101.6%	11.41
11	GILEAD SCIENCES INC	GILD	100.0%	51.27
4	DELPHI AUTOMOTIVE PLC	DLPH	98.8%	50.69
2	REGENERON PHARMACEUTICALS	REGN	96.9%	224.88
13	CONSTELLATION BRANDS	STZ	92.6%	52.12
10	WHIRLPOOL CORP	WHR	87.0%	114.36
2	ELECTRONIC ARTS INC	EA	86.2%	22.99
5	CELGENE CORP	CELG	82.3%	116.98
2	SEAGATE TECHNOLOGY PLC	STX	81.3%	44.83
6	CABOT OIL & GAS CORP	COG	80.3%	71.02
3	CARMAX INC	KMX	77.9%	46.16
13	PULTEGROUP INC	PHM	77.3%	18.97
3	PHILLIPS 66	PSX	77.2%	58.91
8	COMPUTER SCIENCES CORP	CSC	76.4%	43.77
2	HARTFORD FINANCIAL SERVICES	HIG	75.4%	30.92
2	CITIGROUP INC	C	75.0%	47.97
5	BLOCK H & R INC	HRB	73.7%	27.75

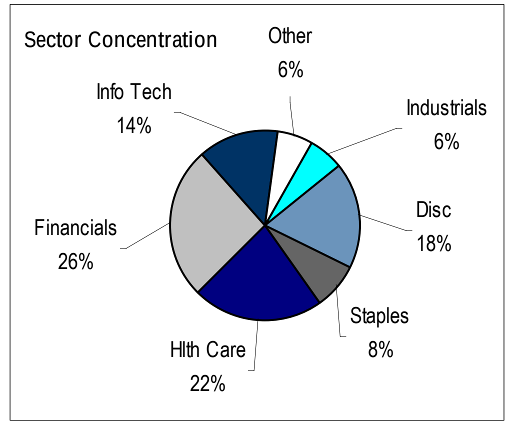
Mo. In Scrn.*	Company	Ticker	Price Return	Price 06/28/2013
2	ACTAVIS INC	ACT	70.6%	126.22
New	GENERAL MOTORS CO	GM	68.9%	33.31
New	RYDER SYSTEM INC	R	68.8%	60.79
2	SANDISK CORP	SNDK	67.5%	61.10
2	MORGAN STANLEY	MS	67.4%	24.43
2	LINCOLN NATIONAL CORP	LNC	66.8%	36.47
3	MOODY'S CORP	MCO	66.7%	60.93
New	EATON CORP PLC	ETN	66.1%	65.81
4	GANNETT CO	GCI	66.1%	24.46
New	CIGNA CORP	CI	64.8%	72.49
4	LYONDELLBASELL INDUSTRIES N	LYB	64.5%	66.26
3	LIFE TECHNOLOGIES CORP	LIFE	64.5%	74.00
New	SCHWAB (CHARLES) CORP	SCHW	64.2%	21.23
New	PIONEER NATURAL RESOURCES	PXD	64.1%	144.75
New	AETNA INC	AET	63.9%	63.54
New	BOSTON SCIENTIFIC CORP	BSX	63.5%	9.27
3	THERMO FISHER SCIENTIFIC IN(	TMO	63.0%	84.63
3	NYSE EURONEXT	NYX	61.8%	41.40
New	Ford Motor Co	F	61.3%	15.47
New	PVH CORP	PVH	60.8%	125.05
5	YAHOO INC	YHOO	58.7%	25.13
11	MARATHON PETROLEUM CORP	MPC	58.2%	71.06
2	GOLDMAN SACHS GROUP INC	GS	57.8%	151.25
New	E TRADE FINANCIAL CORP	ETFC	57.5%	12.66
3	BANK OF AMERICA CORP	BAC	57.2%	12.86

* Months in screen since inception

Price Return – 9-Month Performance

Top 50 S&P 500 Companies By 9-month price return.





Absolute Returns	
Last 1 Month	-2.76%
Last 3 Months	4.54%
Last 6 Months	18.74%
Last 12 Months	27.23%
2013 YTD	18.74%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end January 2010. The unshaded portion represents actual performance since February 2010. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

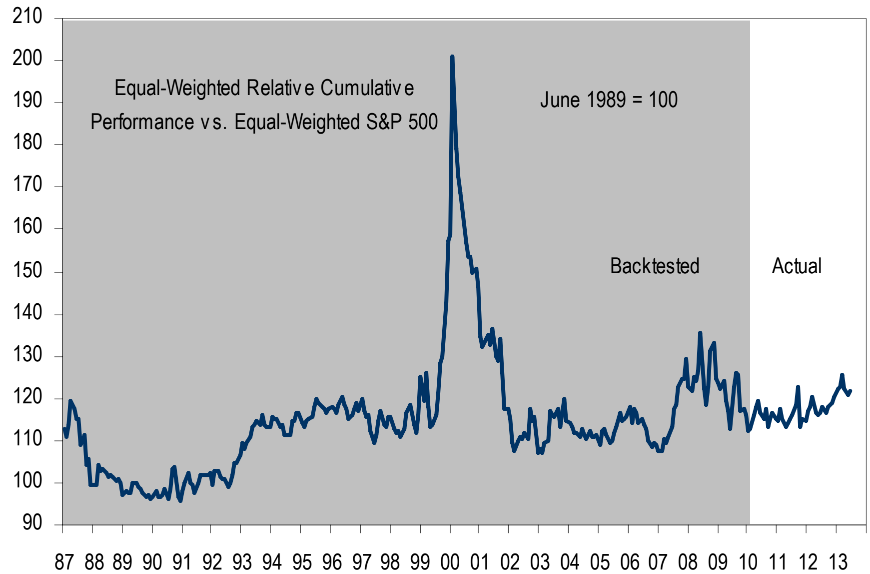
Screen for July

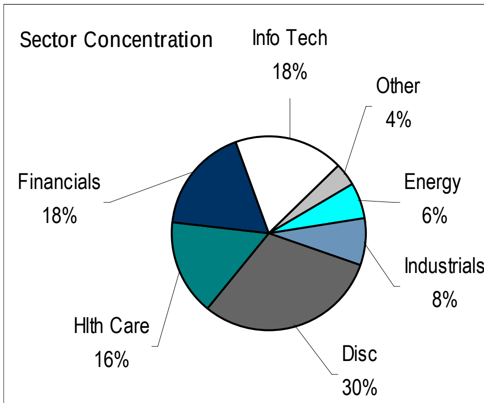
Mo. In Scrn.	Company	Ticker	Price Return	Price 06/28/2013
6	NETFLIX INC	NFLX	287.7%	211.09
4	MICRON TECHNOLOGY INC	MU	139.6%	14.33
6	GENWORTH FINANCIAL INC	GNW	118.2%	11.41
7	FIRST SOLAR INC	FSLR	102.3%	44.81
4	GAMESTOP CORP	GME	100.1%	42.03
2	TRIPADVISOR INC	TRIP	84.8%	60.87
8	TENET HEALTHCARE CORP	THC	83.8%	46.10
3	ELECTRONIC ARTS INC	EA	81.2%	22.99
6	NYSE EURONEXT	NYX	68.0%	41.40
New	SCHWAB (CHARLES) CORP	SCHW	66.1%	21.23
4	DELPHI AUTOMOTIVE PLC	DLPH	63.5%	50.69
4	CARMAX INC	KMX	63.1%	46.16
2	BOSTON SCIENTIFIC CORP	BSX	61.5%	9.27
13	CONSTELLATION BRANDS	STZ	61.1%	52.12
3	AETNA INC	AET	60.5%	63.54
2	WESTERN DIGITAL CORP	WDC	60.3%	62.09
3	TYSON FOODS INC -CL A	TSN	60.3%	25.68
6	BLOCK H & R INC	HRB	60.1%	27.75
3	HARTFORD FINANCIAL SERVICES	HIG	59.1%	30.92
2	BEST BUY CO INC	BBY	58.9%	27.33
9	CABOT OIL & GAS CORP	COG	58.2%	71.02
4	YAHOO INC	YHOO	57.3%	25.13
2	Ford Motor Co	F	56.9%	15.47
2	RYDER SYSTEM INC	R	55.6%	60.79
2	STATE STREET CORP	STT	55.4%	65.21

Mo. In Scrn.	Company	Ticker	Price Return	Price 06/28/2013
2	SEALED AIR CORP	SEE	54.9%	23.95
12	GILEAD SCIENCES INC	GILD	54.6%	51.27
New	CIGNA CORP	CI	53.7%	72.49
6	CELGENE CORP	CELG	53.1%	116.98
New	Unum Group	UNM	52.8%	29.37
3	LIFE TECHNOLOGIES CORP	LIFE	51.5%	74.00
4	LINCOLN NATIONAL CORP	LNC	50.8%	36.47
2	ACTAVIS INC	ACT	48.2%	126.22
2	OWENS-ILLINOIS INC	OI	48.1%	27.79
2	REGENERON PHARMACEUTICAL	REGN	47.3%	224.88
New	BOEING CO	BA	47.2%	102.44
New	SAFEWAY INC	SWY	47.0%	23.66
3	SOUTHWEST AIRLINES	LUV	47.0%	12.89
3	KROGER CO	KR	46.7%	34.54
5	CITIGROUP INC	C	46.6%	47.97
New	GENERAL MOTORS CO	GM	46.4%	33.31
6	MORGAN STANLEY	MS	45.9%	24.43
6	BANK OF AMERICA CORP	BAC	45.6%	12.86
2	SLM CORP	SLM	45.4%	22.86
New	HEWLETT-PACKARD CO	HPQ	45.4%	24.80
New	SEAGATE TECHNOLOGY PLC	STX	44.8%	44.83
New	AMERISOURCEBERGEN CORP	ABC	44.2%	55.83
3	BIOGEN IDEC INC	BIIB	44.2%	215.20
4	BLACKROCK INC	BLK	44.1%	256.85
New	E TRADE FINANCIAL CORP	ETFC	43.9%	12.66

Price Return – 3-Month Performance

Top 50 S&P 500 Companies By 3-month price return.





Absolute Returns	
Last 1 Month	-0.53%
Last 3 Months	-0.26%
Last 6 Months	16.57%
Last 12 Months	29.75%
2013 YTD	16.57%

Source: BofA Merrill Lynch US Quantitative Strategy
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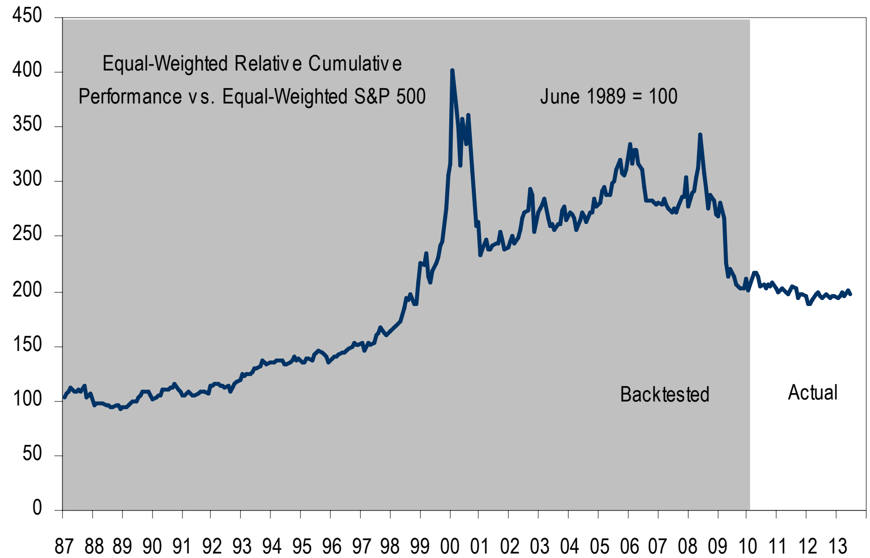
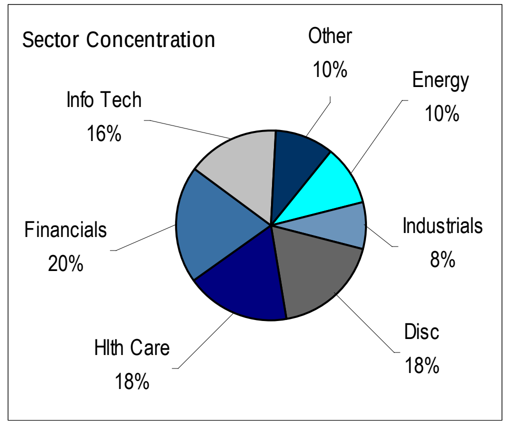
Screen for July

Mo. In Scrn.	Company	Ticker	Price Return	Price 06/28/2013
3	FIRST SOLAR INC	FSLR	66.2%	44.81
2	ADVANCED MICRO DEVICES	AMD	60.0%	4.08
3	GAMESTOP CORP	GME	50.3%	42.03
6	MICRON TECHNOLOGY INC	MU	43.7%	14.33
3	ACTAVIS INC	ACT	37.0%	126.22
2	ELECTRONIC ARTS INC	EA	29.9%	22.99
2	REGENERON PHARMACEUTICALS	REGN	27.5%	224.88
New	MONSTER BEVERAGE CORP	MNST	27.4%	60.83
3	AETNA INC	AET	24.3%	63.54
2	PRUDENTIAL FINANCIAL INC	PRU	23.8%	73.03
New	CME GROUP INC	CME	23.7%	75.95
2	WELLPOINT INC	WLP	23.6%	81.84
2	WESTERN DIGITAL CORP	WDC	23.5%	62.09
5	BEST BUY CO INC	BBY	23.4%	27.33
2	SEAGATE TECHNOLOGY PLC	STX	22.6%	44.83
New	HUMANA INC	HUM	22.1%	84.38
2	HARMAN INTERNATIONAL INDS	HAR	21.4%	54.20
New	GOODYEAR TIRE & RUBBER CO	GT	21.4%	15.30
3	MICROSOFT CORP	MSFT	20.8%	34.55
2	AKAMAI TECHNOLOGIES INC	AKAM	20.5%	42.55
2	METLIFE INC	MET	20.4%	45.76
New	PRICELINE.COM INC	PCLN	20.1%	826.67
2	SCHWAB (CHARLES) CORP	SCHW	20.0%	21.23
2	HARTFORD FINANCIAL SERVICES	HIG	19.8%	30.92
New	GENERAL MOTORS CO	GM	19.7%	33.31
3	BOEING CO	BA	19.3%	102.44
New	PRECISION CASTPARTS CORP	PCP	19.2%	226.01
2	WHOLE FOODS MARKET INC	WFM	18.7%	51.48
2	BOSTON SCIENTIFIC CORP	BSX	18.7%	9.27
New	STAPLES INC	SPLS	18.3%	15.87
2	WPX ENERGY INC	WPX	18.2%	18.94
New	E TRADE FINANCIAL CORP	ETFC	18.2%	12.66
2	NORTHROP GRUMMAN CORP	NOC	18.0%	82.80
2	GAP INC	GPS	17.9%	41.73
2	Ford Motor Co	F	17.6%	15.47
3	EQT CORP	EQT	17.2%	79.37
New	TIME WARNER CABLE INC	TWC	17.1%	112.48
New	PVH CORP	PVH	17.1%	125.05
New	HOSPIRA INC	HSP	16.7%	38.31
New	PIONEER NATURAL RESOURCE:	PXD	16.5%	144.75
2	DUN & BRADSTREET CORP	DNB	16.5%	97.45
New	CISCO SYSTEMS INC	CSCO	16.5%	24.34
New	REGIONS FINANCIAL CORP	RF	16.4%	9.53
New	CIGNA CORP	CI	16.2%	72.49
2	TRIPADVISOR INC	TRIP	15.9%	60.87
New	ZIONS BANCORPORATION	ZION	15.7%	28.92
New	AMERICAN INTERNATIONAL GR(	AIG	15.2%	44.70
New	VF CORP	VFC	15.1%	193.06
New	STARBUCKS CORP	SBUX	15.0%	65.51
New	MACY'S INC	M	14.7%	48.00

Price Return – 11-Month Performance

Top 50 S&P 500 Companies By 11-month price return from one year ago.





Absolute Returns	
Last 1 Month	-2.88%
Last 3 Months	2.62%
Last 6 Months	17.12%
Last 12 Months	26.04%
2013 YTD	17.12%

Source: BofA Merrill Lynch US Quantitative Strategy
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Screen for July

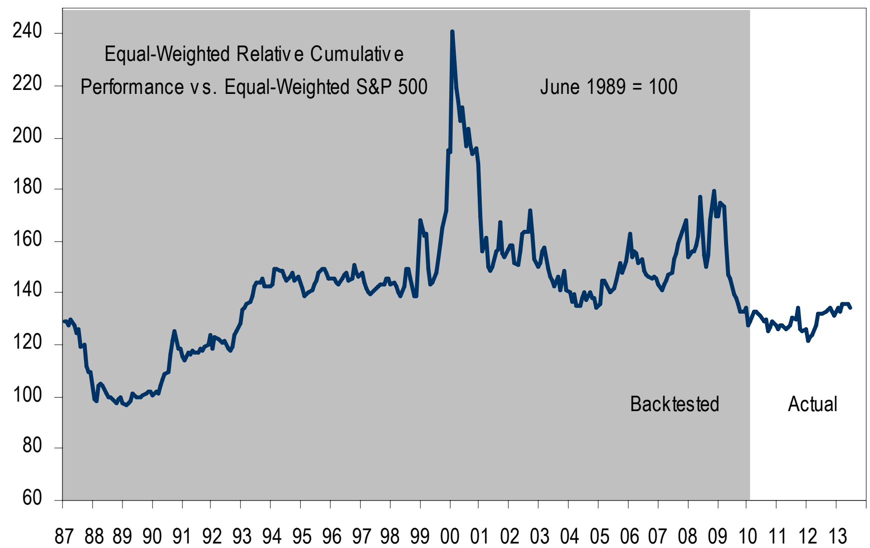
Mo. In Scrn.*	Company	Ticker	Price Return	Price 06/28/2013
3	FIRST SOLAR INC	FSLR	261.2%	44.81
5	NETFLIX INC	NFLX	230.4%	211.09
10	TESORO CORP	TSO	147.0%	52.32
6	TENET HEALTHCARE CORP	THC	126.0%	46.10
10	SPRINT NEXTEL CORP	S	123.9%	7.02
9	GILEAD SCIENCES INC	GILD	112.5%	51.27
2	REGENERON PHARMACEUTICALS	REGN	111.8%	224.88
9	WHIRLPOOL CORP	WHR	108.9%	114.36
2	WESTERN DIGITAL CORP	WDC	107.7%	62.09
13	PULTEGROUP INC	PHM	101.8%	18.97
3	PHILLIPS 66	PSX	100.3%	58.91
12	CONSTELLATION BRANDS	STZ	95.9%	52.12
5	CELGENE CORP	CELG	92.7%	116.98
4	DELPHI AUTOMOTIVE PLC	DLPH	91.4%	50.69
3	GENWORTH FINANCIAL INC	GNW	91.0%	11.41
2	CITIGROUP INC	C	89.7%	47.97
New	ELECTRONIC ARTS INC	EA	86.2%	22.99
3	MICRON TECHNOLOGY INC	MU	85.1%	14.33
10	MARATHON PETROLEUM CORP	MPC	83.7%	71.06
5	BLOCK H & R INC	HRB	83.2%	27.75
2	MOODY'S CORP	MCO	81.8%	60.93
2	GAMESTOP CORP	GME	80.6%	42.03
2	CARMAX INC	KMX	80.3%	46.16
4	COMPUTER SCIENCES CORP	CSC	79.7%	43.77
6	CABOT OIL & GAS CORP	COG	78.6%	71.02

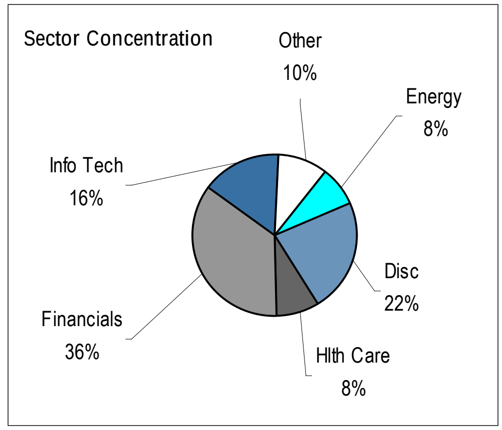
Mo. In Scrn.*	Company	Ticker	Price Return	Price 06/28/2013
2	MORGAN STANLEY	MS	77.5%	24.43
New	RYDER SYSTEM INC	R	75.1%	60.79
2	SEAGATE TECHNOLOGY PLC	STX	74.2%	44.83
2	HARTFORD FINANCIAL SERVICE	HIG	73.7%	30.92
New	GENERAL MOTORS CO	GM	71.9%	33.31
2	THERMO FISHER SCIENTIFIC IN(	TMO	70.1%	84.63
New	GOLDMAN SACHS GROUP INC	GS	69.1%	151.25
7	VALERO ENERGY CORP	VLO	68.2%	34.77
3	BANK OF AMERICA CORP	BAC	67.0%	12.86
New	EATON CORP PLC	ETN	66.7%	65.81
New	ACTAVIS INC	ACT	66.6%	126.22
4	YAHOO INC	YHOO	66.1%	25.13
New	LYONDELLBASELL INDUSTRIES N	LYB	65.5%	66.26
2	LIFE TECHNOLOGIES CORP	LIFE	64.7%	74.00
3	BIOGEN IDEC INC	BIIB	64.5%	215.20
2	BLACKROCK INC	BLK	64.4%	256.85
New	Ford Motor Co	F	63.5%	15.47
2	LINCOLN NATIONAL CORP	LNC	63.1%	36.47
New	BOSTON SCIENTIFIC CORP	BSX	63.0%	9.27
3	SANDISK CORP	SNDK	61.8%	61.10
2	Walgreen Co	WAG	61.5%	44.20
2	INTL PAPER CO	IP	59.6%	44.31
2	KANSAS CITY SOUTHERN	KSU	59.1%	105.96
New	AVERY DENNISON CORP	AVY	59.1%	42.76
3	NYSE EURONEXT	NYX	57.3%	41.40

* Months in screen since inception

Price Return – 12-Month and 1-Month Performance

Top 50 S&P 500 Companies By average rank of 12-month and 1-month price return.





Absolute Returns	
Last 1 Month	-2.20%
Last 3 Months	2.27%
Last 6 Months	18.15%
Last 12 Months	26.32%
2013 YTD	18.15%

Source: BofA Merrill Lynch US Quantitative Strategy
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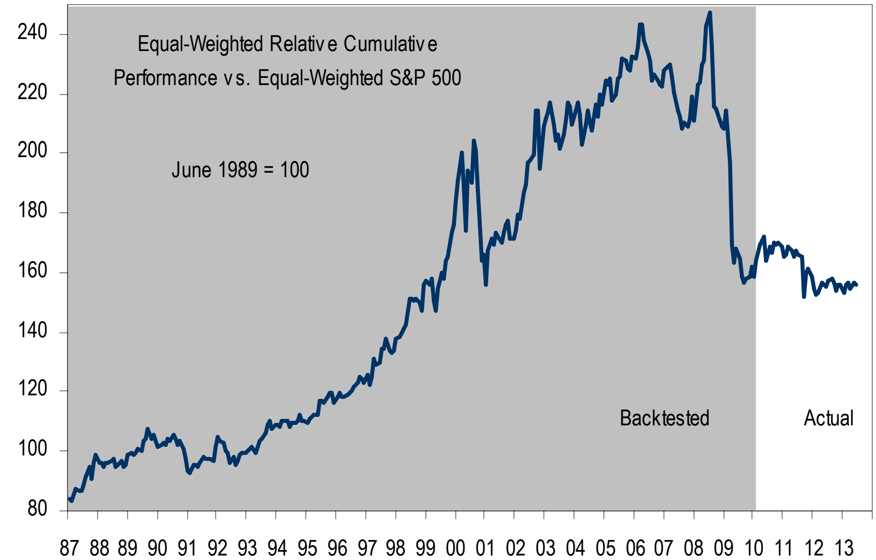
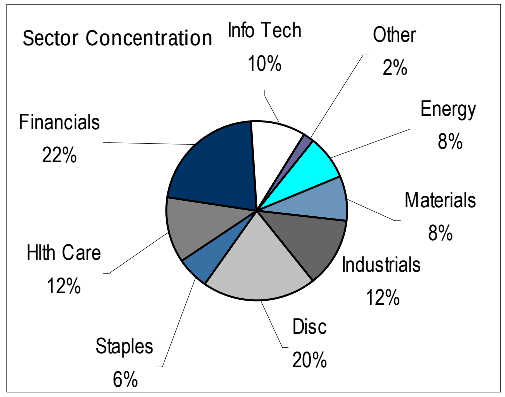
Screen for July

Mo. In Scrn.	Company	Ticker	Avg Percent Rank	Price 06/28/2013
New	GAMESTOP CORP	GME	1.2	42.03
2	MICRON TECHNOLOGY INC	MU	1.3	14.33
New	GANNETT CO	GCI	4.5	24.46
2	GENWORTH FINANCIAL INC	GNW	4.6	11.41
New	CIGNA CORP	CI	6.1	72.49
New	PVH CORP	PVH	6.6	125.05
2	SCHWAB (CHARLES) CORP	SCHW	6.6	21.23
New	E TRADE FINANCIAL CORP	ETFC	7.1	12.66
New	DELPHI AUTOMOTIVE PLC	DLPH	7.6	50.69
2	SEAGATE TECHNOLOGY PLC	STX	7.6	44.83
New	AETNA INC	AET	8.1	63.54
2	PIONEER NATURAL RESOURCES C	PXD	9.1	144.75
2	PRUDENTIAL FINANCIAL INC	PRU	9.6	73.03
2	SANDISK CORP	SNDK	10.1	61.10
New	NRG ENERGY INC	NRG	10.1	26.70
New	HUDSON CITY BANCORP INC	HCBK	11.6	9.18
New	CME GROUP INC	CME	13.0	75.95
4	ACTAVIS INC	ACT	13.6	126.22
New	VF CORP	VFC	13.6	193.06
New	NYSE EURONEXT	NYX	13.6	41.40
New	FLIR SYSTEMS INC	FLIR	14.0	26.97
New	TIME WARNER CABLE INC	TWC	14.4	112.48
New	ADOBE SYSTEMS INC	ADBE	14.6	45.56
New	LINCOLN NATIONAL CORP	LNC	14.6	36.47
New	Unum Group	UNM	14.6	29.37
New	NASDAQ OMX GROUP INC	NDAQ	15.1	32.79
2	METLIFE INC	MET	15.1	45.76
New	GAP INC	GPS	15.1	41.73
2	ZIONS BANCORPORATION	ZION	16.1	28.92
New	PRECISION CASTPARTS CORP	PCP	16.6	226.01
New	REGIONS FINANCIAL CORP	RF	16.6	9.53
New	M & T BANK CORP	MTB	17.1	111.75
New	NOBLE ENERGY INC	NBL	17.1	60.04
New	NIKE INC	NKE	17.1	63.68
New	KROGER CO	KR	17.1	34.54
New	VIACOM INC	VIAB	17.1	68.03
New	VISA INC	V	17.6	182.75
New	CABOT OIL & GAS CORP	COG	18.0	71.02
3	HARTFORD FINANCIAL SERVICE	HIG	18.6	30.92
New	BORGWARNER INC	BWA	19.0	86.15
New	AMERISOURCEBERGEN CORP	ABC	19.1	55.83
New	ASSURANT INC	AIZ	19.1	50.91
New	CAMPBELL SOUP CO	CPB	19.6	44.79
New	AFLAC INC	AFL	19.6	58.12
New	JDS UNIPHASE CORP	JDSU	20.0	14.39
New	EOG RESOURCES INC	EOG	20.1	131.68
New	PEOPLE'S UNITED FINL INC	PBCT	20.5	14.90
New	BOEING CO	BA	20.6	102.44
New	TE CONNECTIVITY LTD	TEL	20.6	45.54
New	CABLEVISION SYS CORP -CL A	CVC	21.0	16.82

Price Return – 12-Month and 1-Month Reversal

Top 50 S&P 500 Companies By average rank of 12-month and reversal 1-month price return.





Absolute Returns	
Last 1 Month	-1.86%
Last 3 Months	2.69%
Last 6 Months	15.35%
Last 12 Months	24.67%
2013 YTD	15.35%

Source: BofA Merrill Lynch US Quantitative Strategy
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Screen for July

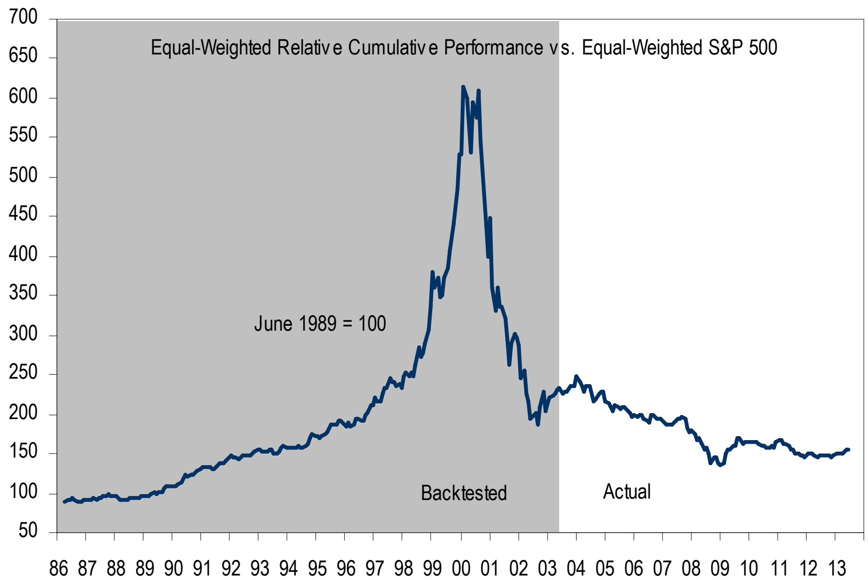
Mo. In Scrn.	Company	Ticker	Avg Percent Rank	Price 06/28/2013
New	FIRST SOLAR INC	FSLR	0.7	44.81
New	TESORO CORP	TSO	1.8	52.32
New	WHIRLPOOL CORP	WHR	3.8	114.36
2	PULTEGROUP INC	PHM	3.8	18.97
New	PHILLIPS 66	PSX	4.3	58.91
New	MARATHON PETROLEUM CORP	MPC	5.9	71.06
New	NETFLIX INC	NFLX	6.0	211.09
New	REGENERON PHARMACEUTICALS	REGN	6.8	224.88
New	CITIGROUP INC	C	7.3	47.97
New	MOODY'S CORP	MCO	7.3	60.93
New	GILEAD SCIENCES INC	GILD	8.3	51.27
New	CELGENE CORP	CELG	10.3	116.98
New	BIOGEN IDEC INC	BIIB	10.3	215.20
4	VALERO ENERGY CORP	VLO	10.4	34.77
New	MORGAN STANLEY	MS	10.8	24.43
New	GOLDMAN SACHS GROUP INC	GS	10.8	151.25
New	BLACKROCK INC	BLK	10.8	256.85
New	BLOCK H & R INC	HRB	11.3	27.75
2	Walgreen Co	WAG	11.8	44.20
New	BANK OF AMERICA CORP	BAC	12.8	12.86
2	SPRINT NEXTEL CORP	S	13.2	7.02
New	YAHOO INC	YHOO	15.3	25.13
New	THERMO FISHER SCIENTIFIC INC	TMO	15.8	84.63
New	SOUTHWEST AIRLINES	LUV	15.8	12.89
New	RYDER SYSTEM INC	R	16.2	60.79

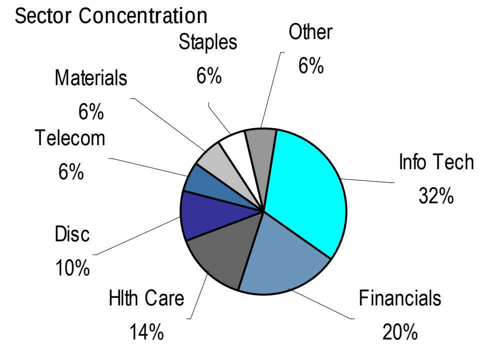
Mo. In Scrn.	Company	Ticker	Avg Percent Rank	Price 06/28/2013
New	TENET HEALTHCARE CORP	THC	16.6	46.10
2	KANSAS CITY SOUTHERN	KSU	16.8	105.96
2	INTL PAPER CO	IP	17.3	44.31
New	MASCO CORP	MAS	17.3	19.49
2	ABERCROMBIE & FITCH -CL A	ANF	18.8	45.25
New	TIFFANY & CO	TIF	19.3	72.84
2	URBAN OUTFITTERS INC	URBN	19.8	40.22
New	INVESCO LTD	IVZ	19.8	31.80
New	INTL FLAVORS & FRAGRANCES	IFF	19.8	75.16
New	AKAMAI TECHNOLOGIES INC	AKAM	19.8	42.55
New	AVON PRODUCTS	AVP	19.8	21.03
New	WESTERN DIGITAL CORP	WDC	20.6	62.09
New	JPMORGAN CHASE & CO	JPM	21.2	52.79
New	SLM CORP	SLM	21.2	22.86
New	PPG INDUSTRIES INC	PPG	21.8	146.41
New	TRIPADVISOR INC	TRIP	21.8	60.87
New	JACOBS ENGINEERING GROUP I	JEC	22.2	55.13
New	SHERWIN-WILLIAMS CO	SHW	22.3	176.60
4	COMPUTER SCIENCES CORP	CSC	22.7	43.77
2	XL GROUP PLC	XL	22.7	30.32
New	CONSTELLATION BRANDS	STZ	23.1	52.12
2	LEUCADIA NATIONAL CORP	LUK	23.3	26.22
3	LEGGETT & PLATT INC	LEG	23.7	31.09
New	FLOWSERVE CORP	FLS	24.2	54.01
New	GENERAL MOTORS CO	GM	24.7	33.31

Most Active

Top 50 S&P 500 Companies By Most Actively Traded Stocks.

Most Actively Traded Stocks: Stocks have the highest monthly share trading volume.





Absolute Returns	
Last 1 Month	-1.30%
Last 3 Months	6.07%
Last 6 Months	19.70%
Last 12 Months	29.15%
2013 YTD	19.70%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end May 1986 to month end August 2003. The unshaded portion represents actual performance since September 2003. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

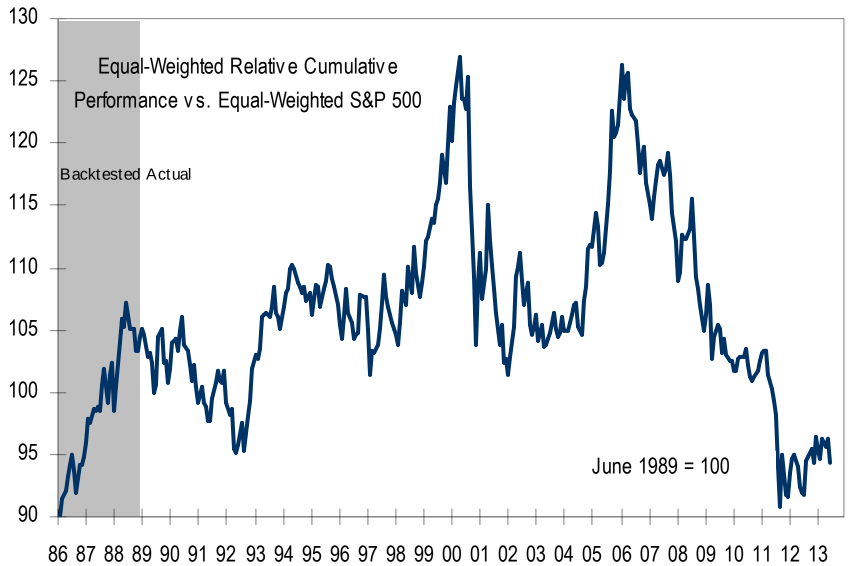
Mo. In Scrn	Company	Ticker	Trading Volume (In Mils)	Price 06/28/2013
107	BANK OF AMERICA CORP	BAC	2751	12.86
119	PFIZER INC	PFE	2301	28.01
103	SPRINT NEXTEL CORP	S	1754	7.02
119	MICROSOFT CORP	MSFT	1001	34.55
51	MICRON TECHNOLOGY INC	MU	944	14.33
119	GENERAL ELECTRIC CO	GE	925	23.19
119	INTEL CORP	INTC	918	24.23
102	FORD MOTOR CO	F	893	15.47
119	CISCO SYSTEMS INC	CSCO	778	24.34
26	CITIGROUP INC	C	763	47.97
119	ORACLE CORP	ORCL	725	30.71
92	AT&T INC	T	682	35.40
8	MERCK & CO	MRK	494	46.45
119	EMC CORP/MA	EMC	480	23.62
81	JPMORGAN CHASE & CO	JPM	465	52.79
28	MORGAN STANLEY	MS	465	24.43
72	WELLS FARGO & CO	WFC	461	41.27
50	ADVANCED MICRO DEVICES	AMD	450	4.08
29	FREEPORT-MCMORAN COP&GOLD	FCX	423	27.61
11	AMERICAN INTERNATIONAL GROUI	AIG	407	44.70
New	GENERAL MOTORS CO	GM	405	33.31
43	TWENTY-FIRST CENTURY FOX INC	FOXA	405	28.77
51	REGIONS FINANCIAL CORP	RF	404	9.53
57	ALCOA INC	AA	384	7.82
15	BOSTON SCIENTIFIC CORP	BSX	360	9.27

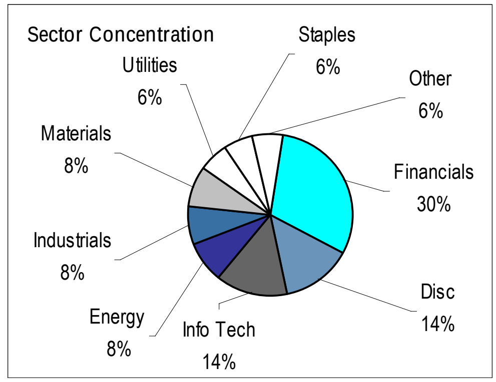
Mo. In Scrn	Company	Ticker	Trading Volume (In Mils)	Price 06/28/2013
119	DELL INC	DELL	353	13.33
14	APPLIED MATERIALS INC	AMAT	340	14.92
119	YAHOO INC	YHOO	338	25.13
38	HEWLETT-PACKARD CO	HPQ	336	24.80
11	COCA-COLA CO	KO	332	40.11
46	VERIZON COMMUNICATIONS INC	VZ	317	50.34
10	QUALCOMM INC	QCOM	314	61.09
119	EXXON MOBIL CORP	XOM	310	90.35
104	COMCAST CORP	CMCSA	305	41.75
New	ZOETIS INC	ZTS	299	30.89
17	APPLE INC	AAPL	264	396.53
2	SCHWAB (CHARLES) CORP	SCHW	259	21.23
New	ALTRIA GROUP INC	MO	256	34.99
2	CHESAPEAKE ENERGY CORP	CHK	255	20.38
32	CORNING INC	GLW	253	14.23
New	KEYCORP	KEY	248	11.04
New	NVIDIA CORP	NVDA	247	14.04
2	BRISTOL-MYERS SQUIBB CO	BMY	240	44.69
4	GILEAD SCIENCES INC	GILD	232	51.27
New	EBAY INC	EBAY	228	51.72
4	CLIFFS NATURAL RESOURCES INC	CLF	226	16.25
New	PULTEGROUP INC	PHM	226	18.97
2	JOHNSON & JOHNSON	JNJ	224	85.86
3	U S BANCORP	USB	220	36.15
9	MONDELEZ INTERNATIONAL INC	MDLZ	220	28.53

Earnings Momentum

Top 50 S&P 500 Companies By EPS MOMENTUM

Earnings Momentum: The difference between 12-month trailing EPS and year-ago12-month trailing EPS divided by year-ago 12-month trailing EPS.





Absolute Returns	
Last 1 Month	-3.23%
Last 3 Months	0.83%
Last 6 Months	12.77%
Last 12 Months	27.45%
2013 YTD	12.77%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

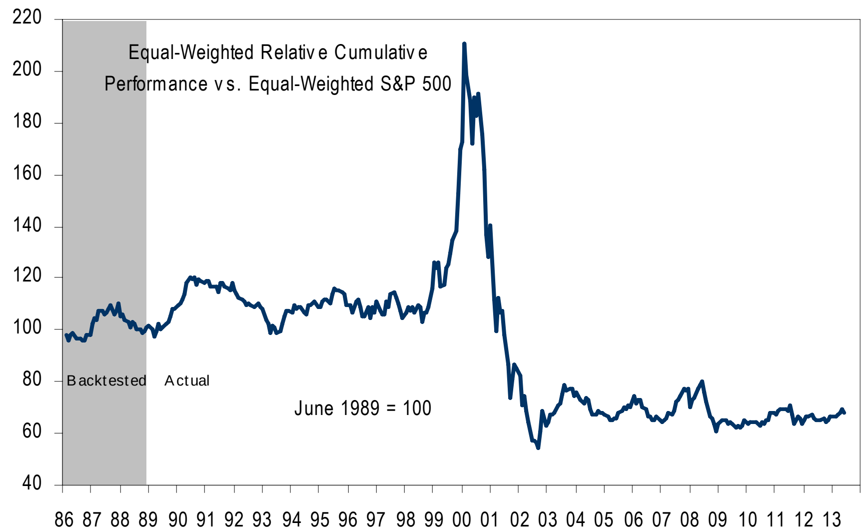
Screen for July

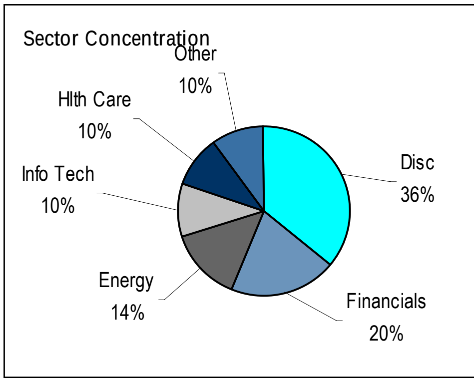
Mo. In Scrn.	Company	Ticker	EPS Momentum	Price 06/28/2013
5	PERKINELMER INC	PKI	1825.0	32.50
5	XL GROUP PLC	XL	1542.1	30.32
14	GENWORTH FINANCIAL INC	GNW	1540.0	11.41
4	SAIC INC	SAI	1510.0	13.93
5	LINCOLN NATIONAL CORP	LNC	828.0	36.47
18	D R HORTON INC	DHI	692.9	21.28
17	REGIONS FINANCIAL CORP	RF	600.0	9.53
2	REGENERON PHARMACEUTICALS	REGN	579.2	224.88
12	BANK OF AMERICA CORP	BAC	328.6	12.86
6	HUDSON CITY BANCORP INC	HCBK	309.1	9.18
9	YAHOO INC	YHOO	292.0	25.13
12	PULTEGROUP INC	PHM	262.5	18.97
5	UNUM GROUP	UNM	260.0	29.37
17	EQUITY RESIDENTIAL	EQR	246.2	58.06
9	MARRIOTT INTL INC	MAR	223.7	40.37
5	NEWMONT MINING CORP	NEM	197.3	29.95
9	ANADARKO PETROLEUM CORP	APC	194.5	85.93
21	SUNTRUST BANKS INC	STI	187.9	31.57
8	BEAM INC	BEAM	184.4	63.11
4	KROGER CO	KR	183.7	34.54
9	NEWELL RUBBERMAID INC	NWL	180.9	26.25
2	FIRST SOLAR INC	FSLR	167.8	44.81
9	CINCINNATI FINANCIAL CORP	CINF	158.1	45.92
5	ABERCROMBIE & FITCH -CL A	ANF	149.2	45.25
3	SLM CORP	SLM	141.7	22.86
5	NRG ENERGY INC	NRG	137.8	26.70
6	OWENS-ILLINOIS INC	OI	130.6	27.79
12	ALLSTATE CORP	ALL	121.9	48.12
6	GOLDMAN SACHS GROUP INC	GS	114.4	151.25
18	VERISIGN INC	VRSN	112.0	44.66
5	COMPUTER SCIENCES CORP	CSC	111.4	43.77
3	UNITED STATES STEEL CORP	X	110.8	17.53
3	VALERO ENERGY CORP	VLO	109.9	34.77
3	HESS CORP	HES	102.1	66.49
3	MOTOROLA SOLUTIONS INC	MSI	94.0	57.73
9	TRAVELERS COS INC	TRV	91.1	79.92
6	AT&T INC	T	87.0	35.40
9	INGERSOLL-RAND PLC	IR	86.7	55.52
2	INTEGRYS ENERGY GROUP INC	TEG	85.6	58.53
12	WESTERN DIGITAL CORP	WDC	85.5	62.09
3	WEYERHAEUSER CO	WY	83.7	28.49
5	MASCO CORP	MAS	83.6	19.49
11	QUANTA SERVICES INC	PWR	76.2	26.46
3	WHIRLPOOL CORP	WHR	75.6	114.36
2	TEXTRON INC	TXT	73.1	26.05
2	LEGGETT & PLATT INC	LEG	67.3	31.09
New	CONAGRA FOODS INC	CAG	66.4	34.93
5	EDISON INTERNATIONAL	EIX	64.1	48.16
2	TESORO CORP	TSO	61.4	52.32
New	ECOLAB INC	ECL	60.1	85.19

Projected Five-Year EPS Growth

Top 50 S&P 500 Companies By PROJ. 5-YR EPS GROWTH

Projected 5-Year EPS Growth: The five-year EPS growth rate estimated by BofAML Fundamental Equity Research. If no BofAML estimate exist, then the IBES Mean Long Term Growth Estimate is used.





Absolute Returns	
Last 1 Month	-3.11%
Last 3 Months	4.42%
Last 6 Months	19.02%
Last 12 Months	29.68%
2013 YTD	19.02%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

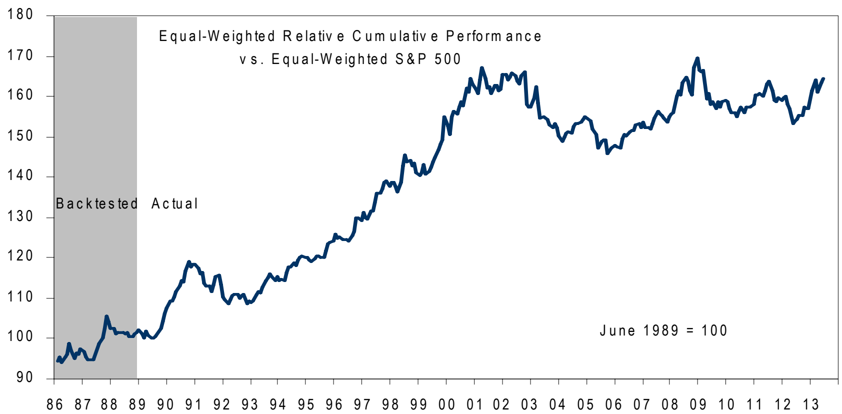
Mo. In Scrn	Company	Ticker	EPS Gr Next 5Yr	Price 06/28/2013
2	LEGG MASON INC	LM	137.4	31.01
3	FOREST LABORATORIES -CL A	FRX	82.0	41.00
11	TESORO CORP	TSO	81.0	52.32
6	D R HORTON INC	DHI	62.7	21.28
4	PULTEGROUP INC	PHM	60.9	18.97
32	WYNN RESORTS LTD	WYNN	49.6	127.97
5	CHESAPEAKE ENERGY CORP	CHK	46.7	20.38
38	GOODYEAR TIRE & RUBBER CO	GT	41.0	15.30
27	COMERICA INC	CMA	40.0	39.83
9	CROWN CASTLE INTL CORP	CCI	39.4	72.39
5	CABOT OIL & GAS CORP	COG	35.0	71.02
92	AMAZON.COM INC	AMZN	34.1	277.69
5	GILEAD SCIENCES INC	GILD	33.3	51.27
15	SOUTHWEST AIRLINES	LUV	31.4	12.89
7	BIOGEN IDEC INC	BIIB	30.3	215.20
24	NETFLIX INC	NFLX	30.0	211.09
8	E TRADE FINANCIAL CORP	ETFC	29.8	12.66
4	INTL PAPER CO	IP	29.8	44.31
14	AMERICAN TOWER CORP	AMT	28.9	73.17
36	AUTONATION INC	AN	27.0	43.39
5	AVON PRODUCTS	AVP	26.2	21.03
4	WHIRLPOOL CORP	WHR	26.0	114.36
6	SANDISK CORP	SNDK	25.3	61.10
24	ABERCROMBIE & FITCH -CL A	ANF	25.0	45.25
31	F5 NETWORKS INC	FFIV	25.0	68.80

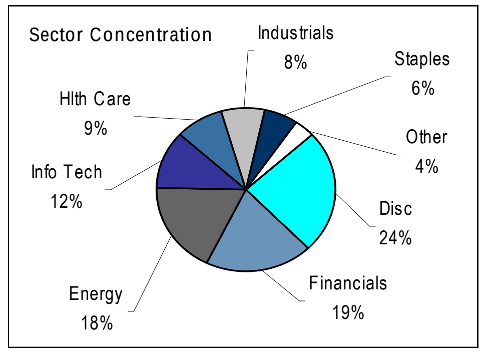
Mo. In Scrn	Company	Ticker	EPS Gr Next 5Yr	Price 06/28/2013
27	M & T BANK CORP	MTB	25.0	111.75
58	SALESFORCE.COM INC	CRM	25.0	38.18
6	EQT CORP	EQT	24.8	79.37
3	BANK OF AMERICA CORP	BAC	23.4	12.86
9	PETSMART INC	PETM	23.2	66.99
6	ANADARKO PETROLEUM CORP	APC	22.6	85.93
14	ALEXION PHARMACEUTICALS INC	ALXN	22.0	92.24
6	FIFTH THIRD BANCORP	FITB	21.8	18.05
11	DIRECTV	DTV	21.7	61.64
43	CELGENE CORP	CELG	21.5	116.98
New	PIONEER NATURAL RESOURCES C	PXD	20.8	144.75
40	DISCOVERY COMMUNICATIONS IN(	DISCA	20.3	77.24
5	SCHWAB (CHARLES) CORP	SCHW	20.2	21.23
6	MARATHON OIL CORP	MRO	20.0	34.58
27	CHIPOTLE MEXICAN GRILL INC	CMG	20.0	364.35
19	DOLLAR TREE INC	DLTR	20.0	50.84
19	O'REILLY AUTOMOTIVE INC	ORLY	20.0	112.62
44	PRICELINE.COM INC	PCLN	20.0	826.67
48	RED HAT INC	RHT	20.0	47.82
14	STARBUCKS CORP	SBUX	20.0	65.51
163	YAHOO INC	YHOO	20.0	25.13
12	WYNDHAM WORLDWIDE CORP	WYN	19.7	57.23
5	QUANTA SERVICES INC	PWR	19.3	26.46
2	BB&T CORP	BBT	18.7	33.88
New	SUNTRUST BANKS INC	STI	18.6	31.57

Forecast Positive Earnings Surprise

Top S&P 500 Companies By POSITIVE EPS SURPRISE

Earnings Surprise: A forecast earnings surprise variable which compares BofAML estimates to those of the consensus after adjusting for the range of estimates. Stocks are ranked from 1 to 10, with 1 being among the most optimistic, relative to the consensus. 10 being among the most pessimistic.





Absolute Returns	
Last 1 Month	-0.62%
Last 3 Months	3.27%
Last 6 Months	20.70%
Last 12 Months	32.72%
2013 YTD	20.70%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

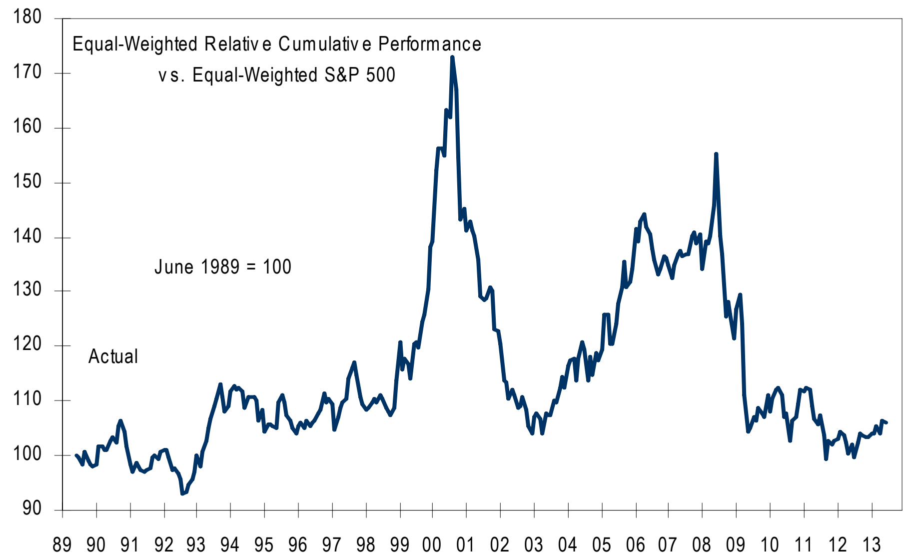
Mo. In Scrn.	Company	Ticker	ML vs. Con	Price 06/28/2013
3	ABBVIE INC	ABBV	1	41.34
2	AFLAC INC	AFL	1	58.12
15	AMAZON.COM INC	AMZN	1	277.69
3	ARCHER-DANIELS-MIDLAND CO	ADM	1	33.91
21	AUTONATION INC	AN	1	43.39
5	BIOGEN IDEC INC	BIIB	1	215.20
5	CAPITAL ONE FINANCIAL CORP	COF	1	62.81
New	CME GROUP INC	CME	1	75.95
3	COMCAST CORP	CMCSA	1	41.75
New	DARDEN RESTAURANTS INC	DRI	1	50.48
3	DIAMOND OFFSHRE DRILLING INC	DO	1	68.79
8	DOLLAR TREE INC	DLTR	1	50.84
3	EXPEDIA INC	EXPE	1	60.15
3	GARMIN LTD	GRMN	1	36.17
5	GENERAL DYNAMICS CORP	GD	1	78.33
3	HALLIBURTON CO	HAL	1	41.72
12	HESS CORP	HES	1	66.49
8	HOME DEPOT INC	HD	1	77.47
New	HUDSON CITY BANCORP INC	HCBK	1	9.18
3	HUNTINGTON BANCSHARES	HBAN	1	7.87
3	MARATHON OIL CORP	MRO	1	34.58
2	MARATHON PETROLEUM CORP	MPC	1	71.06
13	MICRON TECHNOLOGY INC	MU	1	14.33
19	NETFLIX INC	NFLX	1	211.09
2	PARKER-HANNIFIN CORP	PH	1	95.40
2	PERKINELMER INC	PKI	1	32.50
4	PHILLIPS 66	PSX	1	58.91
New	PUBLIC SERVICE ENTRP GRP INC	PEG	1	32.66
3	RANGE RESOURCES CORP	RRC	1	77.32
9	SANDISK CORP	SNDK	1	61.10
2	SCHWAB (CHARLES) CORP	SCHW	1	21.23
3	STERICYCLE INC	SRCL	1	110.43
6	SYMANTEC CORP	SYMC	1	22.48
5	TARGET CORP	TGT	1	68.86
2	THERMO FISHER SCIENTIFIC INC	TMO	1	84.63
6	U S BANCORP	USB	1	36.15

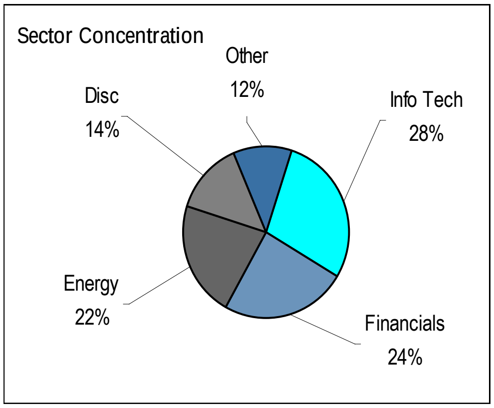
Mo. In Scrn.	Company	Ticker	ML vs. Con	Price 06/28/2013
2	ANADARKO PETROLEUM CORP	APC	2	85.93
2	APACHE CORP	APA	2	83.83
2	ASSURANT INC	AIZ	2	50.91
5	AUTODESK INC	ADSK	2	33.94
New	AUTOZONE INC	AZO	2	423.69
New	BB&T CORP	BBT	2	33.88
2	BOEING CO	BA	2	102.44
New	CABOT OIL & GAS CORP	COG	2	71.02
3	CBS CORP	CBS	2	48.87
18	CHESAPEAKE ENERGY CORP	CHK	2	20.38
New	DEVON ENERGY CORP	DVN	2	51.88
2	DIRECTV	DTV	2	61.64
New	DOW CHEMICAL	DOW	2	32.17
2	E TRADE FINANCIAL CORP	ETFC	2	12.66
26	FLUOR CORP	FLR	2	59.31
New	GAMESTOP CORP	GME	2	42.03
New	GENUINE PARTS CO	GPC	2	78.07
3	HARTFORD FINANCIAL SERVICES	HIG	2	30.92
6	JOHNSON CONTROLS INC	JCI	2	35.79
9	JPMORGAN CHASE & CO	JPM	2	52.79
2	KELLOGG CO	K	2	64.23
6	LILLY (ELI) & CO	LLY	2	49.12
New	LSI CORP	LSI	2	7.14
5	MOLSON COORS BREWING CO	TAP	2	47.86
9	MYLAN INC	MYL	2	31.03
2	NETAPP INC	NTAP	2	37.78
12	O'REILLY AUTOMOTIVE INC	ORLY	2	112.62
4	ORACLE CORP	ORCL	2	30.71
New	PHILIP MORRIS INTERNATIONAL	PM	2	86.62
7	PRINCIPAL FINANCIAL GRP INC	PFG	2	37.45
New	ROWAN COMPANIES PLC	RDC	2	34.07
New	SALESFORCE.COM INC	CRM	2	38.18
New	SOUTHERN CO	SO	2	44.13
2	TEXTRON INC	TXT	2	26.05
New	TRAVELERS COS INC	TRV	2	79.92
9	TRIPADVISOR INC	TRIP	2	60.87

Earnings Estimate Revision

Top 50 S&P 500 Companies By UPWARD EPS EST. REVISION

EPS Estimate Revision: The difference between the I/B/E/S FY1 estimate and that of three months ago divided by the absolute value of the I/B/E/S FY1 estimate of three months ago.





Absolute Returns	
Last 1 Month	-1.68%
Last 3 Months	3.44%
Last 6 Months	18.07%
Last 12 Months	28.96%
2013 YTD	18.07%

ource: BofA Merrill Lynch US Quantitative Strategy

The performance chart represents actual returns since July 1989. There is no back tested performance.

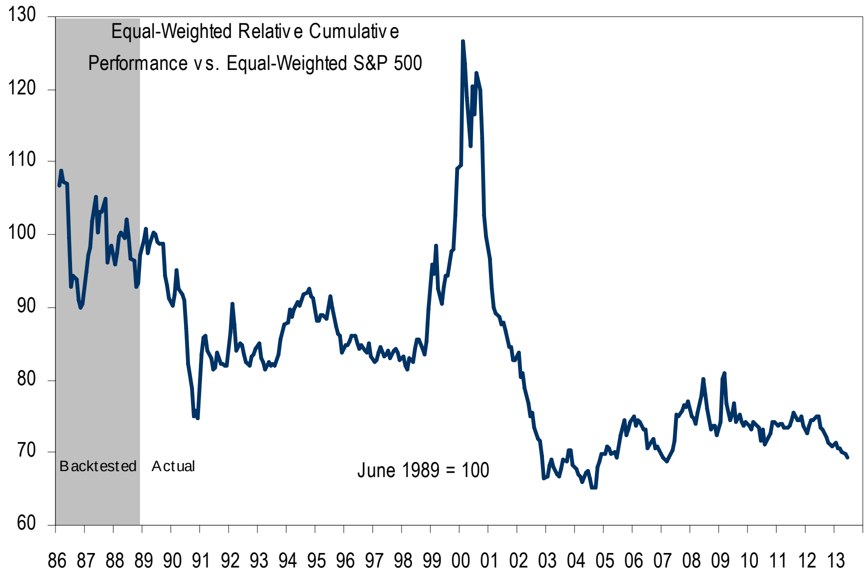
Screen for July

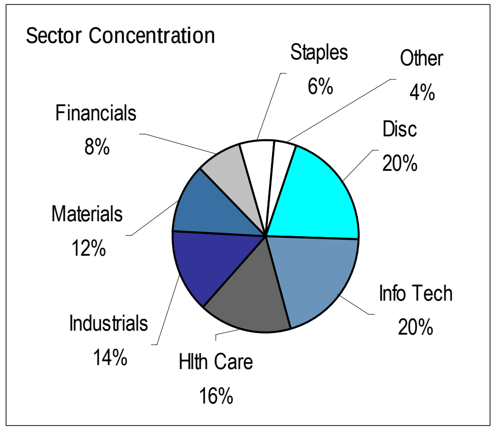
Mo. In Scrn.	Company	Ticker	EPS Est. Revision	Price 06/28/2013
2	CLIFFS NATURAL RESOURCES INC	CLF	0.456	16.25
3	MICRON TECHNOLOGY INC	MU	0.445	14.33
3	YAHOO INC	YHOO	0.268	25.13
3	EQT CORP	EQT	0.252	79.37
3	ADVANCED MICRO DEVICES	AMD	0.241	4.08
2	MOTOROLA SOLUTIONS INC	MSI	0.236	57.73
2	CHESAPEAKE ENERGY CORP	CHK	0.211	20.38
2	CROWN CASTLE INTL CORP	CCI	0.209	72.39
2	AVALONBAY COMMUNITIES INC	AVB	0.193	134.91
6	D R HORTON INC	DHI	0.188	21.28
9	CINCINNATI FINANCIAL CORP	CINF	0.188	45.92
New	LENNAR CORP	LEN	0.177	36.04
2	EOG RESOURCES INC	EOG	0.172	131.68
3	SOUTHWESTERN ENERGY CO	SWN	0.170	36.53
New	FIRST SOLAR INC	FSLR	0.165	44.81
2	AMERICAN INTERNATIONAL GROUI	AIG	0.157	44.70
5	XL GROUP PLC	XL	0.148	30.32
3	CABOT OIL & GAS CORP	COG	0.146	71.02
17	PULTEGROUP INC	PHM	0.142	18.97
2	CA INC	CA	0.139	28.62
5	AVON PRODUCTS	AVP	0.137	21.03
3	WYNN RESORTS LTD	WYNN	0.119	127.97
9	SANDISK CORP	SNDK	0.114	61.10
6	RANGE RESOURCES CORP	RRC	0.106	77.32
6	NRG ENERGY INC	NRG	0.100	26.70
2	CORNING INC	GLW	0.099	14.23
2	MICROCHIP TECHNOLOGY INC	MCHP	0.098	37.25
3	SLM CORP	SLM	0.091	22.86
2	BERKSHIRE HATHAWAY	BRK.B	0.088	111.92
2	LAM RESEARCH CORP	LRCX	0.088	44.34
2	HUMANA INC	HUM	0.087	84.38
New	WPX ENERGY INC	WPX	0.083	18.94
New	NOBLE ENERGY INC	NBL	0.081	60.04
2	HARTFORD FINANCIAL SERVICES	HIG	0.077	30.92
5	CHUBB CORP	CB	0.074	84.65
New	ANADARKO PETROLEUM CORP	APC	0.070	85.93
2	HARMAN INTERNATIONAL INDS	HAR	0.069	54.20
New	APOLLO GROUP INC -CL A	APOL	0.068	17.72
2	PRUDENTIAL FINANCIAL INC	PRU	0.067	73.03
New	KINDER MORGAN INC	KMI	0.064	38.15
5	NETAPP INC	NTAP	0.062	37.78
3	REGIONS FINANCIAL CORP	RF	0.060	9.53
New	FIFTH THIRD BANCORP	FITB	0.060	18.05
New	TEXAS INSTRUMENTS INC	TXN	0.060	34.85
4	TRAVELERS COS INC	TRV	0.059	79.92
New	ELECTRONIC ARTS INC	EA	0.059	22.99
11	PHILLIPS 66	PSX	0.059	58.91
2	LSI CORP	LSI	0.058	7.14
5	MASCO CORP	MAS	0.058	19.49
New	STARWOOD HOTELS&RESORTS WF	HOT	0.058	63.19

Equity Duration

Top 50 S&P 500 Companies By HIGH DURATION

Equity Duration: An adaptation of our Dividend Discount Model that measures the interest-rate sensitivity of a stock. Longer duration (higher numbers) suggests more interest-rate sensitivity.





Absolute Returns	
Last 1 Month	-1.92%
Last 3 Months	1.17%
Last 6 Months	12.63%
Last 12 Months	15.04%
2013 YTD	12.63%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

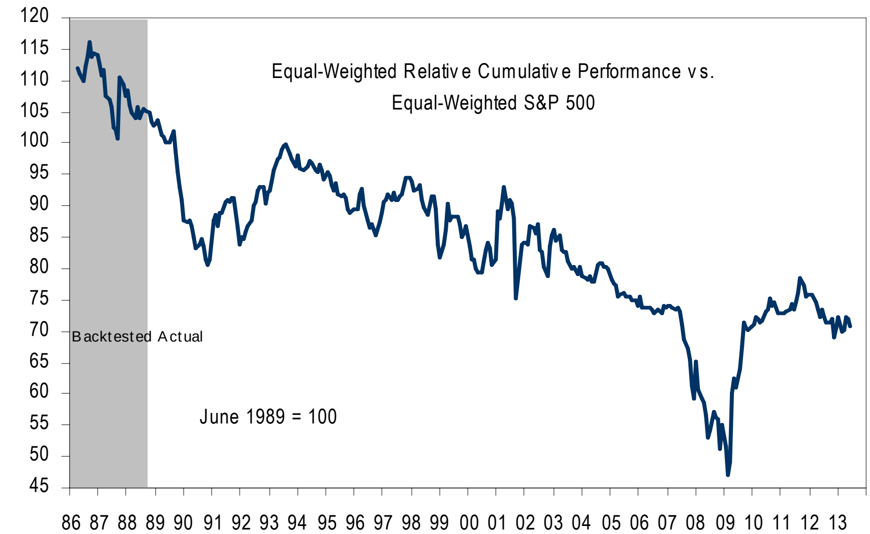
Screen for July

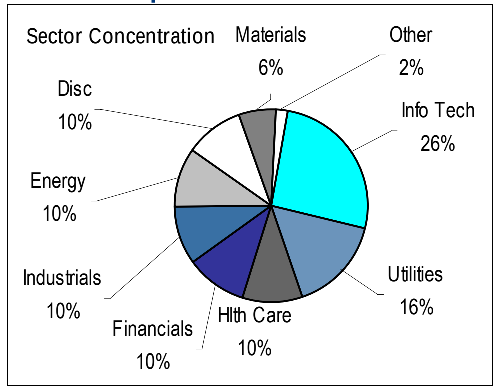
Mo. In Scrn.	Company	Ticker	Equity Duration	Price 06/28/2013
54	PATTERSON COMPANIES INC	PDCO	67.8	37.60
45	TYSON FOODS INC -CL A	TSN	55.2	25.68
13	SOUTHWEST AIRLINES	LUV	54.6	12.89
29	TEXAS INSTRUMENTS INC	TXN	47.8	34.85
3	AVERY DENNISON CORP	AVY	46.1	42.76
53	NORDSTROM INC	JWN	46.1	59.94
20	PROGRESSIVE CORP-OHIO	PGR	43.8	25.42
6	ALCOA INC	AA	42.8	7.82
3	DANAHER CORP	DHR	42.4	63.30
19	PERRIGO CO	PRGO	42.2	121.00
5	NETFLIX INC	NFLX	41.5	211.09
5	HOSPIRA INC	HSP	39.7	38.31
12	SIGMA-ALDRICH CORP	SIAL	39.6	80.42
35	PRECISION CASTPARTS CORP	PCP	39.4	226.01
6	INTEL CORP	INTC	38.4	24.23
9	STATE STREET CORP	STT	38.0	65.21
4	LIFE TECHNOLOGIES CORP	LIFE	37.5	74.00
8	ALTERA CORP	ALTR	37.5	32.99
4	PNC FINANCIAL SVCS GROUP INC	PNC	37.3	72.92
8	TENET HEALTHCARE CORP	THC	37.3	46.10
19	MASTERCARD INC	MA	37.1	574.50
5	SEALED AIR CORP	SEE	37.1	23.95
38	SALESFORCE.COM INC	CRM	37.0	38.18
23	RALPH LAUREN CORP	RL	36.9	173.74
24	BALL CORP	BLL	36.8	41.54
4	TRIPADVISOR INC	TRIP	36.5	60.87
6	PAYCHEX INC	PAYX	36.4	36.51
15	EBAY INC	EBAY	36.3	51.72
8	BEAM INC	BEAM	36.2	63.11
4	SHERWIN-WILLIAMS CO	SHW	36.2	176.60
5	EOG RESOURCES INC	EOG	36.2	131.68
20	TJX COMPANIES INC	TJX	36.2	50.06
8	NIKE INC	NKE	36.0	63.68
6	LAM RESEARCH CORP	LRCX	35.9	44.34
8	MEAD JOHNSON NUTRITION CO	MJN	35.7	79.23
New	PVH CORP	PVH	35.6	125.05
2	KANSAS CITY SOUTHERN	KSU	35.6	105.96
4	STERICYCLE INC	SRCL	35.5	110.43
2	WATERS CORP	WAT	35.4	100.05
3	AUTOMATIC DATA PROCESSING	ADP	35.4	68.86
New	EXPEDIA INC	EXPE	35.3	60.15
6	ROCKWELL COLLINS INC	COL	35.3	63.41
5	DEVON ENERGY CORP	DVN	35.3	51.88
4	CARMAX INC	KMX	35.1	46.16
New	GAP INC	GPS	34.9	41.73
New	HUDSON CITY BANCORP INC	HCBK	34.9	9.18
2	FMC CORP	FMC	34.9	61.06
2	XILINX INC	XLNX	34.8	39.61
New	HUMANA INC	HUM	34.7	84.38
2	DAVITA HEALTHCARE PARTNER:	DVA	34.6	120.80

Earnings Torpedo

Top S&P 500 Companies By LOW EPS TORPEDO

Earnings Torpedo: I/B/E/S FY2 estimate less latest actual annual EPS divided by month-end price.





Absolute Returns	
Last 1 Month	-2.91%
Last 3 Months	3.71%
Last 6 Months	16.01%
Last 12 Months	19.71%
2013 YTD	16.01%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end May 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

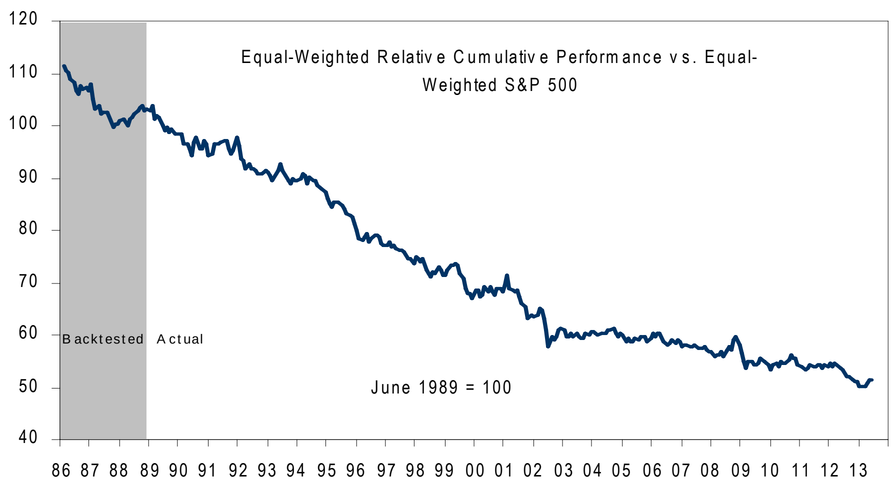
Screen for July

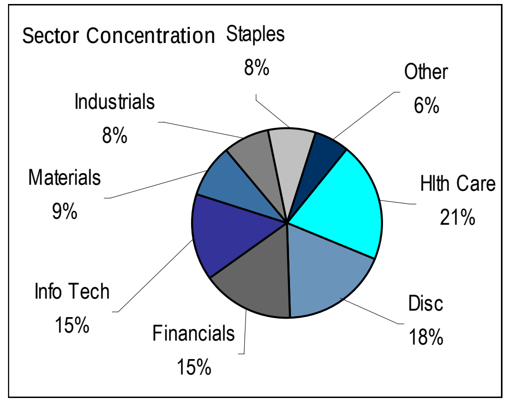
Mo. In Scrn.	Company	Ticker	EPS Torpedo	Price 06/28/2013
15	CLIFFS NATURAL RESOURCES INC	CLF	-0.101	16.25
33	APOLLO GROUP INC -CL A	APOL	-0.097	17.72
6	ABBOTT LABORATORIES	ABT	-0.081	34.88
5	PEABODY ENERGY CORP	BTU	-0.072	14.64
8	D R HORTON INC	DHI	-0.050	21.28
3	DELL INC	DELL	-0.036	13.33
19	FIRST SOLAR INC	FSLR	-0.036	44.81
6	JOY GLOBAL INC	JOY	-0.036	48.53
5	CF INDUSTRIES HOLDINGS INC	CF	-0.030	171.50
9	SEAGATE TECHNOLOGY PLC	STX	-0.028	44.83
2	NEWMONT MINING CORP	NEM	-0.026	29.95
6	NABORS INDUSTRIES LTD	NBR	-0.023	15.31
4	SAIC INC	SAI	-0.021	13.93
6	SUNTRUST BANKS INC	STI	-0.021	31.57
6	HUDSON CITY BANCORP INC	HCBK	-0.020	9.18
3	PITNEY BOWES INC	PBI	-0.020	14.68
6	PHILLIPS 66	PSX	-0.020	58.91
33	ENTERGY CORP	ETR	-0.017	69.68
39	EXELON CORP	EXC	-0.017	30.88
6	LENNAR CORP	LEN	-0.016	36.04
20	HEWLETT-PACKARD CO	HPQ	-0.016	24.80
7	ADOBE SYSTEMS INC	ADBE	-0.014	45.56
30	LILLY (ELI) & CO	LLY	-0.014	49.12
5	GARMIN LTD	GRMN	-0.013	36.17
5	HARRIS CORP	HRS	-0.012	49.25

Mo. In Scrn.	Company	Ticker	EPS Torpedo	Price 06/28/2013
3	CATERPILLAR INC	CAT	-0.011	82.49
5	FRONTIER COMMUNICATIONS COF	FTR	-0.011	4.05
9	WESTERN DIGITAL CORP	WDC	-0.010	62.09
8	BEST BUY CO INC	BBY	-0.009	27.33
10	DENBURY RESOURCES INC	DNR	-0.009	17.32
6	WESTERN UNION CO	WU	-0.009	17.11
5	EDISON INTERNATIONAL	EIX	-0.009	48.16
3	KLA-TENCOR CORP	KLAC	-0.009	55.73
29	PPL CORP	PPL	-0.009	30.26
18	FIRSTENERGY CORP	FE	-0.008	37.34
5	NVIDIA CORP	NVDA	-0.006	14.04
5	VORNADO REALTY TRUST	VNO	-0.005	82.85
4	INTEL CORP	INTC	-0.004	24.23
5	LSI CORP	LSI	-0.004	7.14
40	AMEREN CORP	AEE	-0.004	34.44
2	COVIDIEN PLC	COV	-0.003	57.16
18	PG&E CORP	PCG	-0.003	45.73
2	ABBVIE INC	ABBV	-0.003	41.34
6	NORTHROP GRUMMAN CORP	NOC	-0.003	82.80
5	RAYTHEON CO	RTN	-0.003	66.12
5	HUNTINGTON BANCSHARES	HBAN	-0.002	7.87
New	MERCK & CO	MRK	-0.002	46.45
5	CINCINNATI FINANCIAL CORP	CINF	-0.002	45.92
New	APACHE CORP	APA	-0.002	83.83
41	PUBLIC SERVICE ENTRP GRP INC	PEG	-0.001	32.66

Forecast Negative Earnings Surprise

Top S&P 500 Companies By NEGATIVE EPS SURPRISE





Absolute Returns	
Last 1 Month	-0.77%
Last 3 Months	5.92%
Last 6 Months	16.25%
Last 12 Months	20.26%
2013 YTD	16.25%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

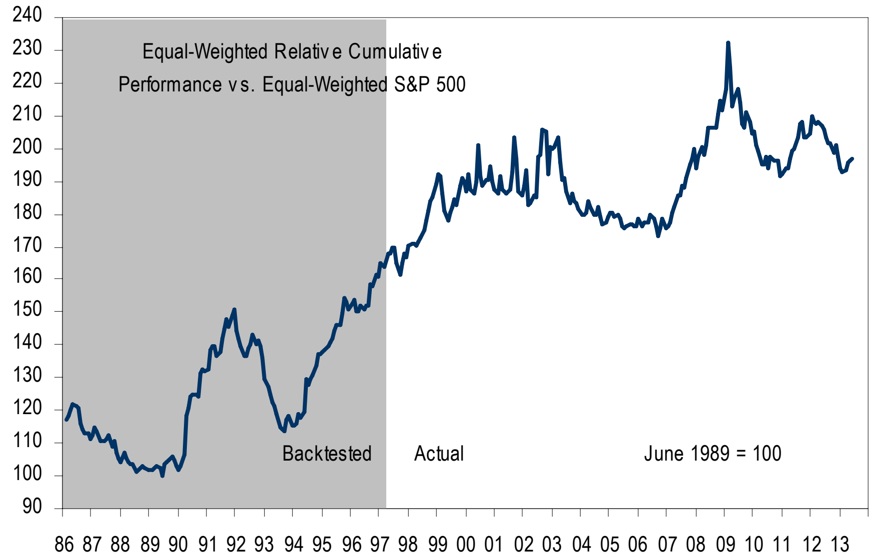
Mo. In Scrn.	Company	Ticker	ML vs. Con	Price 06/28/2013
New	ALLSTATE CORP	ALL	10	48.12
New	APOLLO GROUP INC -CL A	APOL	10	17.72
3	BARD (C.R.) INC	BCR	10	108.68
4	BEST BUY CO INC	BBY	10	27.33
2	CAMERON INTERNATIONAL CORP	CAM	10	61.16
New	CARMAX INC	KMX	10	46.16
5	CLIFFS NATURAL RESOURCES INC	CLF	10	16.25
3	COACH INC	COH	10	57.09
9	COCA-COLA CO	KO	10	40.11
2	CORNING INC	GLW	10	14.23
3	CSX CORP	CSX	10	23.19
New	FIRST SOLAR INC	FSLR	10	44.81
3	FOREST LABORATORIES -CL A	FRX	10	41.00
New	FOSSIL GROUP INC	FOSL	10	103.31
4	HOST HOTELS & RESORTS INC	HST	10	16.87
2	INTUIT INC	INTU	10	61.04
3	L BRANDS INC	LTD	10	49.25
3	L-3 COMMUNICATIONS HLDGS INC	LLL	10	85.74
4	MCKESSON CORP	MCK	10	114.50
9	NORDSTROM INC	JWN	10	59.94
12	OWENS-ILLINOIS INC	OI	10	27.79
3	PEOPLE'S UNITED FINL INC	PBCT	10	14.90
92	QUALCOMM INC	QCOM	10	61.09
9	SEALED AIR CORP	SEE	10	23.95
4	STAPLES INC	SPLS	10	15.87
3	TE CONNECTIVITY LTD	TEL	10	45.54
3	UNITED PARCEL SERVICE INC	UPS	10	86.48
5	UNUM GROUP	UNM	10	29.37
4	ACCENTURE PLC	ACN	9	71.96
New	AES CORP	AES	9	11.99
5	AGILENT TECHNOLOGIES INC	A	9	42.76
2	ALLERGAN INC	AGN	9	84.24

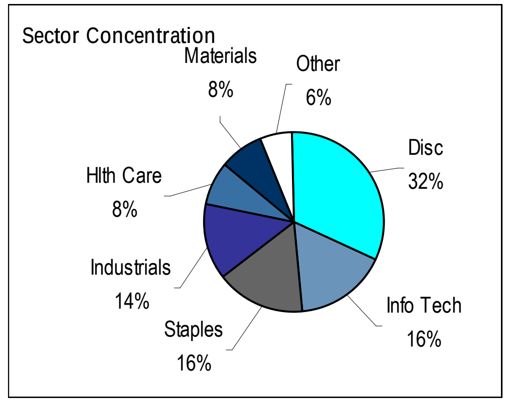
Mo. In Scrn.	Company	Ticker	ML vs. Con	Price 06/28/2013
3	AMPHENOL CORP	APH	9	77.94
4	BEMIS CO INC	BMS	9	39.14
New	BLACKROCK INC	BLK	9	256.85
6	BRISTOL-MYERS SQUIBB CO	BMY	9	44.69
New	CARDINAL HEALTH INC	CAH	9	47.20
New	CONAGRA FOODS INC	CAG	9	34.93
New	DUKE ENERGY CORP	DUK	9	67.50
2	EBAY INC	EBAY	9	51.72
New	EDISON INTERNATIONAL	EIX	9	48.16
New	FRANKLIN RESOURCES INC	BEN	9	136.02
4	GAP INC	GPS	9	41.73
New	GENERAL MILLS INC	GIS	9	48.53
3	GILEAD SCIENCES INC	GILD	9	51.27
New	GOOGLE INC	GOOG	9	880.37
8	HOSPIRA INC	HSP	9	38.31
New	INTL PAPER CO	IP	9	44.31
2	KRAFT FOODS GROUP INC	KRFT	9	55.87
3	LABORATORY CP OF AMER HLDGS	LH	9	100.10
New	MACERICH CO	MAC	9	60.97
12	MEADWESTVACO CORP	MWV	9	34.11
New	MEDTRONIC INC	MDT	9	51.47
2	MERCK & CO	MRK	9	46.45
New	NASDAQ OMX GROUP INC	NDAQ	9	32.79
New	PAYCHEX INC	PAYX	9	36.51
9	PEPSICO INC	PEP	9	81.79
6	RAYTHEON CO	RTN	9	66.12
4	ROSS STORES INC	ROST	9	64.81
9	SOUTHWEST AIRLINES	LUV	9	12.89
2	SUNTRUST BANKS INC	STI	9	31.57
3	TORCHMARK CORP	TMK	9	65.14
9	UNITEDHEALTH GROUP INC	UNH	9	65.48
New	WHIRLPOOL CORP	WHR	9	114.36
4	YUM BRANDS INC	YUM	9	69.34

One-Year Return on Equity

Top 50 S&P 500 Companies By ROE (1-Yr Average)

Return on Equity One-Year Average: Net income divided by average equity provided.





Absolute Returns	
Last 1 Month	-1.04%
Last 3 Months	4.93%
Last 6 Months	14.96%
Last 12 Months	18.84%
2013 YTD	14.96%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end April 1997. The unshaded portion represents actual performance since May 1997. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

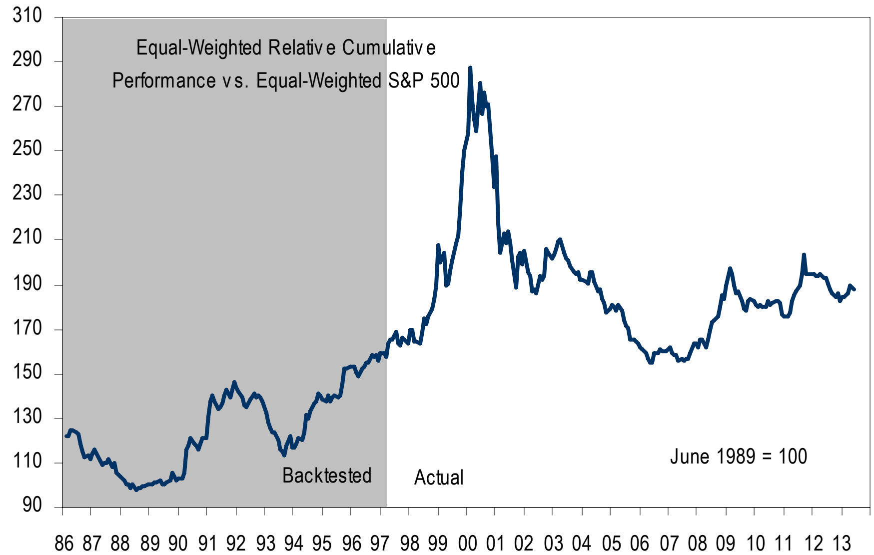
Screen for July

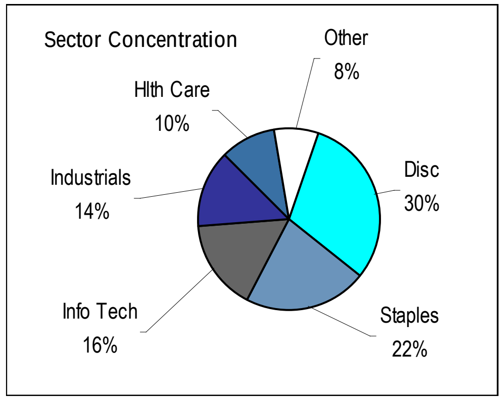
Mo. In Scrn.	Company	Ticker	ROE	Price 06/28/2013
3	PITNEY BOWES INC	PBI	444.0	14.68
75	LOCKHEED MARTIN CORP	LMT	302.4	108.46
8	MOODY'S CORP	MCO	261.2	60.93
51	ALTRIA GROUP INC	MO	120.2	34.99
183	COLGATE-PALMOLIVE CO	CL	115.2	57.29
48	WESTERN UNION CO	WU	105.1	17.11
2	REGENERON PHARMACEUTICALS	REGN	87.7	224.88
72	INTL BUSINESS MACHINES CORP	IBM	83.3	191.11
20	HERSHEY CO	HSY	71.8	89.28
12	SEAGATE TECHNOLOGY PLC	STX	71.8	44.83
2	ABBVIE INC	ABBV	71.4	41.34
24	ACCENTURE PLC	ACN	67.6	71.96
131	YUM BRANDS INC	YUM	66.6	69.34
42	BOEING CO	BA	65.4	102.44
125	CAMPBELL SOUP CO	CPB	57.4	44.79
65	TJX COMPANIES INC	TJX	54.7	50.06
106	COACH INC	COH	50.9	57.09
30	LINEAR TECHNOLOGY CORP	LLTC	50.1	36.84
96	ROCKWELL COLLINS INC	COL	49.9	63.41
75	MCGRAW HILL FINANCIAL	MHFI	49.0	53.19
4	ROSS STORES INC	ROST	46.6	64.81
7	DELPHI AUTOMOTIVE PLC	DLPH	44.3	50.69
26	PRICELINE.COM INC	PCLN	44.2	826.67
15	MASTERCARD INC	MA	43.4	574.50
18	C H ROBINSON WORLDWIDE INC	CHRW	43.1	56.31
7	DEERE & CO	DE	41.0	81.25
6	SCRIPPS NETWORKS INTERACTIVE	SNI	40.7	66.76
9	GAP INC	GPS	40.0	41.73
17	DOLLAR TREE INC	DLTR	39.5	50.84
4	SHERWIN-WILLIAMS CO	SHW	39.0	176.60
161	KELLOGG CO	K	38.0	64.23
9	MONSTER BEVERAGE CORP	MNST	37.0	60.83
4	PETSMART INC	PETM	36.9	66.99
12	NORDSTROM INC	JWN	36.8	59.94
2	MCDONALD'S CORP	MCD	36.6	99.00
5	KIMBERLY-CLARK CORP	KMB	36.1	97.14
5	TRIPADVISOR INC	TRIP	36.1	60.87
10	BLOCK H & R INC	HRB	35.9	27.75
108	WATERS CORP	WAT	35.7	100.05
24	ROCKWELL AUTOMATION	ROK	35.7	83.14
5	GOODYEAR TIRE & RUBBER CO	GT	35.6	15.30
4	KROGER CO	KR	35.5	34.54
17	CF INDUSTRIES HOLDINGS INC	CF	35.4	171.50
2	BALL CORP	BLL	34.5	41.54
2	FORD MOTOR CO	F	34.4	15.47
3	FMC CORP	FMC	34.1	61.06
67	PAYCHEX INC	PAYX	33.7	36.51
2	BAXTER INTERNATIONAL INC	BAX	33.5	69.27
42	APPLE INC	AAPL	33.3	396.53
New	MARATHON PETROLEUM CORP	MPC	33.2	71.06

Five-Year Return on Equity

Top 50 S&P 500 Companies By ROE (5-Yr Average)

Return on Equity Five-year Average: Five-year average return on equity.





Absolute Returns	
Last 1 Month	-1.66%
Last 3 Months	3.77%
Last 6 Months	18.57%
Last 12 Months	20.97%
2013 YTD	18.57%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end April 1997. The unshaded portion represents actual performance since May 1997. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

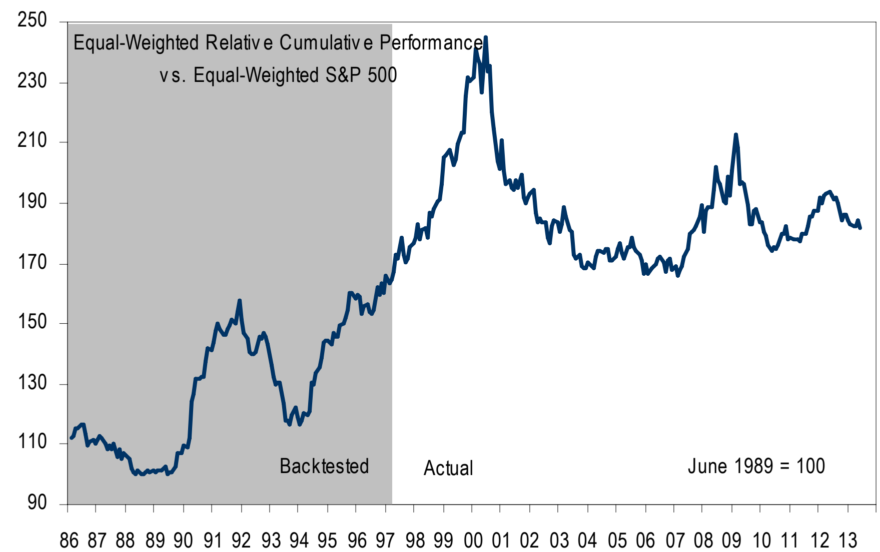
Mo. In Scrn	Company	Ticker	5-Yr Avg ROE	Price 06/28/2013
73	PITNEY BOWES INC	PBI	706.7	14.68
5	MOODY'S CORP	MCO	638.3	60.93
10	LYONDELLBASELL INDUSTRIES NV	LYB	278.1	66.26
80	AUTOZONE INC	AZO	202.8	423.69
61	LORILLARD INC	LO	199.4	43.68
64	PHILIP MORRIS INTERNATIONAL	PM	193.4	86.62
41	LOCKHEED MARTIN CORP	LMT	169.2	108.46
5	FORD MOTOR CO	F	159.1	15.47
53	BOEING CO	BA	147.0	102.44
47	LINEAR TECHNOLOGY CORP	LLTC	138.5	36.84
73	YUM BRANDS INC	YUM	133.5	69.34
126	COLGATE-PALMOLIVE CO	CL	92.9	57.29
40	ALTRIA GROUP INC	MO	80.9	34.99
73	CAMPBELL SOUP CO	CPB	76.6	44.79
76	HERSHEY CO	HSY	71.4	89.28
52	INTL BUSINESS MACHINES CORP	IBM	71.3	191.11
11	DIRECTV	DTV	71.1	61.64
24	ACCENTURE PLC	ACN	65.2	71.96
64	WINDSTREAM CORP	WIN	61.3	7.71
73	KELLOGG CO	K	57.6	64.23
148	AVON PRODUCTS	AVP	52.0	21.03
9	TENET HEALTHCARE CORP	THC	50.3	46.10
134	APOLLO GROUP INC -CL A	APOL	50.1	17.72
64	MCGRAW HILL FINANCIAL	MHFI	49.4	53.19
106	COACH INC	COH	48.9	57.09

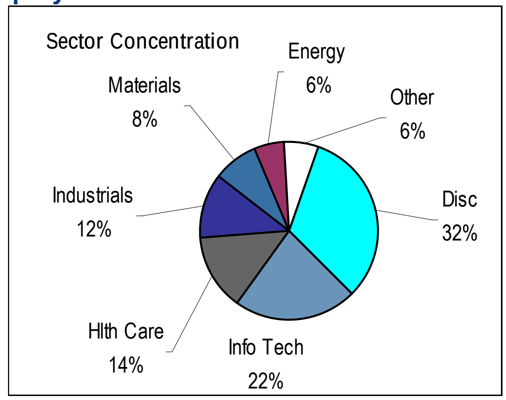
Mo. In Scrn	Company	Ticker	5-Yr Avg ROE	Price 06/28/2013
29	JOY GLOBAL INC	JOY	48.3	48.53
146	TJX COMPANIES INC	TJX	47.8	50.06
4	ABBVIE INC	ABBV	46.1	41.34
4	L BRANDS INC	LTD	45.6	49.25
28	GILEAD SCIENCES INC	GILD	45.4	51.27
73	ROCKWELL COLLINS INC	COL	42.9	63.41
28	ROSS STORES INC	ROST	42.3	64.81
15	EXPRESS SCRIPTS HOLDING CO	ESRX	41.9	61.74
47	MICROSOFT CORP	MSFT	41.4	34.55
135	WATERS CORP	WAT	41.3	100.05
16	TRIPADVISOR INC	TRIP	40.3	60.87
44	PRICELINE.COM INC	PCLN	40.0	826.67
120	DELL INC	DELL	39.1	13.33
48	PAYCHEX INC	PAYX	36.9	36.51
17	NETFLIX INC	NFLX	36.1	211.09
28	C H ROBINSON WORLDWIDE INC	CHRW	35.7	56.31
8	APPLE INC	AAPL	35.7	396.53
40	KIMBERLY-CLARK CORP	KMB	34.6	97.14
41	NORDSTROM INC	JWN	34.5	59.94
5	MCDONALD'S CORP	MCD	34.5	99.00
4	UNITED PARCEL SERVICE INC	UPS	34.1	86.48
4	VERISIGN INC	VRSN	34.0	44.66
13	MONSTER BEVERAGE CORP	MNST	33.9	60.83
112	PEPSICO INC	PEP	33.8	81.79
New	BLOCK H & R INC	HRB	33.8	27.75

One-Year Return on Equity (Adjusted for Debt)

Top 50 S&P 500 Companies By ROE (1-Yr Avg. Adj. for Debt)

Return on Equity One-Year Average (Adjusted for Debt): The ROE of companies with higher debt levels are considered lower than those of companies with lower debt levels based on their debt-to-equity ratios.





Absolute Returns	
Last 1 Month	-2.54%
Last 3 Months	2.72%
Last 6 Months	12.47%
Last 12 Months	17.31%
2013 YTD	12.47%

Source: BofA Merrill Lynch US Quantitative Strategy
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Screen for July

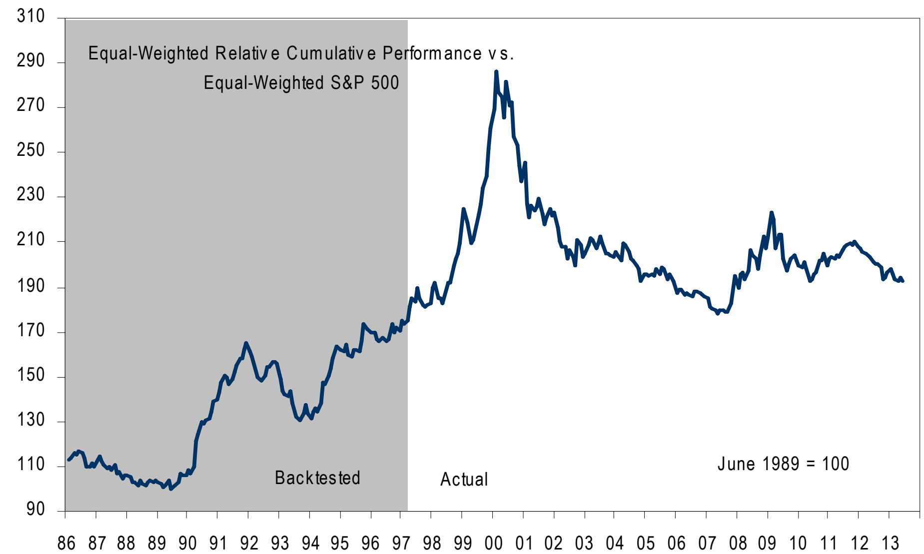
Mo. In Scrn.	Company	Ticker	Debt Adj ROE	Price 06/28/2013
2	REGENERON PHARMACEUTICALS	REGN	58.9	224.88
106	COACH INC	COH	50.9	57.09
48	MASTERCARD INC	MA	43.3	574.50
4	ROSS STORES INC	ROST	42.9	64.81
175	TJX COMPANIES INC	TJX	36.2	50.06
14	PRICELINE.COM INC	PCLN	34.4	826.67
11	DOLLAR TREE INC	DLTR	33.7	50.84
9	YAHOO INC	YHOO	30.0	25.13
77	VARIAN MEDICAL SYSTEMS INC	VAR	28.4	67.45
New	FOSSIL GROUP INC	FOSL	26.6	103.31
17	EXXON MOBIL CORP	XOM	26.5	90.35
72	APOLLO GROUP INC -CL A	APOL	26.1	17.72
18	ROBERT HALF INTL INC	RHI	26.0	33.23
2	STARBUCKS CORP	SBUX	26.0	65.51
20	CF INDUSTRIES HOLDINGS INC	CF	25.5	171.50
9	ROCKWELL COLLINS INC	COL	24.5	63.41
8	GAP INC	GPS	24.2	41.73
2	MARATHON PETROLEUM CORP	MPC	23.8	71.06
6	EDWARDS LIFESCIENCES CORP	EW	22.0	67.20
5	LILLY (ELI) & CO	LLY	21.9	49.12
26	INTUIT INC	INTU	21.8	61.04
65	AUTOMATIC DATA PROCESSING	ADP	21.4	68.86
5	TRIPADVISOR INC	TRIP	21.2	60.87
18	FAMILY DOLLAR STORES	FDO	20.9	62.31
9	PETSMART INC	PETM	20.7	66.99

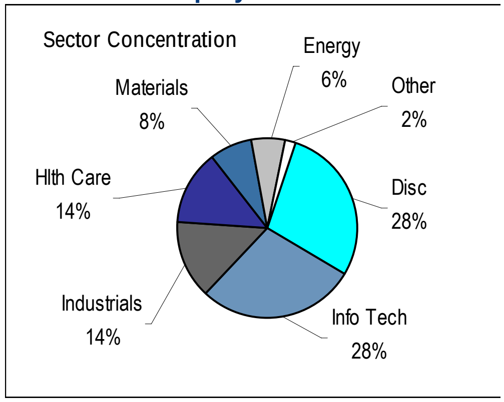
Mo. In Scrn.	Company	Ticker	Debt Adj ROE	Price 06/28/2013
11	CUMMINS INC	CMI	20.7	108.46
36	GRAINGER (W W) INC	GWW	20.7	252.18
75	NIKE INC	NKE	20.4	63.68
2	RALPH LAUREN CORP	RL	20.0	173.74
21	GENUINE PARTS CO	GPC	19.9	78.07
21	BIOGEN IDEC INC	BIIB	19.9	215.20
12	WESTERN DIGITAL CORP	WDC	19.8	62.09
27	ROCKWELL AUTOMATION	ROK	19.7	83.14
26	TERADATA CORP	TDC	19.3	50.23
48	MICROSOFT CORP	MSFT	19.1	34.55
9	3M CO	MMM	19.0	109.35
23	LAUDER (ESTEE) COS INC -CL A	EL	18.9	65.77
2	ABBOTT LABORATORIES	ABT	18.6	34.88
2	SEAGATE TECHNOLOGY PLC	STX	18.0	44.83
24	QUALCOMM INC	QCOM	17.9	61.09
30	CHEVRON CORP	CVX	17.8	118.34
5	LYONDELLBASELL INDUSTRIES NV	LYB	17.5	66.26
5	VF CORP	VFC	17.2	193.06
6	FRANKLIN RESOURCES INC	BEN	16.8	136.02
3	ALEXION PHARMACEUTICALS INC	ALXN	16.8	92.24
59	SIGMA-ALDRICH CORP	SIAL	16.7	80.42
6	MONSANTO CO	MON	16.3	98.80
8	HORMEL FOODS CORP	HRL	15.7	38.58
New	GOOGLE INC	GOOG	15.7	880.37
New	INTEL CORP	INTC	15.6	24.23

Five-Year Return on Equity (Adjusted by Debt)

Top 50 S&P 500 Companies By ROE (5-Yr Avg. Adj. for Debt)

Return on Equity Five-year Average (Adjusted for Debt): The average five year ROE of companies with higher debt levels are considered lower than those of companies with lower debt levels based on their debt-to-equity ratios.





Absolute Returns	
Last 1 Month	-1.73%
Last 3 Months	2.58%
Last 6 Months	13.43%
Last 12 Months	19.06%
2013 YTD	13.43%

ource: BofA Merrill Lynch US Quantitative Strategy

The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end April 1997. The unshaded portion represents actual performance since May 1997. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

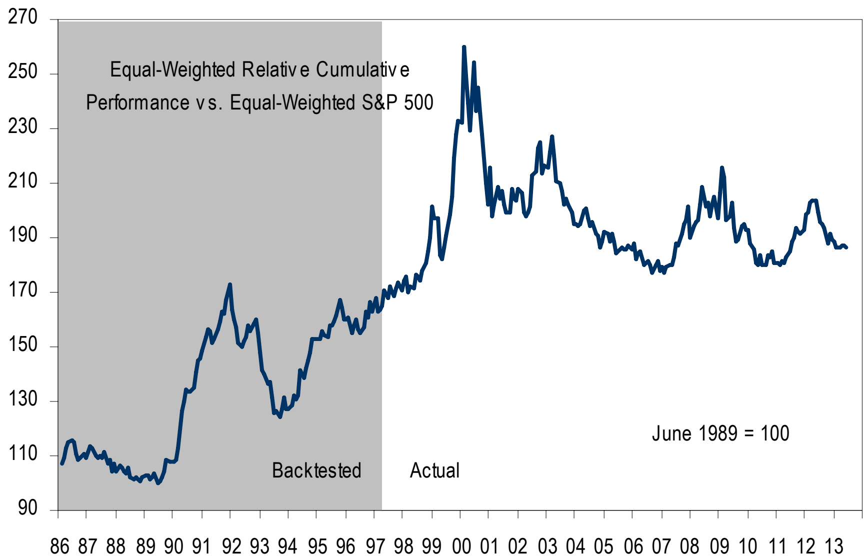
Mo. In Scrn.	Company	Ticker	Debt Adj 5Yr ROE	Price 06/28/2013
10	LYONDELLBASELL INDUSTRIES NV	LYB	175.2	66.26
106	COACH INC	COH	48.9	57.09
72	APOLLO GROUP INC -CL A	APOL	47.0	17.72
43	ROSS STORES INC	ROST	38.9	64.81
48	MICROSOFT CORP	MSFT	34.9	34.55
41	MASTERCARD INC	MA	32.7	574.50
80	TJX COMPANIES INC	TJX	31.6	50.06
14	PRICELINE.COM INC	PCLN	31.1	826.67
77	VARIAN MEDICAL SYSTEMS INC	VAR	30.3	67.45
12	ALTERA CORP	ALTR	27.8	32.99
11	JOY GLOBAL INC	JOY	26.3	48.53
113	EXXON MOBIL CORP	XOM	25.7	90.35
11	DOLLAR TREE INC	DLTR	25.2	50.84
26	TERADATA CORP	TDC	24.7	50.23
5	ALEXION PHARMACEUTICALS INC	ALXN	24.5	92.24
14	DELL INC	DELL	24.1	13.33
12	TRIPADVISOR INC	TRIP	23.7	60.87
17	CF INDUSTRIES HOLDINGS INC	CF	23.3	171.50
73	AUTOMATIC DATA PROCESSING	ADP	23.0	68.86
22	MOSAIC CO	MOS	22.1	53.81
71	CUMMINS INC	CMI	21.9	108.46
6	ROCKWELL COLLINS INC	COL	21.1	63.41
47	3M CO	MMM	21.0	109.35
35	STARBUCKS CORP	SBUX	20.7	65.51
48	WESTERN DIGITAL CORP	WDC	20.3	62.09

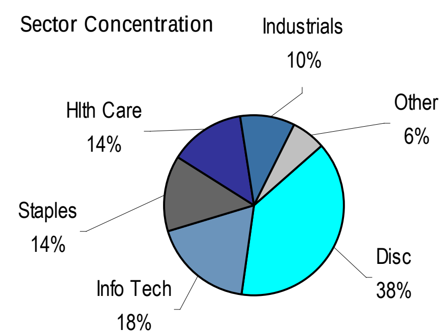
Mo. In Scrn.	Company	Ticker	Debt Adj 5Yr ROE	Price 06/28/2013
New	FOSSIL GROUP INC	FOSL	20.3	103.31
24	GRAINGER (W W) INC	GWW	20.3	252.18
2	ABBOTT LABORATORIES	ABT	20.2	34.88
9	LILLY (ELI) & CO	LLY	19.9	49.12
41	DIAMOND OFFSHRE DRILLING INC	DO	19.9	68.79
14	INTUIT INC	INTU	19.5	61.04
193	JOHNSON & JOHNSON	JNJ	19.3	85.86
124	NIKE INC	NKE	19.2	63.68
76	CHEVRON CORP	CVX	19.1	118.34
193	SIGMA-ALDRICH CORP	SIAL	19.0	80.42
3	LINEAR TECHNOLOGY CORP	LLTC	18.8	36.84
6	ROCKWELL AUTOMATION	ROK	18.1	83.14
24	GOOGLE INC	GOOG	17.8	880.37
2	RALPH LAUREN CORP	RL	17.7	173.74
41	CORNING INC	GLW	17.7	14.23
5	GENUINE PARTS CO	GPC	17.5	78.07
5	COCA-COLA CO	KO	17.4	40.11
3	EXPRESS SCRIPTS HOLDING CO	ESRX	17.4	61.74
40	TOTAL SYSTEM SERVICES INC	TSS	17.3	24.48
5	FAMILY DOLLAR STORES	FDO	17.2	62.31
2	GAP INC	GPS	16.6	41.73
4	EDWARDS LIFESCIENCES CORP	EW	16.5	67.20
21	FLIR SYSTEMS INC	FLIR	16.3	26.97
New	ANALOG DEVICES	ADI	16.2	45.06
New	ROBERT HALF INTL INC	RHI	16.2	33.23

Return on Assets

Top 50 S&P 500 Companies by ROA

Return on Assets: Net income plus interest and taxes as a percent of average total assets.





Absolute Returns	
Last 1 Month	-1.53%
Last 3 Months	3.15%
Last 6 Months	13.43%
Last 12 Months	16.26%
2013 YTD	13.43%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end April 1997. The unshaded portion represents actual performance since May 1997. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

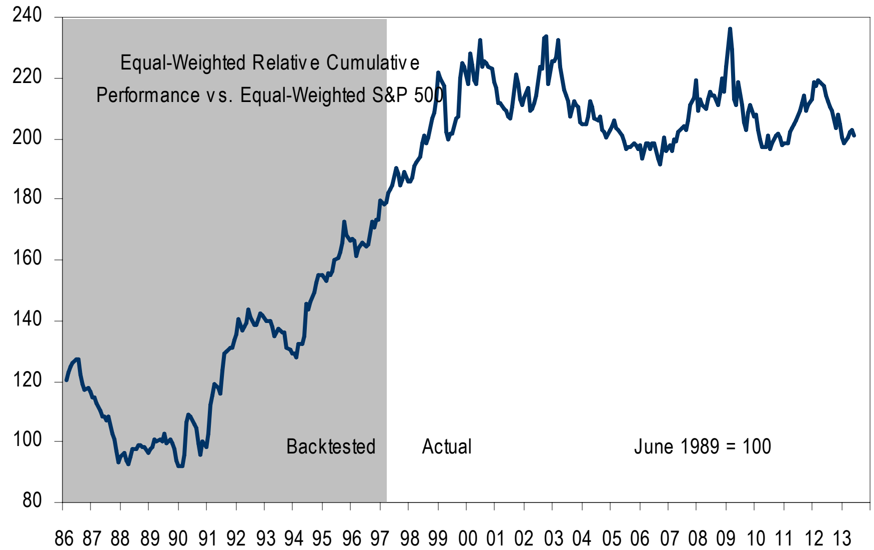
Mo. In Scrn.	Company	Ticker	ROA	Price 06/28/2013
2	REGENERON PHARMACEUTICALS	REGN	46.2	224.88
106	COACH INC	COH	34.0	57.09
61	LORILLARD INC	LO	33.9	43.68
12	SEAGATE TECHNOLOGY PLC	STX	26.6	44.83
9	YAHOO INC	YHOO	25.7	25.13
13	MONSTER BEVERAGE CORP	MNST	25.0	60.83
44	PRICELINE.COM INC	PCLN	24.8	826.67
44	MASTERCARD INC	MA	24.8	574.50
19	DOLLAR TREE INC	DLTR	24.2	50.84
77	C H ROBINSON WORLDWIDE INC	CHRW	23.8	56.31
53	PHILIP MORRIS INTERNATIONAL	PM	23.7	86.62
2	ABBVIE INC	ABBV	23.2	41.34
42	APPLE INC	AAPL	23.0	396.53
58	FASTENAL CO	FAST	22.8	45.79
4	ROSS STORES INC	ROST	22.3	64.81
42	PRICE (T. ROWE) GROUP	TROW	21.4	73.20
51	TJX COMPANIES INC	TJX	21.2	50.06
117	LINEAR TECHNOLOGY CORP	LLTC	21.1	36.84
New	FOSSIL GROUP INC	FOSL	20.9	103.31
143	MOODY'S CORP	MCO	20.4	60.93
43	MEAD JOHNSON NUTRITION CO	MJN	20.0	79.23
24	ACCENTURE PLC	ACN	19.9	71.96
17	CF INDUSTRIES HOLDINGS INC	CF	18.9	171.50
61	INTUITIVE SURGICAL INC	ISRG	18.6	506.13
5	TRIPADVISOR INC	TRIP	18.5	60.87

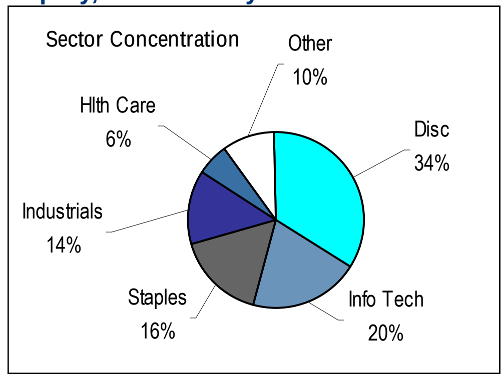
Mo. In Scrn.	Company	Ticker	ROA	Price 06/28/2013
2	STARBUCKS CORP	SBUX	18.3	65.51
27	CHIPOTLE MEXICAN GRILL INC	CMG	18.0	364.35
80	COGNIZANT TECH SOLUTIONS	CTSH	17.6	62.64
78	COLGATE-PALMOLIVE CO	CL	17.5	57.29
3	EDWARDS LIFESCIENCES CORP	EW	17.3	67.20
5	SCRIPPS NETWORKS INTERACTIVE	SNI	17.1	66.76
22	BED BATH & BEYOND INC	BBBY	17.0	70.95
6	VERISIGN INC	VRSN	16.7	44.66
11	BROWN-FORMAN -CL B	BF.B	16.6	67.55
5	GAP INC	GPS	16.5	41.73
74	WATERS CORP	WAT	16.3	100.05
2	MCDONALD'S CORP	MCD	16.2	99.00
18	YUM BRANDS INC	YUM	16.1	69.34
6	ROBERT HALF INTL INC	RHI	16.1	33.23
4	PETSMART INC	PETM	16.1	66.99
3	BIOGEN IDEC INC	BIIB	15.6	215.20
12	D R HORTON INC	DHI	15.5	21.28
60	VARIAN MEDICAL SYSTEMS INC	VAR	15.3	67.45
18	AUTOZONE INC	AZO	15.0	423.69
4	DUN & BRADSTREET CORP	DNB	15.0	97.45
15	HERSHEY CO	HSY	14.9	89.28
7	NIKE INC	NKE	14.9	63.68
11	INTUIT INC	INTU	14.8	61.04
3	GRAINGER (W W) INC	GWW	14.6	252.18
4	URBAN OUTFITTERS INC	URBN	14.6	40.22

Return on Capital

Top 50 S&P 500 Companies By ROC

Return on Capital: The sum of net income, interest expense and minority interest, as a percent of average total invested capital which is inclusive of long-term debt, preferred stock, common equity, and minority interest.





Absolute Returns	
Last 1 Month	-1.97%
Last 3 Months	3.60%
Last 6 Months	13.44%
Last 12 Months	16.64%
2013 YTD	13.44%

Source: BofA Merrill Lynch US Quantitative Strategy
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Screen for July

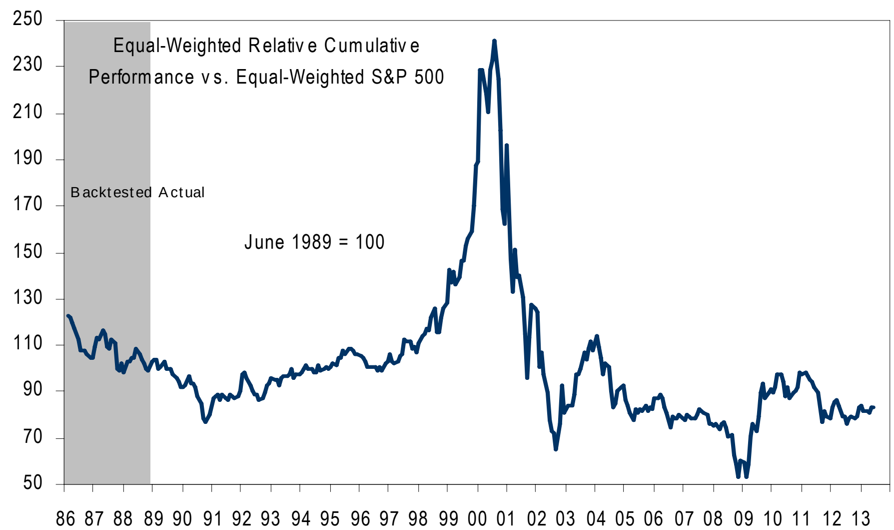
Mo. In Scrn.	Company	Ticker	Ret on Cap	Price 06/28/2013
4	DUN & BRADSTREET CORP	DNB	157%	97.45
61	LORILLARD INC	LO	122%	43.68
17	VERISIGN INC	VRSN	112%	44.66
24	ACCENTURE PLC	ACN	69%	71.96
2	REGENERON PHARMACEUTICALS	REGN	62%	224.88
64	PHILIP MORRIS INTERNATIONAL	PM	61%	86.62
9	MARRIOTT INTL INC	MAR	53%	40.37
106	COACH INC	COH	50%	57.09
57	AUTOZONE INC	AZO	49%	423.69
36	MOODY'S CORP	MCO	48%	60.93
56	LOCKHEED MARTIN CORP	LMT	44%	108.46
40	MEAD JOHNSON NUTRITION CO	MJN	44%	79.23
12	SEAGATE TECHNOLOGY PLC	STX	44%	44.83
77	C H ROBINSON WORLDWIDE INC	CHRW	43%	56.31
48	MASTERCARD INC	MA	43%	574.50
43	ROSS STORES INC	ROST	43%	64.81
60	TJX COMPANIES INC	TJX	43%	50.06
61	INTL BUSINESS MACHINES CORP	IBM	38%	191.11
6	ABBVIE INC	ABBV	37%	41.34
13	MONSTER BEVERAGE CORP	MNST	37%	60.83
17	CLOROX CO/DE	CLX	36%	83.14
19	DOLLAR TREE INC	DLTR	36%	50.84
112	MCGRAW HILL FINANCIAL	MHFI	36%	53.19
44	PRICELINE.COM INC	PCLN	36%	826.67
152	COLGATE-PALMOLIVE CO	CL	35%	57.29

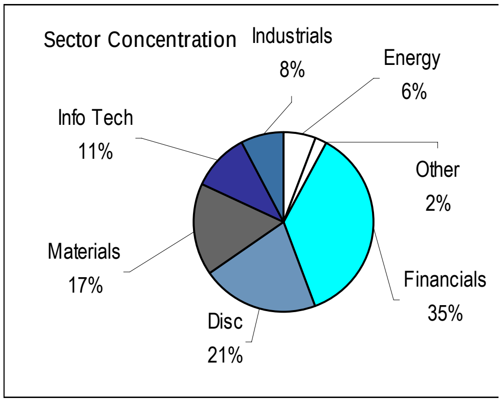
Mo. In Scrn.	Company	Ticker	Ret on Cap	Price 06/28/2013
15	ALTRIA GROUP INC	MO	33%	34.99
45	APPLE INC	AAPL	33%	396.53
71	PAYCHEX INC	PAYX	33%	36.51
124	ROCKWELL COLLINS INC	COL	33%	63.41
33	BOEING CO	BA	31%	102.44
11	DIRECTV	DTV	31%	61.64
64	YUM BRANDS INC	YUM	31%	69.34
5	HERSHEY CO	HSY	30%	89.28
9	YAHOO INC	YHOO	30%	25.13
New	FOSSIL GROUP INC	FOSL	29%	103.31
18	CF INDUSTRIES HOLDINGS INC	CF	28%	171.50
5	GAP INC	GPS	28%	41.73
60	LINEAR TECHNOLOGY CORP	LLTC	28%	36.84
4	PETSMART INC	PETM	28%	66.99
77	VARIAN MEDICAL SYSTEMS INC	VAR	28%	67.45
7	DELPHI AUTOMOTIVE PLC	DLPH	27%	50.69
12	EXXON MOBIL CORP	XOM	27%	90.35
18	FASTENAL CO	FAST	27%	45.79
4	L BRANDS INC	LTD	27%	49.25
5	SCRIPPS NETWORKS INTERACTIVE	SNI	27%	66.76
23	APOLLO GROUP INC -CL A	APOL	26%	17.72
2	MARATHON PETROLEUM CORP	MPC	26%	71.06
New	ROCKWELL AUTOMATION	ROK	26%	83.14
14	STARBUCKS CORP	SBUX	26%	65.51
New	WESTERN UNION CO	WU	26%	17.11

Beta

Top 50 S&P 500 Companies By BETA

Beta: A measure of non-diversifiable risk. It is calculated using a regression incorporating 60 months of price performance versus that of the S&P 500.





Absolute Returns	
Last 1 Month	-1.59%
Last 3 Months	4.78%
Last 6 Months	15.10%
Last 12 Months	30.27%
2013 YTD	15.10%

Source: BofA Merrill Lynch US Quantitative Strategy
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Screen for July

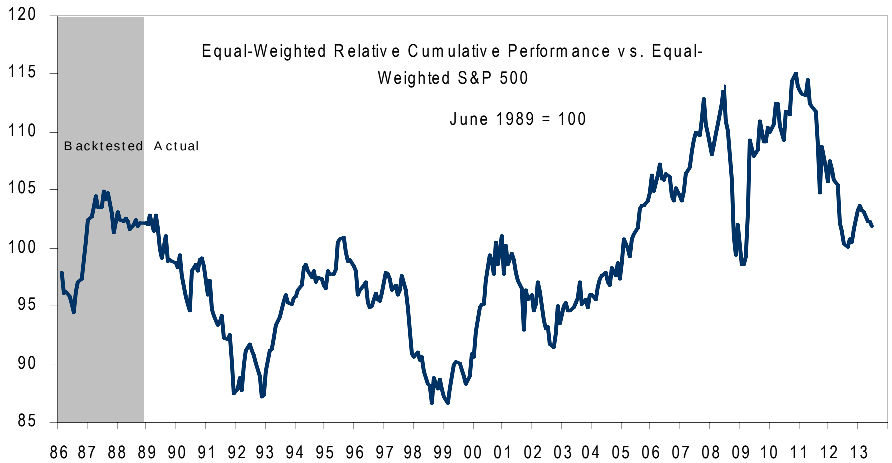
Mo. In Scrn.	Company	Ticker	Beta	Price 06/28/2013
42	AMERICAN INTERNATIONAL GROUI	AIG	2.65	44.70
56	GENWORTH FINANCIAL INC	GNW	2.47	11.41
57	HARTFORD FINANCIAL SERVICES	HIG	2.44	30.92
New	MARATHON PETROLEUM CORP	MPC	2.29	71.06
56	WYNDHAM WORLDWIDE CORP	WYN	2.29	57.23
56	PRINCIPAL FINANCIAL GRP INC	PFG	2.20	37.45
57	LINCOLN NATIONAL CORP	LNC	2.14	36.47
21	CBRE GROUP INC	CBG	2.09	23.36
61	TEXTRON INC	TXT	2.09	26.05
69	GOODYEAR TIRE & RUBBER CO	GT	2.08	15.30
26	CITIGROUP INC	C	2.06	47.97
55	JDS UNIPHASE CORP	JDSU	2.04	14.39
9	TENET HEALTHCARE CORP	THC	2.03	46.10
12	SEAGATE TECHNOLOGY PLC	STX	2.00	44.83
43	CLIFFS NATURAL RESOURCES INC	CLF	1.99	16.25
2	MACERICH CO	MAC	1.99	60.97
90	UNITED STATES STEEL CORP	X	1.99	17.53
51	GANNETT CO	GCI	1.98	24.46
56	WYNN RESORTS LTD	WYNN	1.93	127.97
52	BANK OF AMERICA CORP	BAC	1.92	12.86
57	PRUDENTIAL FINANCIAL INC	PRU	1.92	73.03
51	DOW CHEMICAL	DOW	1.91	32.17
52	MASCO CORP	MAS	1.89	19.49
51	HOST HOTELS & RESORTS INC	HST	1.88	16.87
48	CBS CORP	CBS	1.87	48.87

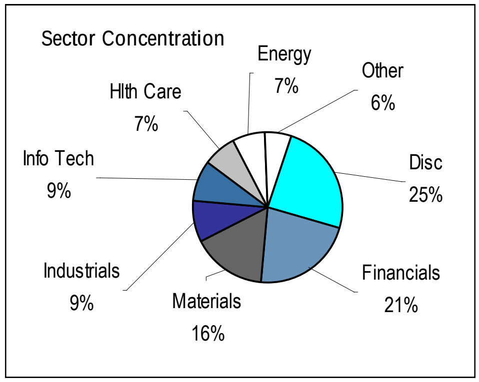
Mo. In Scrn.	Company	Ticker	Beta	Price 06/28/2013
51	INTL PAPER CO	IP	1.86	44.31
37	E TRADE FINANCIAL CORP	ETFC	1.84	12.66
51	OWENS-ILLINOIS INC	OI	1.82	27.79
35	XL GROUP PLC	XL	1.82	30.32
53	HARMAN INTERNATIONAL INDS	HAR	1.80	54.20
43	JABIL CIRCUIT INC	JBL	1.80	20.38
10	LYONDELLBASELL INDUSTRIES NV	LYB	1.80	66.26
21	NABORS INDUSTRIES LTD	NBR	1.79	15.31
41	STARWOOD HOTELS&RESORTS WF	HOT	1.79	63.19
52	HARLEY-DAVIDSON INC	HOG	1.78	54.82
57	ALCOA INC	AA	1.77	7.82
51	FORD MOTOR CO	F	1.75	15.47
19	WHIRLPOOL CORP	WHR	1.72	114.36
52	FIFTH THIRD BANCORP	FITB	1.71	18.05
53	AMERIPRISE FINANCIAL INC	AMP	1.70	80.88
32	EASTMAN CHEMICAL CO	EMN	1.70	70.01
23	METLIFE INC	MET	1.70	45.76
54	APARTMENT INVST & MGMT CO	AIV	1.69	30.04
62	AUTODESK INC	ADSK	1.69	33.94
22	FREEPORT-MCMORAN COP&GOLD	FCX	1.68	27.61
25	PROLOGIS INC	PLD	1.68	37.72
21	TE CONNECTIVITY LTD	TEL	1.68	45.54
41	CUMMINS INC	CMI	1.62	108.46
New	AFLAC INC	AFL	1.61	58.12
7	CATERPILLAR INC	CAT	1.61	82.49

Variability of Earnings

Top S&P 500 Companies By HIGH VARIABILITY OF EPS

Variability of EPS: The degree of variability in quarterly EPS over the past 5 years. Stocks are ranked from 10 to 1 with 10 being the most variable.





Absolute Returns	
Last 1 Month	-1.70%
Last 3 Months	1.74%
Last 6 Months	13.65%
Last 12 Months	24.59%
2013 YTD	13.65%

Source: BofA Merrill Lynch US Quantitative Strategy
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Screen for July

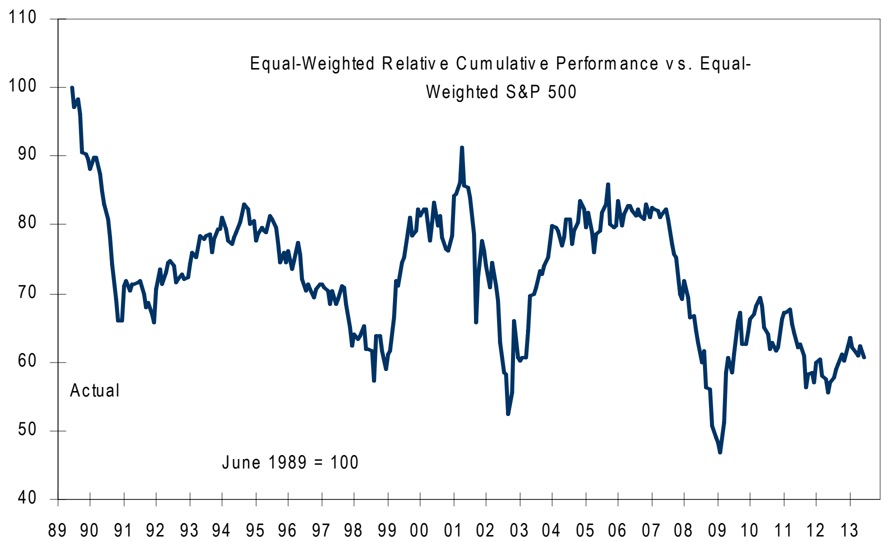
Mo. In Scrn	Company	Ticker	EPS Risk	Price 06/28/2013
12	ALEXION PHARMACEUTICALS INC	ALXN	10	92.24
57	ALLEGHENY TECHNOLOGIES INC	ATI	10	26.31
9	AMAZON.COM INC	AMZN	10	277.69
51	BROADCOM CORP	BRCM	10	33.80
54	CAPITAL ONE FINANCIAL CORP	COF	10	62.81
7	DELPHI AUTOMOTIVE PLC	DLPH	10	50.69
38	DENBURY RESOURCES INC	DNR	10	17.32
29	EOG RESOURCES INC	EOG	10	131.68
39	HARLEY-DAVIDSON INC	HOG	10	54.82
93	KROGER CO	KR	10	34.54
13	LAM RESEARCH CORP	LRCX	10	44.34
42	LIFE TECHNOLOGIES CORP	LIFE	10	74.00
38	MARSH & MCLENNAN COS	MMC	10	39.92
69	MEADWESTVACO CORP	MWV	10	34.11
48	METLIFE INC	MET	10	45.76
48	NABORS INDUSTRIES LTD	NBR	10	15.31
6	NETFLIX INC	NFLX	10	211.09
60	NEWMONT MINING CORP	NEM	10	29.95
36	NUCOR CORP	NUE	10	43.32
27	PACCAR INC	PCAR	10	53.66
17	PERKINELMER INC	PKI	10	32.50
57	PROGRESSIVE CORP-OHIO	PGR	10	25.42
10	SEALED AIR CORP	SEE	10	23.95
8	STAPLES INC	SPLS	10	15.87
39	STARWOOD HOTELS&RESORTS WR	HOT	10	63.19
8	TENET HEALTHCARE CORP	THC	10	46.10
66	UNITED PARCEL SERVICE INC	UPS	10	86.48
50	WASHINGTON POST -CL B	WPO	10	483.77
29	WYNN RESORTS LTD	WYNN	10	127.97
47	YAHOO INC	YHOO	10	25.13
5	ABERCROMBIE & FITCH -CL A	ANF	9	45.25
57	ALLSTATE CORP	ALL	9	48.12
20	AMEREN CORP	AEE	9	34.44

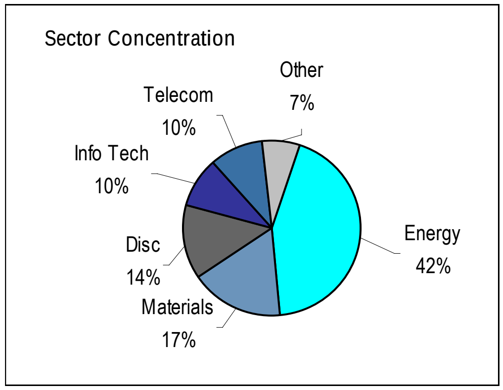
Mo. In Scrn	Company	Ticker	EPS Risk	Price 06/28/2013
41	AMERIPRISE FINANCIAL INC	AMP	9	80.88
25	AUTODESK INC	ADSK	9	33.94
10	BEAM INC	BEAM	9	63.11
19	BORGWARNER INC	BWA	9	86.15
57	BOSTON PROPERTIES INC	BXP	9	105.47
21	CBRE GROUP INC	CBG	9	23.36
20	CBS CORP	CBS	9	48.87
53	CF INDUSTRIES HOLDINGS INC	CF	9	171.50
21	CLIFFS NATURAL RESOURCES INC	CLF	9	16.25
34	DOW CHEMICAL	DOW	9	32.17
49	FEDEX CORP	FDX	9	98.58
3	GOLDMAN SACHS GROUP INC	GS	9	151.25
27	HESS CORP	HES	9	66.49
21	INTL PAPER CO	IP	9	44.31
54	JOHNSON CONTROLS INC	JCI	9	35.79
54	JPMORGAN CHASE & CO	JPM	9	52.79
New	KIMCO REALTY CORP	KIM	9	21.43
4	L BRANDS INC	LTD	9	49.25
2	MACERICH CO	MAC	9	60.97
9	MARRIOTT INTL INC	MAR	9	40.37
29	MERCK & CO	MRK	9	46.45
22	MOSAIC CO	MOS	9	53.81
34	NETAPP INC	NTAP	9	37.78
3	NOBLE ENERGY INC	NBL	9	60.04
34	NRG ENERGY INC	NRG	9	26.70
30	OWENS-ILLINOIS INC	OI	9	27.79
8	PENTAIR LTD	PNR	9	57.69
5	PRUDENTIAL FINANCIAL INC	PRU	9	73.03
5	PVH CORP	PVH	9	125.05
21	ROBERT HALF INTL INC	RHI	9	33.23
8	SCRIPPS NETWORKS INTERACTIVE	SNI	9	66.76
12	SEAGATE TECHNOLOGY PLC	STX	9	44.83
51	SOUTHWEST AIRLINES	LUV	9	12.89

Estimate Dispersion

Top S&P 500 Companies By EPS ESTIMATE DISPERSION

EPS Estimate Dispersion: The coefficient of variation among I/B/E/S FY2 ESTIMATES. Presented as a decile rank.





Absolute Returns	
Last 1 Month	-3.89%
Last 3 Months	1.65%
Last 6 Months	12.28%
Last 12 Months	32.18%
2013 YTD	12.28%

Source: BofA Merrill Lynch US Quantitative Strategy
The performance chart represents actual returns since July 1989. There is no back tested performance.

Screen for July

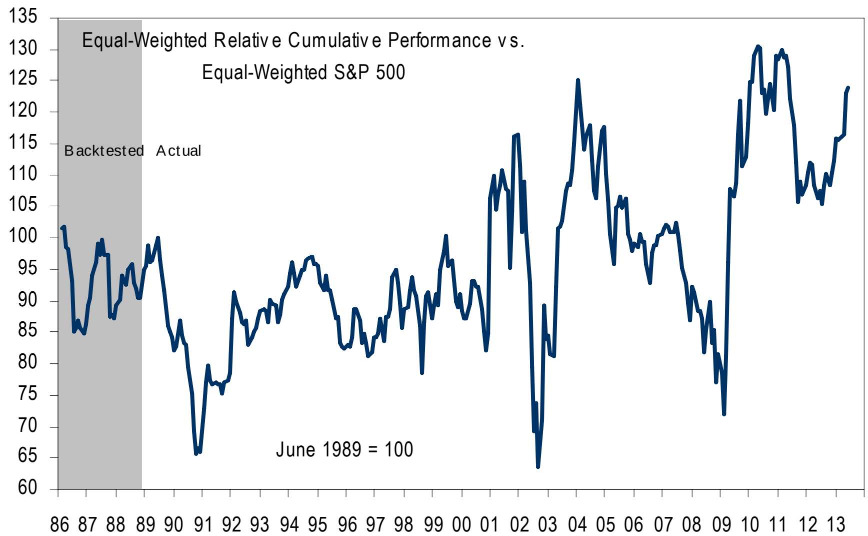
Mo. In Scrn	Company	Ticker	EPS Est. Dispers.	Price 06/28/2013
12	ADVANCED MICRO DEVICES	AMD	10	4.08
102	ALCOA INC	AA	10	7.82
24	AMAZON.COM INC	AMZN	10	277.69
19	CABLEVISION SYS CORP -CL A	CVC	10	16.82
14	CLIFFS NATURAL RESOURCES INC	CLF	10	16.25
21	NETFLIX INC	NFLX	10	211.09
5	NEWMONT MINING CORP	NEM	10	29.95
12	PEABODY ENERGY CORP	BTU	10	14.64
14	PENNEY (J C) CO	JCP	10	17.08
66	SPRINT NEXTEL CORP	S	10	7.02
57	UNITED STATES STEEL CORP	X	10	17.53
18	WPX ENERGY INC	WPX	10	18.94
9	ALLEGHENY TECHNOLOGIES INC	ATI	9	26.31
89	ANADARKO PETROLEUM CORP	APC	9	85.93
2	APACHE CORP	APA	9	83.83
2	APOLLO GROUP INC -CL A	APOL	9	17.72
18	CHESAPEAKE ENERGY CORP	CHK	9	20.38
9	CROWN CASTLE INTL CORP	CCI	9	72.39
2	DELL INC	DELL	9	13.33
15	DENBURY RESOURCES INC	DNR	9	17.32
New	DEVON ENERGY CORP	DVN	9	51.88

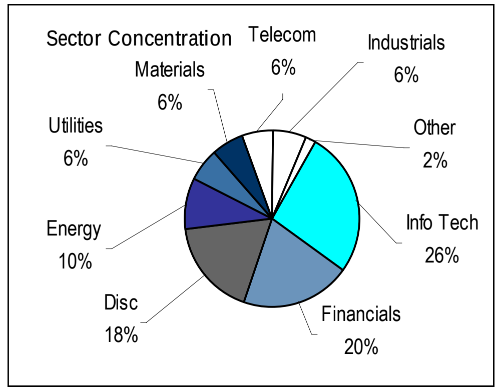
Mo. In Scrn.	Company	Ticker	EPS Est. Dispers.	Price 06/28/2013
4	FOREST LABORATORIES -CL A	FRX	9	41.00
3	FREEPORT-MCMORAN COP&GOLD	FCX	9	27.61
5	FRONTIER COMMUNICATIONS COF	FTR	9	4.05
27	HESS CORP	HES	9	66.49
3	KINDER MORGAN INC	KMI	9	38.15
5	MARATHON OIL CORP	MRO	9	34.58
6	MARATHON PETROLEUM CORP	MPC	9	71.06
171	MICRON TECHNOLOGY INC	MU	9	14.33
5	MURPHY OIL CORP	MUR	9	60.89
2	NABORS INDUSTRIES LTD	NBR	9	15.31
26	NEWFIELD EXPLORATION CO	NFX	9	23.89
41	NRG ENERGY INC	NRG	9	26.70
5	NVIDIA CORP	NVDA	9	14.04
2	PIONEER NATURAL RESOURCES C	PXD	9	144.75
3	PULTEGROUP INC	PHM	9	18.97
8	QEP RESOURCES INC	QEP	9	27.78
52	RANGE RESOURCES CORP	RRC	9	77.32
2	REGENERON PHARMACEUTICALS	REGN	9	224.88
6	VALERO ENERGY CORP	VLO	9	34.77
50	VULCAN MATERIALS CO	VMC	9	48.41
4	WINDSTREAM CORP	WIN	9	7.71

Price

Top 50 S&P 500 Companies By LOW PRICE

Low Price: Absolute price level of the stock at month-end.





Absolute Returns	
Last 1 Month	-0.51%
Last 3 Months	9.81%
Last 6 Months	27.46%
Last 12 Months	43.37%
2013 YTD	27.46%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

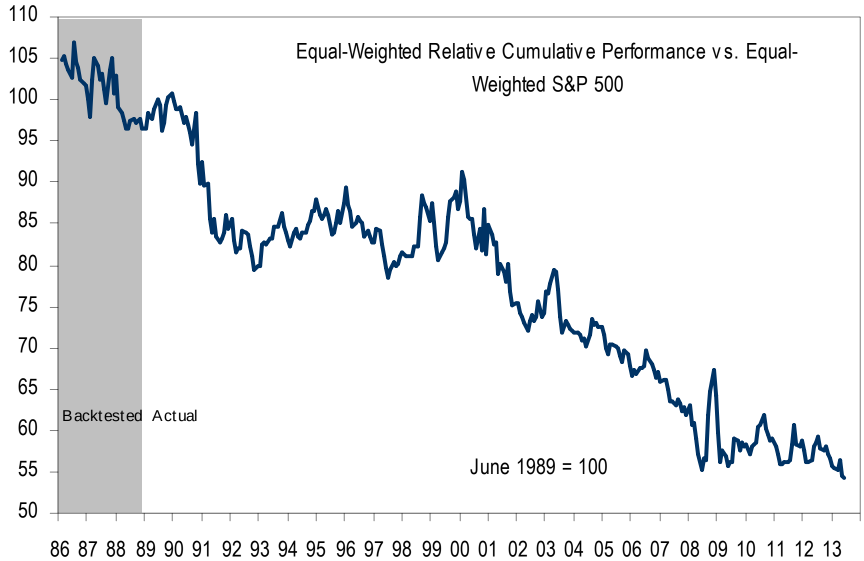
Screen for July

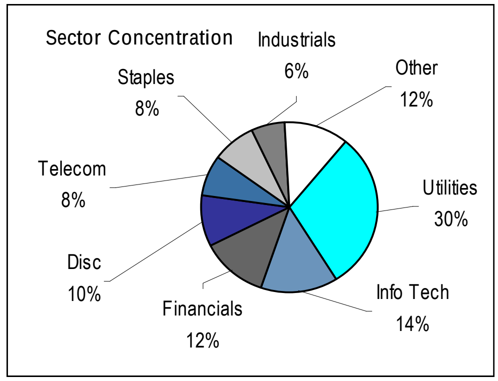
Mo. In Scrn.	Company	Ticker	Price 06/28/2013
51	FRONTIER COMMUNICATIONS CO	FTR	4.05
79	ADVANCED MICRO DEVICES	AMD	4.08
71	SPRINT NEXTEL CORP	S	7.02
135	LSI CORP	LSI	7.14
51	WINDSTREAM CORP	WIN	7.71
27	ALCOA INC	AA	7.82
55	HUNTINGTON BANCSHARES	HBAN	7.87
59	XEROX CORP	XRX	9.07
34	HUDSON CITY BANCORP INC	HCBK	9.18
48	BOSTON SCIENTIFIC CORP	BSX	9.27
55	REGIONS FINANCIAL CORP	RF	9.53
51	KEYCORP	KEY	11.04
35	GENWORTH FINANCIAL INC	GNW	11.41
43	AES CORP	AES	11.99
29	E TRADE FINANCIAL CORP	ETFC	12.66
33	BANK OF AMERICA CORP	BAC	12.86
32	SOUTHWEST AIRLINES	LUV	12.89
16	DELL INC	DELL	13.33
22	SAIC INC	SAI	13.93
19	NVIDIA CORP	NVDA	14.04
22	CORNING INC	GLW	14.23
108	MICRON TECHNOLOGY INC	MU	14.33
25	JDS UNIPHASE CORP	JDSU	14.39
110	INTERPUBLIC GROUP OF COS	IPG	14.55
2	PEABODY ENERGY CORP	BTU	14.64
14	PITNEY BOWES INC	PBI	14.68
33	PEOPLE'S UNITED FINL INC	PBCT	14.90
42	APPLIED MATERIALS INC	AMAT	14.92
23	GOODYEAR TIRE & RUBBER CO	GT	15.30
14	NABORS INDUSTRIES LTD	NBR	15.31
30	FORD MOTOR CO	F	15.47
21	STAPLES INC	SPLS	15.87
2	CLIFFS NATURAL RESOURCES INC	CLF	16.25
12	INTL GAME TECHNOLOGY	IGT	16.71
8	CABLEVISION SYS CORP -CL A	CVC	16.82
9	HOST HOTELS & RESORTS INC	HST	16.87
5	PENNEY (J C) CO	JCP	17.08
9	WESTERN UNION CO	WU	17.11
8	TECO ENERGY INC	TE	17.19
9	DENBURY RESOURCES INC	DNR	17.32
3	UNITED STATES STEEL CORP	X	17.53
10	TERADYNE INC	TER	17.57
5	APOLLO GROUP INC -CL A	APOL	17.72
36	FIFTH THIRD BANCORP	FITB	18.05
8	WPX ENERGY INC	WPX	18.94
New	PULTEGROUP INC	PHM	18.97
4	JUNIPER NETWORKS INC	JNPR	19.31
New	MASCO CORP	MAS	19.49
2	PEPCO HOLDINGS INC	POM	20.16
New	CHESAPEAKE ENERGY CORP	CHK	20.38

Neglect-Institutional Ownership

Top 50 S&P 500 Companies By Low Institutional holdings

Neglect: Those companies with the lowest proportions of float-adjusted shares held by institutional owners are considered more neglected.





Absolute Returns	
Last 1 Month	-1.50%
Last 3 Months	1.36%
Last 6 Months	10.67%
Last 12 Months	15.39%
2013 YTD	10.67%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

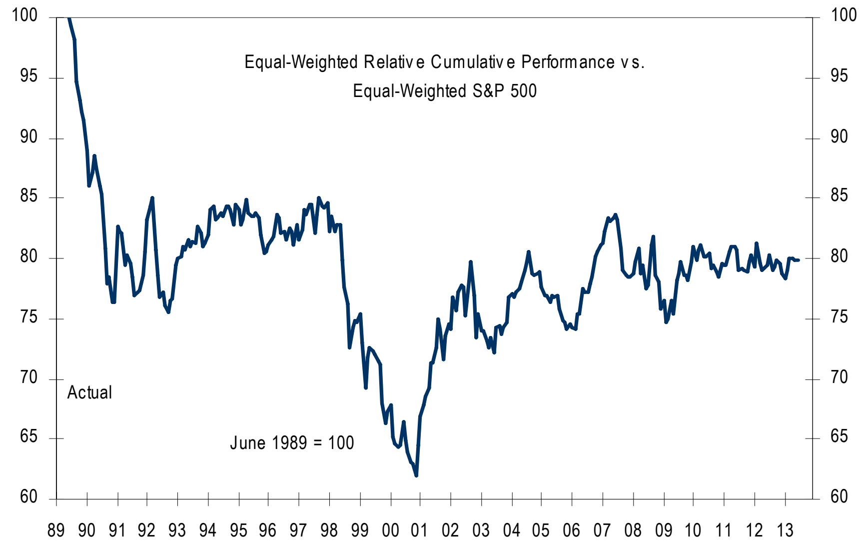
Mo. In Scrn.	Company	Ticker	% Held By Inst	Price 06/28/2013
New	ZOETIS INC	ZTS	20.3%	30.89
New	GARMIN LTD	GRMN	41.3%	36.17
41	BERKSHIRE HATHAWAY	BRK.B	41.8%	111.92
New	CERNER CORP	CERN	42.4%	48.05
8	ADVANCED MICRO DEVICES	AMD	44.2%	4.08
148	CONSOLIDATED EDISON INC	ED	45.6%	58.31
203	SOUTHERN CO	SO	46.3%	44.13
54	SCANA CORP	SCG	47.1%	49.10
4	MOLEX INC	MOLX	47.3%	29.34
2	L BRANDS INC	LTD	49.6%	49.25
26	BROWN-FORMAN -CL B	BF.B	49.7%	67.55
42	WINDSTREAM CORP	WIN	50.1%	7.71
100	EXXON MOBIL CORP	XOM	50.9%	90.35
77	INTEGRYS ENERGY GROUP INC	TEG	52.9%	58.53
31	FORD MOTOR CO	F	53.0%	15.47
12	DUKE ENERGY CORP	DUK	54.2%	67.50
77	AT&T INC	T	56.4%	35.40
23	ALCOA INC	AA	56.6%	7.82
100	GENERAL ELECTRIC CO	GE	56.9%	23.19
68	PEPCO HOLDINGS INC	POM	57.2%	20.16
68	VERIZON COMMUNICATIONS INC	VZ	57.8%	50.34
187	BB&T CORP	BBT	57.9%	33.88
68	DOMINION RESOURCES INC	D	58.8%	56.82
32	BANK OF AMERICA CORP	BAC	59.0%	12.86
37	ALTRIA GROUP INC	MO	60.6%	34.99

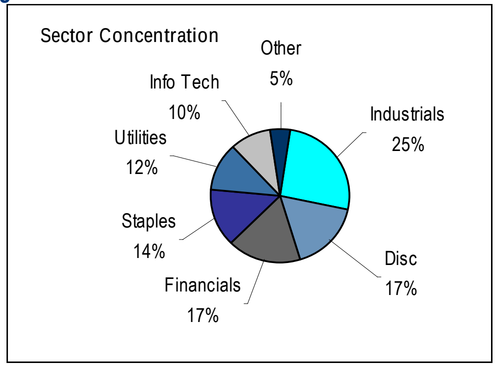
Mo. In Scrn.	Company	Ticker	% Held By Inst	Price 06/28/2013
84	PROCTER & GAMBLE CO	PG	60.8%	76.99
47	PACCAR INC	PCAR	61.0%	53.66
71	DTE ENERGY CO	DTE	61.0%	67.01
63	AMEREN CORP	AEE	61.3%	34.44
39	WAL-MART STORES INC	WMT	61.7%	74.49
New	CINCINNATI FINANCIAL CORP	CINF	62.5%	45.92
5	APPLE INC	AAPL	62.9%	396.53
New	FIRST SOLAR INC	FSLR	63.4%	44.81
2	ORACLE CORP	ORCL	63.6%	30.71
32	INTEL CORP	INTC	63.6%	24.23
60	FRONTIER COMMUNICATIONS COF	FTR	63.7%	4.05
19	AGL RESOURCES INC	GAS	63.9%	42.86
10	CATERPILLAR INC	CAT	64.2%	82.49
17	AMERICAN ELECTRIC POWER CO	AEP	64.5%	44.78
47	INTL BUSINESS MACHINES CORP	IBM	64.9%	191.11
47	PUBLIC SERVICE ENTRP GRP INC	PEG	65.0%	32.66
141	TECO ENERGY INC	TE	65.1%	17.19
3	AFLAC INC	AFL	65.2%	58.12
14	EXELON CORP	EXC	65.2%	30.88
12	PRUDENTIAL FINANCIAL INC	PRU	65.3%	73.03
2	UNITED STATES STEEL CORP	X	65.4%	17.53
8	MCDONALD'S CORP	MCD	65.5%	99.00
4	DISNEY (WALT) CO	DIS	65.8%	63.15
12	CHEVRON CORP	CVX	66.0%	118.34
New	XCEL ENERGY INC	XEL	66.5%	28.34

Neglect-Analyst Coverage

Top 50 S&P 500 Companies By Low Analyst Coverage

Neglect: Those companies with the lowest number of analysts submitting ratings to FirstCall.





Absolute Returns	
Last 1 Month	-1.10%
Last 3 Months	2.81%
Last 6 Months	16.97%
Last 12 Months	24.97%
2013 YTD	16.97%

Source: BofA Merrill Lynch US Quantitative Strategy
The performance chart represents actual returns since July 1989. There is no back tested performance.

Screen for July

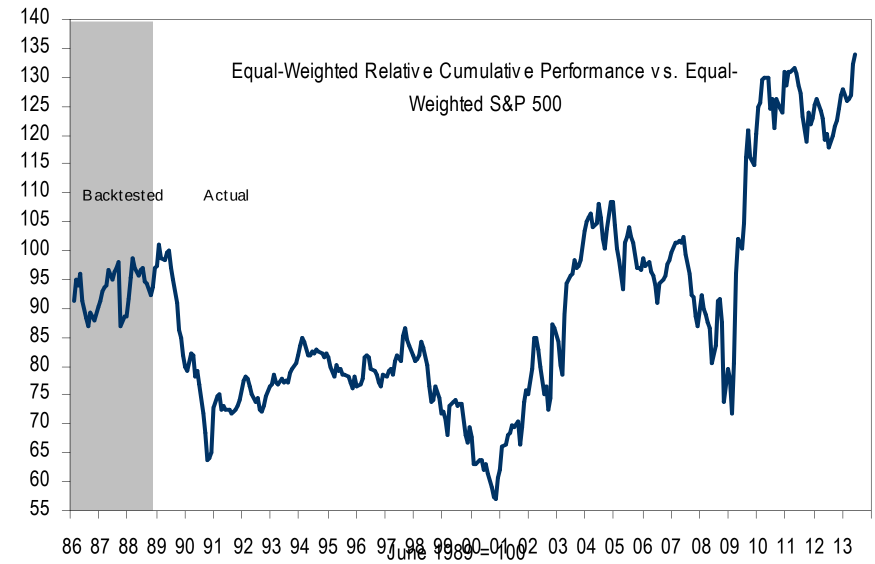
Mo. In Scrn.	Company	Ticker	No. of Analyst Coverage	Price 06/28/2013
129	LOEWS CORP	L	4	44.40
112	PITNEY BOWES INC	PBI	5	14.68
129	SNAP-ON INC	SNA	5	89.38
101	WHIRLPOOL CORP	WHR	5	114.36
21	CBRE GROUP INC	CBG	6	23.36
91	LEGGETT & PLATT INC	LEG	6	31.09
48	AVERY DENNISON CORP	AVY	8	42.76
70	CINCINNATI FINANCIAL CORP	CINF	8	45.92
31	DUN & BRADSTREET CORP	DNB	8	97.45
66	HARMAN INTERNATIONAL INDS	HAR	8	54.20
53	SLM CORP	SLM	8	22.86
98	AES CORP	AES	9	11.99
19	AGL RESOURCES INC	GAS	9	42.86
45	BLOCK H & R INC	HRB	9	27.75
15	HORMEL FOODS CORP	HRL	9	38.58
77	INTEGRYS ENERGY GROUP INC	TEG	9	58.53
12	INTL FLAVORS & FRAGRANCES	IFF	9	75.16
31	MCGRAW HILL FINANCIAL	MHFI	9	53.19
65	MOODY'S CORP	MCO	9	60.93
9	ADT CORP (THE)	ADT	10	39.85
31	GOODYEAR TIRE & RUBBER CO	GT	10	15.30

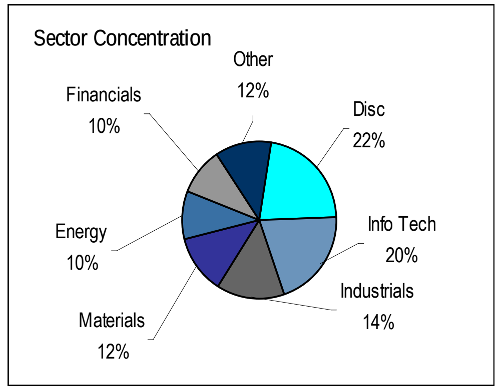
Mo. In Scrn.	Company	Ticker	No. of Analyst Coverage	Price 06/28/2013
5	HUDSON CITY BANCORP INC	HCBK	10	9.18
13	IRON MOUNTAIN INC	IRM	10	26.61
22	MOLSON COORS BREWING CO	TAP	10	47.86
11	PALL CORP	PLL	10	66.43
7	REPUBLIC SERVICES INC	RSG	10	33.94
12	ROPER INDUSTRIES INC/DE	ROP	10	124.22
2	SYSCO CORP	SYY	10	34.16
7	TE CONNECTIVITY LTD	TEL	10	45.54
5	FLIR SYSTEMS INC	FLIR	11	26.97
3	GANNETT CO	GCI	11	24.46
7	GENUINE PARTS CO	GPC	11	78.07
7	HARRIS CORP	HRS	11	49.25
7	LORILLARD INC	LO	11	43.68
13	MONSTER BEVERAGE CORP	MNST	11	60.83
38	ONEOK INC	OKE	11	41.31
3	ROBERT HALF INTL INC	RHI	11	33.23
7	SCANA CORP	SCG	11	49.10
4	TYSON FOODS INC -CL A	TSN	11	25.68
6	WASTE MANAGEMENT INC	WM	11	40.33
18	WPX ENERGY INC	WPX	11	18.94
14	XEROX CORP	XRX	11	9.07

Size

Top 50 S&P 500 Companies By SMALL SIZE

Firm Size: Month-end market value.





Absolute Returns	
Last 1 Month	0.11%
Last 3 Months	9.39%
Last 6 Months	21.65%
Last 12 Months	38.56%
2013 YTD	21.65%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for July

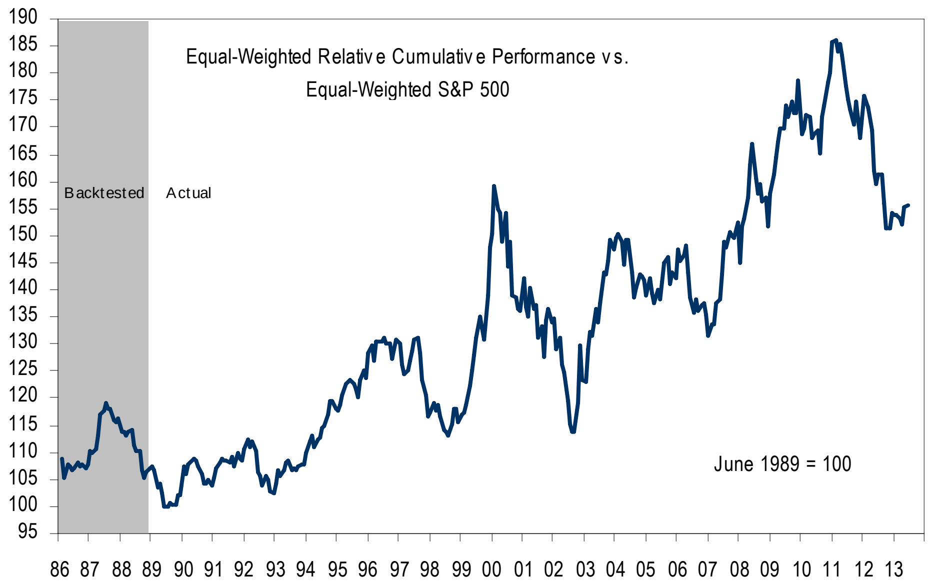
Mo. In Scrn.	Company	Ticker	Market Value	Price 06/28/2013
12	AUTONATION INC	AN	1684	43.39
12	APOLLO GROUP INC -CL A	APOL	1776	17.72
37	WASHINGTON POST -CL B	WPO	2177	483.77
10	PENNEY (J C) CO	JCP	2446	17.08
12	ADVANCED MICRO DEVICES	AMD	2478	4.08
5	CLIFFS NATURAL RESOURCES INC	CLF	2488	16.25
14	UNITED STATES STEEL CORP	X	2530	17.53
14	ALLEGHENY TECHNOLOGIES INC	ATI	2841	26.31
18	PITNEY BOWES INC	PBI	2958	14.68
34	PATTERSON COMPANIES INC	PDCO	3143	37.60
53	RYDER SYSTEM INC	R	3155	60.79
9	NEWFIELD EXPLORATION CO	NFX	3235	23.89
103	TERADYNE INC	TER	3349	17.57
25	JDS UNIPHASE CORP	JDSU	3404	14.39
20	LEGG MASON INC	LM	3458	31.01
10	TECO ENERGY INC	TE	3515	17.19
14	ABERCROMBIE & FITCH -CL A	ANF	3543	45.25
23	E TRADE FINANCIAL CORP	ETFC	3631	12.66
52	PERKINELMER INC	PKI	3637	32.50
19	CABLEVISION SYS CORP -CL A	CVC	3638	16.82
66	HARMAN INTERNATIONAL INDS	HAR	3686	54.20
18	GOODYEAR TIRE & RUBBER CO	GT	3756	15.30
10	JABIL CIRCUIT INC	JBL	3758	20.38
18	WPX ENERGY INC	WPX	3792	18.94
15	FLIR SYSTEMS INC	FLIR	3827	26.97

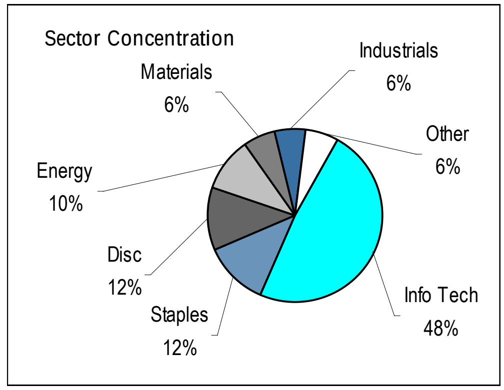
Mo. In Scrn.	Company	Ticker	Market Value	Price 06/28/2013
6	NASDAQ OMX GROUP INC	NDAQ	3859	32.79
11	DUN & BRADSTREET CORP	DNB	3888	97.45
16	ASSURANT INC	AIZ	3920	50.91
9	LSI CORP	LSI	3924	7.14
9	TOTAL SYSTEM SERVICES INC	TSS	3936	24.48
New	PEABODY ENERGY CORP	BTU	3947	14.64
12	SAIC INC	SAI	3960	13.93
21	BEMIS CO INC	BMS	4028	39.14
5	FRONTIER COMMUNICATIONS COF	FTR	4041	4.05
11	MOLEX INC	MOLX	4067	29.34
7	ROWAN COMPANIES PLC	RDC	4231	34.07
24	AVERY DENNISON CORP	AVY	4259	42.76
New	FIRST SOLAR INC	FSLR	4318	44.81
12	INTL GAME TECHNOLOGY	IGT	4351	16.71
2	APARTMENT INVST & MGMT CO	AIV	4383	30.04
4	URBAN OUTFITTERS INC	URBN	4432	40.22
2	LEGGETT & PLATT INC	LEG	4443	31.09
New	IRON MOUNTAIN INC	IRM	4465	26.61
3	NABORS INDUSTRIES LTD	NBR	4510	15.31
2	WINDSTREAM CORP	WIN	4570	7.71
14	OWENS-ILLINOIS INC	OI	4571	27.79
2	INTEGRYS ENERGY GROUP INC	TEG	4630	58.53
New	ROBERT HALF INTL INC	RHI	4636	33.23
3	SEALED AIR CORP	SEE	4689	23.95
New	CINTAS CORP	CTAS	4741	45.54

Foreign Exposure

Top 50 S&P 500 Companies By FOREIGN EXPOSURE

Foreign Exposure: The ratio of foreign sales to total sales.





Absolute Returns	
Last 1 Month	-0.96%
Last 3 Months	4.62%
Last 6 Months	16.31%
Last 12 Months	21.33%
2013 YTD	16.31%

Source: BofA Merrill Lynch US Quantitative Strategy
The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

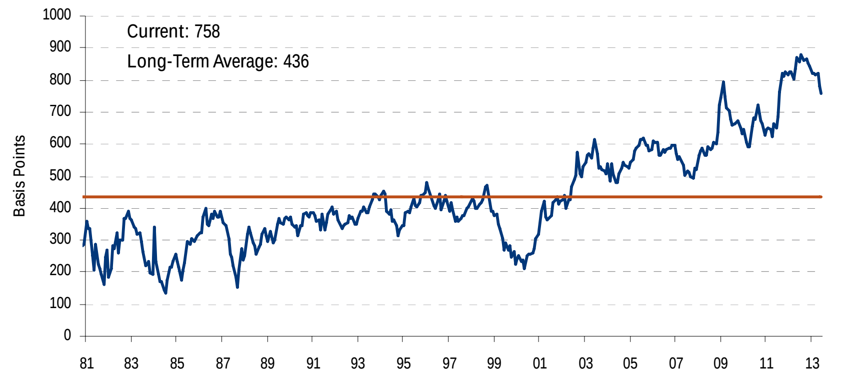
Screen for July

Mo. In Scrn.	Company	Ticker	Foreign Exposure	Price 06/28/2013
26	COCA-COLA ENTERPRISES INC	CCE	100.0%	35.16
13	PHILIP MORRIS INTERNATIONAL	PM	100.0%	86.62
52	MOLSON COORS BREWING CO	TAP	97.3%	47.86
29	BROADCOM CORP	BRCM	96.8%	33.80
140	QUALCOMM INC	QCOM	94.9%	61.09
27	DIAMOND OFFSHRE DRILLING INC	DO	94.2%	68.79
4	ALLEGHENY TECHNOLOGIES INC	ATI	93.5%	26.31
184	ADVANCED MICRO DEVICES	AMD	92.5%	4.08
13	LAM RESEARCH CORP	LRCX	87.7%	44.34
172	TEXAS INSTRUMENTS INC	TXN	87.6%	34.85
56	JABIL CIRCUIT INC	JBL	86.0%	20.38
12	TERADYNE INC	TER	85.9%	17.57
40	SANDISK CORP	SNDK	85.9%	61.10
140	NVIDIA CORP	NVDA	85.1%	14.04
153	AVON PRODUCTS	AVP	85.0%	21.03
14	ROWAN COMPANIES PLC	RDC	85.0%	34.07
92	MICRON TECHNOLOGY INC	MU	84.7%	14.33
196	INTEL CORP	INTC	84.3%	24.23
48	WESTERN DIGITAL CORP	WDC	83.3%	62.09
136	ALTERA CORP	ALTR	83.0%	32.99
4	MONDELEZ INTERNATIONAL INC	MDLZ	80.3%	28.53
70	MICROCHIP TECHNOLOGY INC	MCHP	80.2%	37.25
158	APPLIED MATERIALS INC	AMAT	79.9%	14.92
177	AES CORP	AES	79.3%	11.99
188	KLA-TENCOR CORP	KLAC	78.7%	55.73

Mo. In Scrn.	Company	Ticker	Foreign Exposure	Price 06/28/2013
89	HARMAN INTERNATIONAL INDS	HAR	77.8%	54.20
52	CORNING INC	GLW	76.8%	14.23
12	CHEVRON CORP	CVX	76.5%	118.34
4	YUM BRANDS INC	YUM	75.4%	69.34
158	INTL FLAVORS & FRAGRANCES	IFF	75.4%	75.16
49	FMC TECHNOLOGIES INC	FTI	75.2%	55.68
101	AFLAC INC	AFL	74.9%	58.12
64	LSI CORP	LSI	74.6%	7.14
12	EXPEDITORS INTL WASH INC	EXPD	74.6%	38.04
8	FLUOR CORP	FLR	74.5%	59.31
12	SEAGATE TECHNOLOGY PLC	STX	74.3%	44.83
4	STARWOOD HOTELS&RESORTS WR	HOT	74.3%	63.19
19	BORGWARNER INC	BWA	74.1%	86.15
12	MOLEX INC	MOLX	74.0%	29.34
23	XILINX INC	XLNX	73.8%	39.61
12	NIKE INC	NKE	72.8%	63.68
16	AVERY DENNISON CORP	AVY	72.1%	42.76
13	COLGATE-PALMOLIVE CO	CL	72.1%	57.29
54	OWENS-ILLINOIS INC	OI	71.9%	27.79
43	WESTERN UNION CO	WU	71.9%	17.11
13	EXXON MOBIL CORP	XOM	71.7%	90.35
13	WYNN RESORTS LTD	WYNN	71.2%	127.97
100	WATERS CORP	WAT	71.1%	100.05
34	LINEAR TECHNOLOGY CORP	LLTC	71.1%	36.84
New	AUTODESK INC	ADSK	70.9%	33.94

Valuation Backdrop

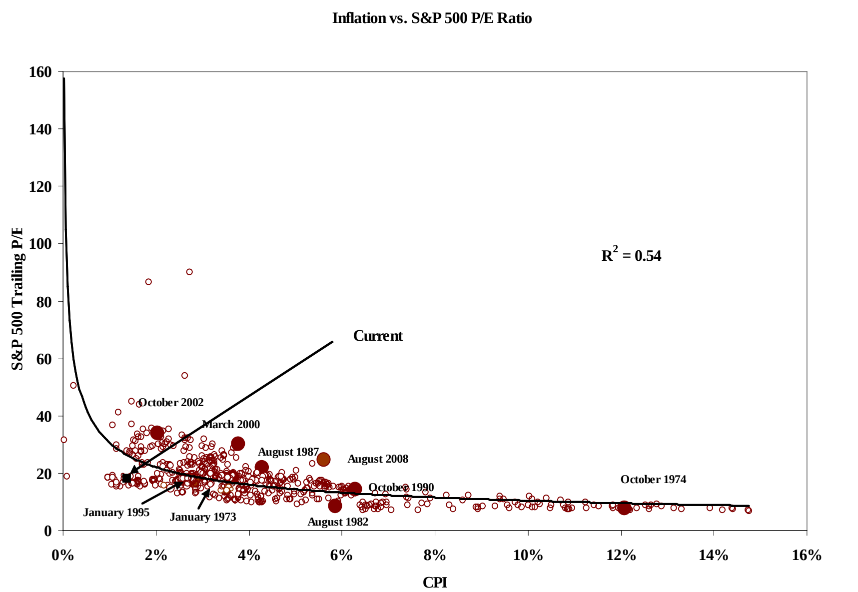
S&P 500 Risk Premium (DDM Expected Return less AAA Corporate Bond Rate)



Source: BofA Merrill Lynch US Quantitative Strategy

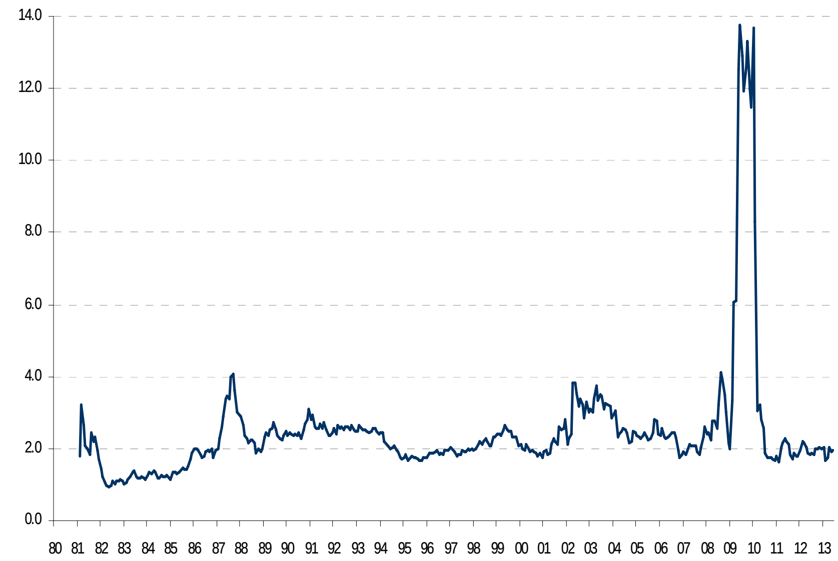
Inflation vs. P/E Model (1965 to present)

Note: We exclude deflationary points from trend line calculation. Historically, the relationship between inflation and valuation breaks down during deflationary periods. For example, from 1949 to1950 S&P 500 valuation was below average, and from 1954 to 1955, valuation was well above average.



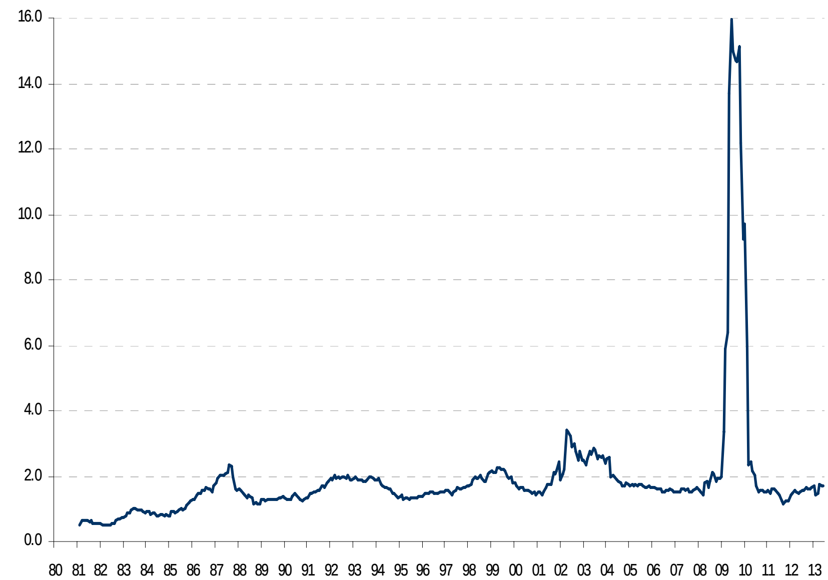
Source: BofA Merrill Lynch US Quantitative Strategy

S&P 500 Real PE-to-Growth Ratio (Trailing P/E Divided by Proj. 5-Yr EPS Growth less Inflation)



Source: BofA Merrill Lynch US Quantitative Strategy

S&P 500 PE-to-Growth Ratio (Trailing P/E Divided by Proj. 5-Yr EPS Growth)



Source: BofA Merrill Lynch US Quantitative Strategy

BofAML Universe Sector/Industry Factor Evaluation

	# of	% Univ	Valuation Analysis								Expectation Analysis							
			Impl.	Reqd	DDM	Eqty.	BofAML	P/E	Price/		Earnings (Decile)					PR 5yr	EPS Growth	
	Comp	BofAML	Return	Return	Alpha	Duration	Adj ßeta	Ratio	Book	Yield	Surprise	Risk	Torp	Disp	Est. Rev.	Growth	2013E	2014E
Economic Sectors																		
Energy	127	11.89	11.5	11.8	-0.3	25.1	0.99	12.2	1.98	2.8	5	6	5	8	5	9.9	6	16
Materials	69	3.51	10.5	15.0	-4.5	30.4	1.30	13.6	2.44	2.4	5	6	7	5	6	10.0	6	21
Industrials	133	10.00	11.1	13.6	-2.5	27.9	1.16	13.9	2.86	2.1	5	5	6	3	6	11.9	9	13
Consumer Discretionary	194	12.63	12.0	13.6	-1.6	29.0	1.16	16.8	3.64	1.4	4	4	6	5	5	18.1	15	19
Consumer Staples	53	9.43	11.5	9.0	2.5	28.2	0.72	16.1	3.62	2.8	7	2	5	2	6	9.4	9	10
Health Care	150	12.83	12.1	10.1	2	29.3	0.83	15.3	3.20	1.8	6	4	4	4	6	10.7	3	12
Financials	259	15.75	11.7	15.3	-3.6	26.8	1.32	11.8	1.31	2.4	5	7	5	4	4	10.0	10	7
Information Technology	155	17.86	13.1	12.2	0.9	28.2	1.03	12.7	3.14	1.8	6	4	5	5	6	13.5	5	14
Telecommunication Services	18	2.82	9.5	8.9	0.6	23.7	0.72	20.1	2.70	4.0	5	8	6	5	5	9.6	33	22
Utilities	49	3.27	9.8	8.0	1.8	28.1	0.64	15.5	1.59	4.0	6	4	3	2	5	3.0	0	4
Capitalization Sectors ($ Million)																		
0 To 1224	241	1.00	11.3	13.8	-2.5	30.1	1.19	29	1.54	1.6	6	7	6	7	6	13.0	-27	83
1225 To 2757	242	2.97	11.2	13.0	-1.8	29.6	1.11	16.7	1.87	2.2	6	6	6	6	6	15.6	6	19
2761 To 5916	241	6.23	11.1	13.4	-2.3	29.5	1.15	15.2	2.06	1.9	5	6	6	5	6	13.9	11	17
5922 To 15189	242	14.60	11.3	12.9	-1.6	30.4	1.10	15.1	2.36	1.7	6	5	5	5	5	13.0	16	15
15224 To 401732	241	75.20	12.0	12.0	0	27.2	1.01	13.4	2.45	2.4	5	5	5	4	5	11.0	6	12
Risk Sectors																		
0.17 To 0.68	227	19.98	11.2	7.7	3.5	27.2	0.61	15.3	2.81	3.0	6	4	4	4	5	9.2	6	11
0.69 To 0.93	224	23.94	11.7	10.0	1.7	28.3	0.83	15	2.89	2.3	6	4	5	4	5	10.9	7	11
0.94 To 1.17	231	26.14	12.4	12.4	0	28.3	1.05	13.4	2.68	2.0	5	4	5	4	6	12.6	9	13
1.18 To 1.44	221	15.54	11.6	14.9	-3.3	27.9	1.29	13	1.86	1.8	5	6	6	5	5	12.0	6	14
1.45 To 3.33	229	12.39	11.8	20.2	-8.4	26.4	1.80	12	1.56	1.8	4	7	6	5	5	14.4	10	17
Uncoded	75	2.01	12.1			27.8		14.6	3.44	2.2	5	9	4	5	4	13.9	14	7
DDM Alpha																		
Most Undervalued	159	18.43	13.9	9.8	4.1	26.5	0.80	13.4	3.24	2.3	6	3	5	4	5	16.4	6	14
Undervalued	160	25.23	11.5	10.1	1.4	26.8	0.83	13.6	2.60	2.6	5	5	5	4	6	10.2	7	11
Fair Value	160	16.71	11.5	12.7	-1.2	29.1	1.08	14.7	2.58	1.6	5	4	6	4	5	12.9	11	12
Overvalued	160	13.67	10.8	14.8	-4	28.6	1.28	12.9	1.84	2.1	5	7	6	4	5	9.2	6	12
Most Overvalued	160	9.77	10.8	19.3	-8.5	29.4	1.71	12.2	1.67	1.6	5	7	6	5	5	10.1	9	15
Uncoded	408	16.19	12.1	11.4	0.7	27.8	0.96	16.4	2.36	2.7	5	5	5	5	5	10.0	8	15

Source: BofA Merrill Lynch US Equity and US Quant Strategy

BofAML Universe Sector/Industry Factor Evaluation (cont'd)

			Valuation Analysis								Expectation Analysis							
											Earnings (Decile)						EPS Growth	
	# of Comp	% Univ BOFAML	Impl. Return	Reqd Return	DDM Alpha	Eqty. Duration	BofAML Adj ßeta	P/E Ratio	Price/ Book	Yield	Surprise	Risk	Torp	Disp	Est. Rev.	PR 5yr Growth	2013E	2014E
Duration																		
6.01 To 23.58	158	16.89	12.9	12.6	0.3	21.5	1.07	12.1	2.16	2.7	4	5	5	4	6	13.4	7	13
23.63 To 26.92	159	28.22	12.4	12.9	-0.5	25.2	1.10	11.8	2.11	2.3	5	5	5	4	5	11.0	6	12
26.94 To 30.33	159	13.61	11.0	11.4	-0.4	28.9	0.95	15.6	2.70	2.1	6	5	5	3	6	10.5	10	12
30.33 To 34.28	159	15.24	11.1	11.5	-0.4	32.3	0.96	15.8	2.80	1.7	6	4	5	3	5	10.1	8	13
34.32 To 73.55	159	9.04	10.2	12.7	-2.5	38.5	1.08	17.3	2.70	1.1	5	5	5	5	5	10.6	10	15
Uncoded	413	17.01		11.9			1.01	16	2.37	2.7	5	5	5	5	5	13.9	9	nm
Growth Sectors																		
0.00 To 0.00	10	0.05						nm	0.80	6.9							nm	nm
Growth	369	25.52	12.1	12.4	-0.3	28.1	1.05	15.4	2.74	1.4	5	4	6	5	5	15.5	12	15
Growth Cyclical	343	22.55	12.4	14.2	-1.8	28.8	1.23	13.3	2.33	2.0	6	5	5	5	6	13.3	7	16
Growth Defensive	134	13.73	12.1	10.9	1.2	26.9	0.91	15.2	2.71	2.8	5	4	5	3	5	10.6	7	10
Cyclical	230	16.94	11.2	14.4	-3.2	27.9	1.25	12.2	1.76	2.1	5	7	6	5	5	11.2	8	14
Defensive	121	21.21	11.0	9.0	2	26.8	0.73	13.6	2.53	3.2	6	5	4	4	5	6.2	4	9
EPS Surprise																		
Most Optimistic	204	16.67	12.0	12.9	-0.9	26.4	1.10	13	2.18	1.9	2	5	6	5	5	13.1	11	12
Optimistic	205	24.69	11.7	13.0	-1.3	27.2	1.10	12.8	2.16	2.5	4	5	5	4	5	10.4	9	12
Neutral	204	15.35	11.5	12.2	-0.7	28.7	1.03	15.1	2.46	1.7	6	4	6	3	5	12.8	10	14
Less Optimistic	205	21.34	12.2	11.7	0.5	28.0	0.99	13.3	2.42	2.6	7	5	4	4	6	11.3	3	13
Not Optimistic	204	15.17	11.4	11.4	0	29.2	0.96	16.1	2.97	1.9	9	5	5	4	5	12.0	4	15
Uncoded	185	6.78	12.2	11.6	0.6	25.7	0.97	15.3	2.30	2.5		5	5	4	6	10.0	11	15
Quality Rank																		
A+	37	15.90	11.6	9.8	1.8	28.2	0.80	13.3	3.13	2.5	6	3	4	3	5	8.0	4	11
A	52	7.79	10.9	10.3	0.6	30.1	0.85	15.5	3.61	2.4	6	3	4	3	5	9.6	9	9
A-	66	11.80	12.3	13.0	-0.7	25.2	1.11	12.8	2.48	2.5	4	5	6	3	5	11.6	11	10
B+	197	25.94	12.1	12.1	0	28.2	1.02	12.8	2.22	2.2	5	5	5	4	5	10.4	3	11
B	213	14.62	11.7	12.7	-1	27.6	1.08	14.4	2.04	2.1	6	7	5	5	5	11.9	9	16
B-	170	7.09	11.6	17.4	-5.8	28.2	1.53	14.7	1.65	1.2	5	9	7	6	5	19.6	18	22
C & D	78	1.80	11.3	18.4	-7.1	31.0	1.62	20.6	1.55	0.0	4	9	5	8	5	19.4	44	43
Not Rated	394	15.06	11.8	11.9	-0.1	27.2	1.00	15.2	2.56	2.4	5	6	5	5	5	14.1	11	15
B+ or Better	352	61.43	11.9	11.4	0.5	27.8	0.96	13.2	2.59	2.4	5	4	5	4	5	9.9	6	10
B or Worse	855	38.57	11.7	13.6	-1.9	27.7	1.17	15	2.08	1.9	5	6	6	5	5	14.5	12	18
BofAML Universe	1207	100.00	11.8	12.2	-0.4	27.8	1.04	14.8	2.37	2.2						11.5	8	13
S&P 500	500	89.91	11.9	12.1	-0.2	27.6	1.04	14.3	2.31	2.2						10.7	8	12

Source: BofA Merrill Lynch US Equity and US Quant Strategy

BofAML Universe Sector/Industry Factor Evaluation (cont'd)

			Valuation Analysis								Expectation Analysis							
											Earnings (Decile)					PR 5yr	EPS Growth	
	# of Comp	% Univ BofAML	Impl. Return	Reqd Return	DDM Alpha	Eqty. Duration	BofAML Adj ßeta	P/E Ratio	Price/ Book	Yield	Surprise	Risk	Torp	Disp	Est. Rev.	Growth	2013E	2014E
ENERGY	127	11.9	11.5	11.8	-0.3	25.1	0.99	12.2	2.0	2.8	5	6	5	8	5	9.8	6	16
ENERGY EQUIP & SVS	16	1.8	13.0	15.3	-2.3	24.2	1.33	12.6	1.9	1.5	6	5	8	5	6	15.8	12	26
OIL & GAS	111	10.1	11.2	11.1	0.1	25.3	0.93	12.1	2.0	3.0	5	7	4	8	5	8.7	5	15
MATERIALS	69	3.51	10.5	15.0	-4.5	30.4	1.30	13.6	2.4	2.4	5	6	7	5	6	10.0	6	21
CHEMICALS	26	2.38	10.8	14.8	-4	29.6	1.28	14	3.4	2.2	5	6	7	4	6	9.4	12	12
CONTAINERS & PCKG	14	0.38	9.8	13.2	-3.4	34.6	1.13	14.2	2.8	1.6	8	6	8	5	5	7.7	16	20
METALS & MINING	24	0.6	9.7	15.6	-5.9	32.4	1.35	12.1	1.1	3.4	6	8	7	9	10	9.4	-19	56
PAPER & FOREST PROD	5	0.16	13.9	21.1	-7.2	22.7	1.89	11.8	2.3	2.4	9	9	9	7	9	26.6	32	31
INDUSTRIALS	133	10	11.1	13.6	-2.5	27.9	1.16	13.9	2.9	2.1	5	5	6	3	6	11.9	9	13
AEROSPACE & DEF	22	2.51	11.5	12.8	-1.3	28.3	1.09	13.9	3.5	2.0	4	3	6	4	5	11.0	9	9
BLDGS PRODUCTS	3	0.09	12.5	20.1	-7.6	26.0	1.79	19.2	3.2	0.7	8	9	9	8	3	25.4	52	49
CONSTR. & ENGR	8	0.16	12.4	14.3	-1.9	30.5	1.23	13.1	1.8	0.7	4	4	5	5	7	14.5	5	16
ELECTRICAL EQUIP	10	0.66	11.8	13.7	-1.9	25.2	1.17	15.1	3.1	2.2	5	5	6	2	7	10.7	14	14
IND CONGLOMERATES	3	2.17	11.4	15.0	-3.6	26.5	1.30	14	2.2	2.8	3	4	5	2	6	9.5	9	9
MACHINERY	23	1.43	11.2	16.0	-4.8	26.0	1.39	12.4	2.9	2.0	6	7	4	5	7	10.2	-5	18
TRADING COMPANIES	8	0.21	14.8	12.7	2.1	20.2	1.08	14.1	3.1	1.4	5	3	6	4	5	16.5	20	18
COMMERCIAL SVS	26	0.83	10.5	10.0	0.5	31.9	0.82	17.5	3.0	1.7	4	4	5	3	5	10.7	18	14
AIR FREIGHT & LOGIS	4	0.63	11.5	11.6	-0.1	27.5	0.97	15.6	5.1	2.2	8	9	7	3	7	12.0	11	17
AIRLINES	11	0.31	10.0	10.7	-0.7	44.0	0.89	7.9	1.5	0.7	8	8	10	8	5	36.7	35	18
MARINE	1	0.03	11.5	13.4	-1.9	29.4	1.15	17.4	2.6	0.0	2	4	6	3	3	15.0	16	11
ROAD & RAIL	12	0.94	8.3	13.2	-4.9	30.7	1.13	14.8	3.1	1.8	6	4	7	3	5	12.5	10	15
TRANSPORT INFRA	2	0.03	10.8	16.4	-5.6	31.8	1.44	19.2	2.9	3.2	5		9	7	1	41.5	14	21
CONSUMER DISCR	194	12.6	12.0	13.6	-1.6	29.0	1.16	16.8	3.6	1.4	4	4	6	5	5	18.1	15	
AUTO COMP	16	0.59	12.6	18.3	-5.7	25.5	1.61	11.1	2.6	1.3	5	9	7	6	4	13.4	8	19
AUTOMOBILES	3	0.62	11.2	17.4	-6.2	27.2	1.53	10.3	3.0	1.6	3		8	7	5	13.3	9	31
HOUSEHOLD DURABLES	15	0.38	13.4	16.2	-2.8	22.9	1.42	14.3	2.3	1.6	6	5	5	6	3	33.6	38	29
TEXTILES, APPAREL	13	0.8	10.7	13.7	-3	32.7	1.18	18.8	4.4	1.2	5	3	5	3	5	13.8	11	14
HOTELS, RESTAURANTS & LEISURE	37	2.31	11.3	14.5	-3.2	28.0	1.25	20.1	4.3	2.1	6	4	5	4	5	22.1	22	14
DIV CONSUMER SVS	17	0.13	9.7	11.9	-2.2	37.6	1.01	17.1	2.2	0.8	8	6	4	6	4	6.6	-22	0
MEDIA	22	3.16	13.3	13.7	-0.4	27.4	1.17	15.8	2.9	1.3	4	4	7	4	4	18.3	19	19
DISTRIBUTORS	2	0.12	11.0	10.2	0.8	29.4	0.84	18	3.9	1.7	5	3	5	3	4	12.3	17	15
INTERNET & CATALOG RETAIL	12	1.2	11.4	11.8	-0.4	32.0	0.99	37.5	8.6	0.0	2	8	6	8	8	27.0	25	30
MULTILINE RETAIL	9	0.74	11.6	11.2	0.4	30.7	0.94	14.5	3.0	1.7	4	3	7	4	7	9.7	9	18
SPECIALTY RETAIL	48	2.57	11.8	12.0	-0.2	29.7	1.02	16.7	4.4	1.4	4	3	6	4	4	14.4	11	16

Source: BofA Merrill Lynch US Equity and US Quant Strategy

BofAML Universe Sector/Industry Factor Evaluation (cont'd)

			Valuation Analysis								Expectation Analysis							
											Earnings (Decile)						EPS Growth	
	# of Comp	% Univ BofAML	Impl. Return	Reqd Return	DDM Alpha	Eqty. Duration	BofAML Adj ßeta	P/E Ratio	Price/ Book	Yield	Surprise	Risk	Torp	Disp	Est. Rev.	PR 5yr Growth	2013E	2014E
CONSUMER STAPLES	53	9.43	11.5	9.0	2.5	28.2	0.72	16.1	3.6	2.8	7	2	5	2	6	9.4	9	10
FOOD & STAPLES RETAILING	12	2.06	11.9	9.2	2.7	29.7	0.74	14.7	2.9	1.9	6	2	6	2	5	11.5	11	10
BEVERAGES	7	2.03	11.1	8.8	2.3	30.6	0.71	17.6	4.7	2.7	9	3	4	1	6	8.6	6	10
FOOD PRODUCTS	20	1.57	10.5	8.6	1.9	30.9	0.69	16.1	2.4	2.2	6	4	5	3	5	9.4	11	12
TOBACCO	4	1.53	12.0	9.7	2.3	20.6	0.79	14.3	13.1	4.4	4	1	5	1	7	9.1	8	10
HOUSEHOLD PRODUCTS	6	2.03	11.4	7.9	3.5	28.9	0.63	17.9	4.1	3.0	7	2	3	1	6	7.5	6	8
PERSONAL PRODUCTS	4	0.21	12.5	15.2	-2.7	26.0	1.32	16.1	8.0	1.4	6	5	7	3	3	17.8	21	16
HEALTH CARE	150	12.8	12.1	10.1	2	29.3	0.83	15.3	3.2	1.8	6	4	4	4	6	10.6	3	12
HEALTH CARE EQUIP	28	2.11	12.7	10.7	2	31.9	0.89	15	3.0	1.5	7	3	3	2	6	10.4	7	10
HEALTH CARE PROV	43	2.37	11.9	11.5	0.4	28.6	0.97	12.8	2.1	0.9	7	4	5	3	5	12.9	6	11
HEALTH CARE TECH	2	0.02	11.8	7.6	4.2	28.6	0.60	17.9	3.4	0.0	4	3	6	6	7	16.5	12	17
BIOTECH	34	2.21	14.0	9.4	4.6	23.4	0.77	24.4	6.6	0.4	5	4	7	7	5	21.0	13	43
PHARMACEUTICALS	31	5.51	11.2	9.2	2	31.0	0.75	14.4	3.4	3.0	7	5	3	3	6	5.4	-2	8
LIFE SCIENCES	12	0.61	10.2	12.1	-1.9	34.7	1.02	17	2.8	0.4	5	5	4	3	7	10.6	5	12
FINANCIALS	259	15.8	11.7	15.3	-3.6	26.8	1.32	11.8	1.3	2.4	5	7	5	4	4	9.8	10	7
BANKS	34	3	13.6	13.4	0.2	23.9	1.14	11.4	1.3	2.5	4	7	5	4	4	13.2	12	5
THRIFTS & MORTGAGE FINANCE	8	0.18	10.5	8.9	1.6	27.0	0.72	11.7	1.4	2.7	7	8	5	6	7	13.4	30	18
DIV FINANCIALS	11	2.7	11.3	16.8	-5.5	26.2	1.47	10	1.0	1.7	4	8	7	4	3	8.1	3	8
CONSUMER FINANCE	6	0.85	11.1	16.4	-5.3	30.2	1.44	11.5	2.0	1.5	2	7	4	4	4	9.6	16	6
CAPITAL MARKETS	47	2.34	11.4	15.0	-3.6	28.1	1.30	12.9	1.4	2.1	6	6	6	5	4	11.7	10	14
INSURANCE	41	3.02	11.6	16.9	-5.3	27.7	1.48	10.3	1.0	1.7	4	7	6	5	3	8.9	13	5
REITS	108	3.54	10.4	14.3	-3.9	27.1	1.24	15.6	2.1	3.8	6	7	4	2	5	7.3	0	7
REAL ESTATE MGMT & DEV	4	0.12	12.2	20.1	-7.9	27.8	1.79	19.2	3.6	0.2		9				18.2	162	26
INFO TECH	155	17.9	13.1	12.2	0.9	28.2	1.03	12.7	3.1	1.8	6	4	5	5	6	13.4	5	14
INTERNET SOFTWARE	20	2.63	11.3	11.7	-0.4	31.4	0.98	20.5	3.7	0.0	8	5	6	5	4	18.4	13	16
IT SERVICES	27	3.49	12.4	10.4	2	28.2	0.86	14.5	6.1	1.5	6	3	6	2	5	12.3	10	11
SOFTWARE	24	3.81	12.4	12.2	0.2	25.7	1.03	12.5	3.5	1.8	3	4	5	3	7	13.3	7	10
COMMUNICA. EQUIP	16	1.7	11.8	13.1	-1.3	26.2	1.12	13	2.4	2.2	6	5	6	4	5	12.3	13	9
COMPUTERS & PERIPH	11	3.47	17.8	12.6	5.2	25.6	1.07	8.7	2.6	2.7	7	4	3	7	7	13.4	-4	15
ELECTR EQUIP & INSTR	19	0.58	12.5	16.4	-3.9	26.4	1.43	12	1.6	1.4	8	6	5	6	5	12.9	1	15
SEMICONDUCTORS	38	2.18	11.6	13.1	-1.5	35.3	1.12	13.8	2.5	2.5	5	8	4	7	5	10.5	3	23
TELECOMMUNICATION SERVICES	18	2.82	9.5	8.9	0.6	23.7	0.72	20.1	2.7	4.0	5	8	6	5	5	9.4	33	22
DIVERSIFIED TELECOM SVS	11	2.36	9.5	8.3	1.2	23.0	0.66	15.1	2.6	4.8	5	8	6	4	5	8.8	15	10
WIRELESS TELECOM SVS	7	0.47	9.4	11.8	-2.4	38.5	1.00	nm	4.3	0.0	6	6	6	10	5	12.5	nm	nm
UTILITIES	49	3.27	9.8	8.0	1.8	28.1	0.64	15.5	1.6	4.0	6	4	3	2	5	2.9	0	4
ELECTRIC UTILITIES	19	1.81	9.7	7.8	1.9	27.6	0.61	14.8	1.5	4.2	6	4	2	2	5	1.8	-2	1
GAS UTILITIES	11	0.18	9.5	7.5	2	28.5	0.59	17	1.8	4.9	5	5	5	4	5	4.1	22	7
MULTI-UTILITIES	14	1.07	9.7	7.8	1.9	28.5	0.61	16	1.8	3.9	6	5	3	2	5	3.4	-1	6
WATER UTILITIES	1	0.05	9.8	7.1	2.7	29.6	0.55	18	1.6	2.7	3		3	1	6	6.7	5	7
INDEP POWER PROD & ENERGY TRAD	4	0.17	11.3	12.9	-1.6	30.7	1.10	19.3	1.5	0.9	10	8	8	7	5	9.8	26	23
BofAML UNIVERSE	1207	100	11.8	12.2	-0.4	27.8	1.04	14.8	2.4	2.2						11.5	8	13
S&P 500	500	89.9	11.9	12.1	-0.2	27.6	1.04	14.3	2.3	2.2						10.7	8	12

Source: BofA Merrill Lynch US Equity and US Quant Strategy

Performance Calculation Methodology

For each of the strategies represented in this report, rebalancing and performance calculations are conducted each month, using data and closing prices corresponding to the market's close on the last business day of each month. The performance of each index is computed on the basis of price return. The performance is presented relative to the benchmark which consists of the equal weighted price performance of stocks in the S&P 500 as of the last business day of each month. For Alpha Surprise model, the performance is also represented as relative to the market capitalization-weighted S&P 500 benchmark.

The results of quantitative strategies presented here may differ from the S&P 500 in that they are significantly less diversified, and, as such, their performance is more exposed to specific stock or sector results. Therefore investors following these strategies may experience greater volatility in their returns.

The performance results do not reflect transaction costs, tax withholdings or any investment advisory fees. Had these costs been reflected, the performance would have been lower. The performance results of individuals following the strategies presented here will differ from the performance contained in this report for a variety of reasons, including differences related to incurring transaction costs and/or investment advisory fees, as well as differences in the time and price that securities were acquired and disposed of, and differences in the weighting of such securities. The performance results of individuals following these strategies will also differ based on differences in treatment of dividends received, including the amount received and whether and when such dividends were reinvested.

Dividend Yield and Dividend Growth Strategies

We also provide total returns for dividend oriented strategies (high dividend yield strategy and high dividend growth strategy). The total return performance calculation assumes that dividends paid on securities in a portfolio are deposited in a cash account on the ex-dividend date, and are not reinvested. The performance is presented relative to the equal weighted total returns index of stocks in the S&P 500 as of the last business day of each month.

This report includes strategies for informational or descriptive purposes, and inclusion here is not equivalent to a recommendation of the strategy or portfolio.

Past performance should not and cannot be viewed as an indicator of future performance. A complete performance record is available upon request.

Advances & Declines

Advances and declines are based on the price returns of each stock for each relevant period. The portfolio rebalancing done each month constitutes the start of a new period for each stock in the portfolio. The performance period for the stock being removed will end when the stock is removed from the portfolio. For the stock being added, the performance period will begin when it is added to the portfolio.

Definitions

Absolute return: Absolute return is calculated based on monthly returns and reflects simple price appreciation (depreciation) over the stated period. Stocks in each screen are equally weighted. Returns do not reflect dividend or transaction costs.

Dividend Discount Model Alpha: The implied return from the BofAML Quantitative Strategy three-stage dividend discount model less the required return from a Capital Asset Pricing Model. Presented as a decile rank.

Dividend Yield: Indicated dividend divided by month-end price.

Price/Book Value: Month-end price divided by the most recently reported book value per share.

Price/Cash Flow: Month-end price divided by the most recently reported cash flow. Cash flow is defined as earnings post extraordinary items plus depreciation.

Price/Free Cash Flow: Month-end price divided by most recently reported free cash flow. Free Cash flow is defined as earnings post extraordinary items plus depreciation minus capital expenditures.

Price/Sales: Month-end market value divided by most recently reported sales.

EV/EBITDA: Enterprise Value (Equity Market Capitalization + Long Term Debt + Short Term Debt + Preferred Stock + Minority Interest – Cash & Cash Equivalents) divided by EBITDA (Reported Net Income + Special Items – Minority Interest + Interest Expense + Income Tax Expense + Depreciation and Amortization) – most recently reported.

Relative Strength: The ratio of the 30-week moving average of price to the 75-week moving average.

Most Active: Stocks have the highest monthly share trading volume.

Low Price: Absolute price level of the stock at month-end.

5Wk/30Wk Moving Average: The ratio between the average daily closing price of a stock over five weeks versus that over thirty weeks.

10Wk/40Wk Moving Average: The ratio between the average daily closing price of a stock over ten weeks versus that over forty weeks.

Price/200-Day Moving Average: A ratio between month-end closing price and average closing price over the last 200 days.

Price Return – 12-Month Performance: Absolute price return over the last twelve months.

Price Return – 11-Month Performance: Absolute price return from one year ago, ignoring the most recent month.

Price Return – 9-Month Performance: Absolute price return over the last nine months.

Price Return – 3-Month Performance: Absolute price return over the last three months.

Price Return – 12-Month and 1-Month Performance: Equal weighted rank of stocks by (1) highest price return over the last twelve months and (2) highest price return over the most recently ended month.

Price Return – 12-Month and 1-Month Reversal: Equal weighted rank of stocks by (1) highest price return over the last twelve months and (2) lowest price return over the last one month.

Earnings Momentum: The difference between 12-month trailing EPS and year-ago 12-month trailing EPS divided by year-ago 12-month trailing EPS.

Projected 5-Year EPS Growth: The five-year EPS growth rate estimated by BofAML Fundamental Equity Research. If no BofAML estimate exist, then I/B/E/S Mean Long Term Growth Estimate is used.

Earnings Torpedo: I/B/E/S FY2 estimate less latest actual annual EPS divided by month-end price.

Forecast Earnings Surprise: A forecast earnings surprise variable which compares BofAML estimates to those of the consensus after adjusting for the range of estimates. Stocks are ranked from 1 to 10, with 1 being among the most optimistic, relative to the consensus, 10 being among the most pessimistic. Consensus estimated earnings data are courtesy of I/B/E/S.

Positive (Negative) Forecast Earnings Surprise: The companies ranked 1 or 2 (9 or 10) by Forecast Earnings Surprise.

EPS Estimate Revision: The difference between the I/B/E/S FY1 estimate and that of three months ago divided by the absolute value of I/B/E/S FY1 estimate of three months ago.

Beta: A measure of non-diversifiable risk. It is calculated using regression Strategy incorporating 60 months of price performance versus that of the S&P 500.

Variability of EPS: The degree of variability in quarterly EPS over the past 5 years. Stocks are ranked from 10 to 1 with 10 being the most variable.

EPS Estimate Dispersion: The coefficient of variation among I/B/E/S FY2 estimates. Presented as a decile rank.

Dividend Growth: The growth between trailing 4-quarter total common dividends and year-ago trailing 4-quarter total common dividends.

Neglect-Institutional Ownership: Those companies with the lowest proportions of float-adjusted shares held by institutional owners are considered more neglected.

Neglect-Analyst Coverage: Those companies with the lowest number of analysts submitting ratings to FirstCall.

Firm Size: Month-end market value.

Foreign Exposure: The ratio of foreign sales to total sales.

Equity Duration: An adaptation of our Dividend Discount Model which measures the interest-rate sensitivity of a stock. Longer durations (higher numbers) suggest more interest-rate sensitivity.

P/E-to-Growth: Trailing twelve months P/E divided by the five-year EPS growth rate estimated by BofAML Fundamental Equity Research. If no BofAML estimate exist, then the IBES Mean Long Term Growth Estimate is used.

Return on Equity One-Year Average: Net income divided by average equity provided.

Return on Equity Five-Year Average: Five-year average return on equity.

Return on Assets: Net income plus interest and taxes as a percent of average total assets.

Return on Capital: The sum of net income, interest expense and minority interest, as a percent of average total invested capital which is inclusive of long-term debt, preferred stock, common equity, and minority interest.

Return on Equity One-Year Average (Adjusted for Debt): The ROE of companies with higher debt levels are considered lower than those of companies with lower debt levels based on their debt-to-equity ratios.

Return on Equity Five-Year Average (Adjusted for Debt): The average five year ROE of companies with higher debt levels are considered lower than those of companies with lower debt levels based on their debt-to-equity ratios.

Link to Definitions

Macro

Click here for definitions of commonly used terms.

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster*
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

* Ratings dispersions may vary from time to time where BofA Merrill Lynch Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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ELECTRIC UTILITY INDUSTRY

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The Edison Electric Institute (EEI) is the association that represents all U.S. investor-owned electric companies. Our members provide electricity for 220 million Americans, operate in all 50 states and the District of Columbia, and directly employ more than 500,000 workers. With more than $85 billion in annual capital expenditures, the electric power industry is responsible for millions of additional jobs. Reliable, affordable, and sustainable electricity powers the economy and enhances the lives of all Americans. EEI has 70 international electric companies as Affiliate Members, and 250 industry suppliers and related organizations as Associate Members. Organized in 1933, EEI provides public policy leadership, strategic business intelligence, and essential conferences and forums.

About EEI's Quarterly Financial Updates

EEI's quarterly financial updates present industry trend analyses and financial data covering 56 U.S. shareholder-owned electric utility companies. These 56 companies include 50 electric utility holding companies whose stocks are traded on major U.S. stock exchanges and six electric utilities who are subsidiaries of non-utility or foreign companies. Financial updates are published for the following topics:

Dividends	Rate Case Summary
Stock Performance	SEC Financial Statements (Holding Companies)
Credit Ratings	FERC Financial Statements (Regulated Utilities)
Construction	Fuel

For EEI Member Companies

The EEI Finance and Accounting Division is developing current year and historical data sets that cover a wide range of industry financial and operating metrics. We look forward to serving as a resource for member companies who wish to produce customized industry financial data and trend analyses for use in:

- Investor relations studies and presentations
- Internal company presentations
- Performance benchmarking
- Peer group analyses
- Annual and quarterly reports to shareholders

We Welcome Your Feedback

EEI is interested in ensuring that our financial publications and industry data sets best address the needs of member companies and the financial community. We welcome your comments, suggestions and inquiries.

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Future EEI Finance Meetings

48th EEI Financial Conference
November 10-13 , 2013
Orlando World Center Marriott
Orlando, FL

For more information about EEI Finance Meetings,
please contact Debra Henry, (202) 508-5496, dhenry@eei.org

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The 56 U.S. Shareholder-Owned Electric Utilities

The companies listed below all serve a regulated distribution territory. Other utilities, such as transmission provider ITC Holdings, are not shown below because they do not serve a regulated distribution territory. However, their financial information is included in relevant EEI data sets, such as transmission-related construction spending.

ALLETE, Inc. (ALE)
Alliant Energy Corporation (LNT)
Ameren Corporation (AEE)
American Electric Power Company, Inc. (AEP)
Avista Corporation (AVA)
Black Hills Corporation (BKH)
CenterPoint Energy, Inc. (CNP)
Cleco Corporation (CNL)
CMS Energy Corporation (CMS)
Consolidated Edison, Inc. (ED)
Dominion Resources, Inc. (D)
DPL, Inc. (DPL)
DTE Energy Company (DTE)
Duke Energy Corporation (DUK)
Edison International (EIX)
El Paso Electric Company (EE)
Empire District Electric Company (EDE)
Energy Future Holdings Corp. (formerly TXU Corp.)
Entergy Corporation (ETR)
Exelon Corporation (EXC)
FirstEnergy Corp. (FE)
Great Plains Energy Incorporated (GXP)
Hawaiian Electric Industries, Inc. (HE)
Iberdrola USA
IDACORP, Inc. (IDA)
Integrys Energy Group, Inc. (TEG)
IPALCO Enterprises, Inc.
MDU Resources Group, Inc. (MDU)
MGE Energy, Inc. (MGEE)
MidAmerican Energy Holdings Company
NextEra Energy, Inc. (NEE)
NiSource Inc. (NI)
Northeast Utilities (NU)
NorthWestern Corporation (NWE)
NV Energy, Inc. (NVE)
OGE Energy Corp. (OGE)
Otter Tail Corporation (OTTR)
Pepco Holdings, Inc. (POM)
PG&E Corporation (PCG)
Pinnacle West Capital Corporation (PNW)
PNM Resources, Inc. (PNM)
Portland General Electric Company (POR)
PPL Corporation (PPL)
Public Service Enterprise Group Inc. (PEG)
Puget Energy, Inc.
SCANA Corporation (SCG)
Sempra Energy (SRE)
Southern Company (SO)
TECO Energy, Inc. (TE)
UIL Holdings Corporation (UIL)
Unitil Corporation (UTL)
UNS Energy Corporation (UNS)
Vectren Corporation (VVC)
Westar Energy, Inc. (WR)
Wisconsin Energy Corporation (WEC)
Xcel Energy, Inc. (XEL)

Companies Listed by Category
(as of 12/31/12)

Please refer to the Quarterly Financial Updates webpage for previous years' lists.

Given the diversity of utility holding company corporate strategies, no single company categorization approach will be useful for all EEI members and utility industry analysts. Never-the-less, we believe the following classification provides an informative framework for tracking financial trends and the capital markets' response to business strategies as companies depart from the traditional regulated utility model.

Regulated	80%+ of total assets are regulated
Mostly Regulated	50% to 80% of total assets are regulated
Diversified	Less than 50% of total assets are regulated

Categorization of the 50 publicly traded utility holding companies is based on year-end business segmentation data presented in 10Ks, supplemented by discussions with company IR departments. Categorization of the six non-publicly traded companies (*shown in italics*) is based on estimates derived from FERC Form 1 data and information provided by parent company IR departments.

The EEI Finance and Accounting Division continues to evaluate our approach to company categorization and business segmentation. In addition, we can produce customized categorization and peer group analyses in response to member company requests. We welcome comments, suggestions and feedback from EEI member companies and the financial community.

Regulated (37 of 56)

ALLETE, Inc.
Alliant Energy Corporation
Ameren Corporation
American Electric Power Company, Inc.
Avista Corporation
Black Hills Corporation
Cleco Corporation
CMS Energy Corporation
Consolidated Edison, Inc.
DPL, Inc.
DTE Energy Company
Duke Energy Corporation
Edison International
El Paso Electric Company
Empire District Electric Company
Entergy Corporation
Great Plains Energy Incorporated
Iberdrola USA
IDACORP, Inc.
Integrys Energy Group
IPALCO Enterprises, Inc.
Northeast Utilities
NorthWestern Energy
NV Energy, Inc.
PG&E Corporation
Pinnacle West Capital Corporation
PNM Resources, Inc.
Portland General Electric Company
Puget Energy, Inc.
Southern Company
TECO Energy, Inc.
UIL Holdings Corporation
Unitil Corporation
UNS Energy Corporation
Westar Energy, Inc.
Wisconsin Energy Corporation
Xcel Energy, Inc.

Mostly Regulated (17 of 56)

CenterPoint Energy, Inc.
Dominion Resources, Inc.
Exelon Corporation
First Energy Corp.
Hawaiian Electric Industries, Inc.
MGE Energy, Inc.
MidAmerican Energy Holdings
NextEra Energy, Inc.
NiSource Inc.
OGE Energy Corp.
Otter Tail Corporation
Pepco Holdings, Inc.
PPL Corporation
Public Service Enterprise Group, Inc.
SCANA Corporation
Sempra Energy
Vectren Corporation

Diversified (2 of 56)

Energy Future Holdings
MDU Resources Group, Inc.

Note: Based on assets at 12/31/12

Q2 2013

Rate Case Summary

HIGHLIGHTS

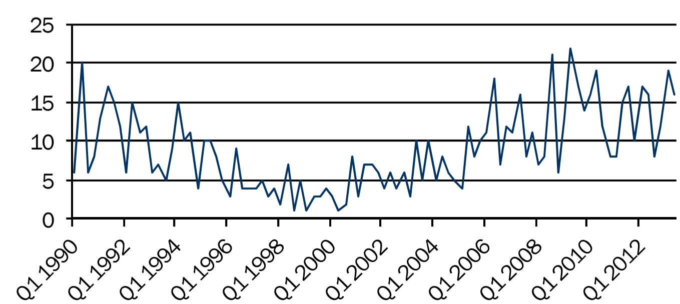
- Shareholder-owned electric utilities filed 16 rate cases in Q2 2013, extending the industry's trend of elevated rate case activity.
- The quarter's average awarded ROE, at 9.77%, is the lowest in several decades. Both Ameren and Commonwealth Edison submitted filings in Illinois as part of those companies' ongoing formula rate plan. The ROE requested in both filings was 8.72%, thus contributing to a record low average requested ROE in Q2 as well.
- In the recent quarter, utilities' efforts to implement clauses and trackers have been a relatively strong driver of cases compared to other quarters, as were utilities' efforts to adjust for slow demand growth.
- Eight of the ten cases decided in Q2 incorporated settlements or partial settlements. These are often silent on details, but in Q2 enough was revealed to allow for an examination of the issues, summarized herein.

COMMENTARY

Shareholder-owned electric utilities filed 16 rate cases in Q2 2013, continuing the trend since the turn of the century of rising rate case activity. The trend largely reflects a construction cycle driven by the need to replace aging infrastructure and reduce the environmental impact of power generation. Capital expenditures, operation and maintenance expenses, and efforts by utilities to implement adjustment clauses/trackers/riders are generally the main drivers of rate case filings, with capital expenditures usually the leading driver. In the recent quarter, utilities' efforts to implement clauses and trackers have been a relatively strong driver of cases compared to other quarters, as were utilities' efforts to adjust for slow demand growth.

I. Number of Rate Cases Filed (Quarterly)

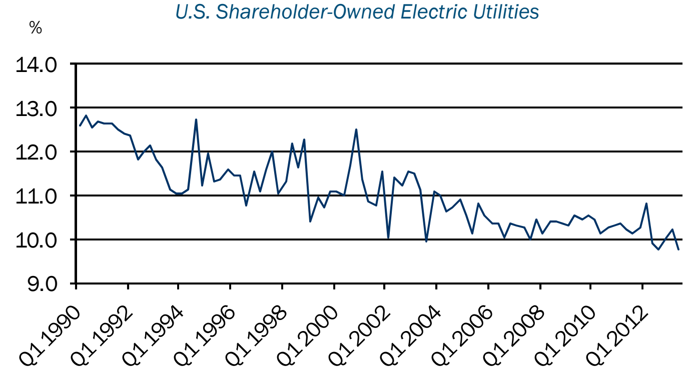
U.S. Shareholder-Owned Electric Utilities



Source: SNL Financial / Regulatory Research Assoc. and EEI Rate Department

II. Average Awarded ROE (Quarterly)

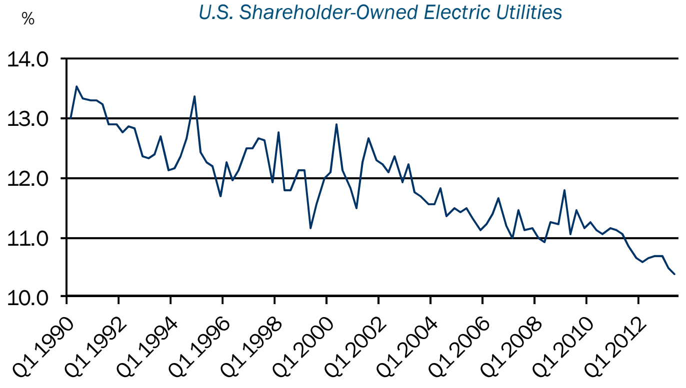
U.S. Shareholder-Owned Electric Utilities



Source: SNL Financial / Regulatory Research Assoc. and EEI Rate Department

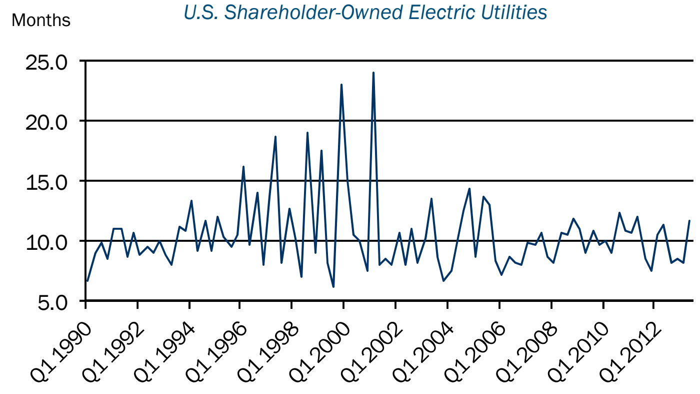
The average awarded return on equity (ROE) in Q2 was 9.77%, the lowest in the last several decades (a period of steadily declining awarded ROEs). Falling interest rates account for much of this trend. Attempts by state commissions to moderate rate increases during times of financial hardship for many customers have also contributed in recent years.

III. Average Requested ROE (Quarterly)



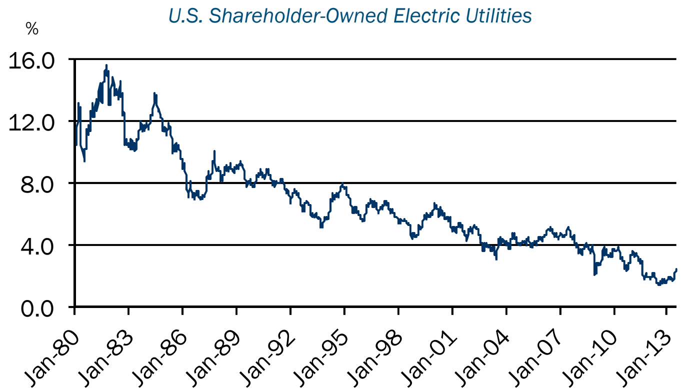
Source: SNL Financial / Regulatory Research Assoc. and EEI Rate Department

IV. Average Regulatory Lag (Quarterly)



Source: SNL Financial / Regulatory Research Assoc. and EEI Rate Department

V. 10-Year Treasury Yield (1/1980 — 6/2013)



Source: U.S. Federal Reserve

The average requested ROE, at 10.4% was similarly the lowest in decades, and for similar reasons.

Regulatory Lag

Average regulatory lag in Q2 was 11.8 months, the highest in two years and slightly above the roughly 10-month average in recent years. During industry restructuring in the late 1990s and early 2000s, the volatility of regulatory lag increased and the average rose to almost 13 months. Outside of this period, regulatory lag has been fairly consistent at about 10 months.

During times of rapidly rising spending, utilities attempt to recover costs by filing rate cases. However, rate case decisions are based primarily on historical costs, and preparing for and administrating a case takes time. If costs continue to rise, rates may already be outdated by the time the commission decides the case and puts rates into effect. We define regulatory lag as the time between a rate case filing and decision because those events are specific and measureable. We consider this a rough proxy for the time between when a utility needs recovery and when new rates take effect.

Some analysts have argued that regulatory lag is actually longer when other delays are considered, such as the time needed to prepare for a case. This suggests an average closer to twice what our definition measures, or close to two years. However it is measured, lag obstructs utilities' ability to earn their allowed return when costs are rising and can ultimately increase their borrowing costs. Electric utilities often fall short of achieving their allowed return due to regulatory lag. Therefore, the decline in allowed ROEs across the industry may over-compensate, in some cases, for declining interest rates.

Commissions can allow utilities to shorten regulatory lag through the use of innovative rate approaches such as interim rate increases, adjustment clauses and other recovery mechanisms, the use of projected costs in rate cases, and construction work-in-progress (CWIP). CWIP allows a utility to partly recover construction financing costs before a project comes online. These approaches have the added benefit of helping to smooth the introduction of rate increases rather than forcing rates to suddenly jump after a case is decided. Commissions and state legislatures can support utilities' financial health and help curb future rate increases due to increased borrowing costs by helping utilities reduce lag.

Filed Cases

Capital expenditures, as they are in almost every quarter, were the main driver of rate cases in Q2. Kentucky Utilities, in its case in Virginia, filed to recover for what it describes as its "most significant environmental compliance building program in its history." Northern States Power in Wisconsin filed for recovery for investment in generation (including nuclear plants), distribution and transmission. Kentucky Power filed to acquire part of a coal plant.

Utility efforts to implement adjustment clauses, trackers and riders strongly influenced filings in Q2 compared to other quarters. Concerns about slow demand growth also appeared in a significant number of cases. Tampa Electric filed in part to recover for revenue shortfalls associated with sluggish revenue growth in its service territory. Low cus-

VI. Rate Case Data: From Tables I-V

U.S. Shareholder-Owned Electric Utilities

Quarter	Number of Rate Cases Filed	Average Awarded ROE	Average Requested ROE	Average 10-Year Treasury Yield	Average Regulatory Lag
Q4 1988	1	NA	14.30	8.96	NA
Q1 1989	4	NA	15.26	9.21	NA
Q2 1989	4	NA	13.30	8.77	NA
Q3 1989	14	NA	13.65	8.11	NA
Q4 1989	13	NA	13.47	7.91	NA
Q1 1990	6	12.62	13.00	8.42	6.71
Q2 1990	20	12.85	13.51	8.68	9.07
Q3 1990	6	12.54	13.34	8.70	9.90
Q4 1990	8	12.68	13.31	8.40	8.61
Q1 1991	13	12.66	13.29	8.02	11.00
Q2 1991	17	12.67	13.23	8.13	11.00
Q3 1991	15	12.49	12.89	7.94	8.70
Q4 1991	12	12.42	12.90	7.35	10.70
Q1 1992	6	12.38	12.77	7.30	8.90
Q2 1992	15	11.83	12.86	7.38	9.61
Q3 1992	11	12.03	12.81	6.62	9.00
Q4 1992	12	12.14	12.36	6.74	10.10
Q1 1993	6	11.84	12.33	6.28	8.87
Q2 1993	7	11.64	12.39	5.99	8.10
Q3 1993	5	11.15	12.70	5.62	11.20
Q4 1993	9	11.04	12.12	5.61	10.90
Q1 1994	15	11.07	12.15	6.07	13.40
Q2 1994	10	11.13	12.37	7.08	9.28
Q3 1994	11	12.75	12.66	7.33	11.80
Q4 1994	4	11.24	13.36	7.84	9.26
Q1 1995	10	11.96	12.44	7.48	12.00
Q2 1995	10	11.32	12.26	6.62	10.40
Q3 1995	8	11.37	12.19	6.32	9.50
Q4 1995	5	11.58	11.69	5.89	10.60
Q1 1996	3	11.46	12.25	5.91	16.30
Q2 1996	9	11.46	11.96	6.72	9.80
Q3 1996	4	10.76	12.13	6.78	14.00
Q4 1996	4	11.56	12.48	6.34	8.12
Q1 1997	4	11.08	12.50	6.56	13.80
Q2 1997	5	11.62	12.66	6.70	18.70
Q3 1997	3	12.00	12.63	6.24	8.33
Q4 1997	4	11.06	11.93	5.91	12.70
Q1 1998	2	11.31	12.75	5.59	10.20
Q2 1998	7	12.20	11.78	5.60	7.00
Q3 1998	1	11.65	NA	5.20	19.00
Q4 1998	5	12.30	12.11	4.67	9.11
Q1 1999	1	10.40	NA	4.98	17.60
Q2 1999	3	10.94	11.17	5.54	8.33
Q3 1999	3	10.75	11.57	5.88	6.33
Q4 1999	4	11.10	12.00	6.14	23.00
Q1 2000	3	11.08	12.10	6.48	15.10
Q2 2000	1	11.00	12.90	6.18	10.50
Q3 2000	2	11.68	12.13	5.89	10.00
Q4 2000	8	12.50	11.81	5.57	7.50
Q1 2001	3	11.38	11.50	5.05	24.00
Q2 2001	7	10.88	12.24	5.27	8.00
Q3 2001	7	10.78	12.64	4.98	8.62
Q4 2001	6	11.57	12.29	4.77	8.00
Q1 2002	4	10.05	12.22	5.08	10.80
Q2 2002	6	11.41	12.08	5.10	8.16
Q3 2002	4	11.25	12.36	4.26	11.00
Q4 2002	6	11.57	11.92	4.01	8.25

VI. Rate Case Data: From Tables I-V (cont.)

U.S. Shareholder-Owned Electric Utilities

Quarter	Number of Rate Cases Filed	Average Awarded ROE	Average Requested ROE	Average 10-Year Treasury Yield	Average Regulatory Lag
Q1 2003	3	11.49	12.24	3.92	10.20
Q2 2003	10	11.16	11.76	3.62	13.60
Q3 2003	5	9.95	11.69	4.23	8.80
Q4 2003	10	11.09	11.57	4.29	6.83
Q1 2004	5	11.00	11.54	4.02	7.66
Q2 2004	8	10.64	11.81	4.60	10.00
Q3 2004	6	10.75	11.35	4.30	12.50
Q4 2004	5	10.91	11.48	4.17	14.40
Q1 2005	4	10.55	11.41	4.30	8.71
Q2 2005	12	10.13	11.49	4.16	13.70
Q3 2005	8	10.84	11.32	4.21	13.00
Q4 2005	10	10.57	11.14	4.49	8.44
Q1 2006	11	10.38	11.23	4.57	7.33
Q2 2006	18	10.39	11.38	5.07	8.83
Q3 2006	7	10.06	11.64	4.90	8.33
Q4 2006	12	10.38	11.19	4.63	8.11
Q1 2007	11	10.30	11.00	4.68	9.88
Q2 2007	16	10.27	11.44	4.85	9.82
Q3 2007	8	10.02	11.13	4.73	10.80
Q4 2007	11	10.44	11.16	4.26	8.75
Q1 2008	7	10.15	10.98	3.66	7.33
Q2 2008	8	10.41	10.93	3.89	10.80
Q3 2008	21	10.42	11.26	3.86	10.60
Q4 2008	6	10.38	11.21	3.25	11.90
Q1 2009	13	10.31	11.79	2.74	11.10
Q2 2009	22	10.55	11.01	3.31	9.13
Q3 2009	17	10.46	11.43	3.52	10.90
Q4 2009	14	10.54	11.15	3.46	9.69
Q1 2010	16	10.45	11.24	3.72	10.00
Q2 2010	19	10.12	11.12	3.49	9.00
Q3 2010	12	10.27	11.07	2.79	12.40
Q4 2010	8	10.30	11.17	2.86	10.90
Q1 2011	8	10.35	11.11	3.46	10.80
Q2 2011	15	10.24	11.06	3.21	12.00
Q3 2011	17	10.13	10.86	2.43	8.64
Q4 2011	10	10.29	10.66	2.05	7.60
Q1 2012	17	10.84	10.57	2.04	10.50
Q2 2012	16	9.92	10.66	1.82	11.40
Q3 2012	8	9.78	10.68	1.64	8.20
Q4 2012	12	10.05	10.69	1.71	8.65
Q1 2013	19	10.23	10.49	1.95	8.24
Q2 2013	16	9.77	10.40	2.00	11.80

NA = Not available
Source: SNL Financial / Regulatory Research Assoc. and EEI Rate Department

tomer growth in part prompted Baltimore Gas and Electric's filing.

Both Ameren and Commonwealth Edison submitted filings in Illinois as part of those companies' ongoing formula rate plan. The ROE requested in both filings was 8.72%, thus contributing to the record low average requested ROE in Q2. However, while the requested ROE is low for both companies, the certainty of earning that ROE and lack of lag that is part of the formula rate plan help to offset any deleterious effects of the low return.

Baltimore Gas and Electric's filing is, in part, an attempt to correct for the company's estimate that its earned overall return for the year ending 7/31/2013 will be only 5.68%. The company also hopes to implement an electric reliability investment initiative (and an associated tracker mechanism) to be based on guidelines established by the Maryland commission, based on its review of Maryland utilities' reliability performance and a Maryland Governor's Task Force's recommendations following a severe wind storm that affected the company's service territory. The company proposed measures that could be completed between 2014 and 2018 at an estimated cost of $136 million. The measures are expected to improve the company's reliability by about 10% compared to its average performance between 2010 and 2012.

Decided Cases

Eight of the ten cases decided in Q2 incorporated settlements or partial settlements. Settlements are often silent on details related to the case, but in Q2 enough details were revealed to allow for a fairly complete examination of the cases decided during the quarter.

Duke Energy Ohio

Duke's settlement granted the company recovery of an $11 million vegetation management expense (the amount the company spent in the test year) and a $4.4 million baseline expense for storms, but did not allow the company's requested storm deferral and tracking mechanism or any recovery of incremental expenses associated with 2012 storms. However, the company can request deferral of incremental storm costs after 2012. Also, the company noted that under pre-existing rates it would earn a return of 4.79% on rate base. The commission observed that such a rate of return is "insufficient to provide [the company] with reasonable compensation for the service it renders to customers."

San Diego Gas & Electric

San Diego Gas & Electric's order allowed attrition rate increases for 2013-2015 based on the Consumer Price Index – Urban, with some modification. This resulted in rate increases of 2.65% for 2013 and 2.75% for both 2014 and 2015. The commission also extended the company's "Z-factor" mechanism that allows utilities to request recovery, under certain circumstances, for significant unforeseen expenses between rate cases, subject to a $5 million deductible. The order also allowed the company recovery of costs associated with the San Onofre Nuclear Generating Station, subject to refund, pending a reasonableness review.

Consumers Energy in Michigan

Consumers Energy entered into a settlement that was approved without addressing advanced metering infrastructure issues, including whether the program should be suspended and whether the customer opt-out fee proposed by the company would be appropriate.

Duke Energy Progress in North Carolina

Duke Energy Progress entered into a settlement that was approved with a rider that allows the company to earn a return on coal inventory above that authorized in rates. The parties to the settlement did not agree, however, on Duke's proposal to implement an experimental rider to reduce rates to industrial customers. The commission similarly did not approve the rider, finding no substantial evidence that the reduction in industrial customers and industrial activity was caused by industrial electric rates. The chairman dissented on this issue, saying that the company's "industrial rates have been measurably higher than those of neighboring electric utilities and even higher than its own industrial rates in South Carolina."

Maui Electric in Hawaii

Maui Electric (MECO) entered into a settlement in Q2 that would have awarded the company a 10% ROE. However, the commission reduced the ROE to 9% because the 10% ROE was outside the 9%-9.75% range proposed by the Division of Consumer Advocacy (one of the parties to the settlement). The commission said that half the reduction was due to "updated economic and financial market conditions" and that the other half of the adjustment reflected "apparent system inefficiencies which negatively impact MECO's customers." The commission said the company "appears to have failed to adequately and sufficiently plan for and implement the necessary modifications to its existing operations to accept a more appropriate level of wind energy generation made available to MECO, negatively impacting ratepayers through higher electricity rates." The commission also disallowed $1.3 million associated with pension costs and other post-retirement-benefits. To derive the disallowance, the commission relied on a three-year average, rather than the test year estimate adopted in the settlement for these costs. The commission further disallowed some amounts associated with integrated resource planning and customer information system costs. The commission said this decision is intended to serve notice to MECO and other Hawaiian Electric utilities that they "appear to lack movement to a sustainable business model to address technological advancements and increasing customer expectations. The commission observes that some mainland electric utilities have begun to define, articulate and implement the vision for the 'electric utility of the future.' Without such a long-term, customer focused business strategy, it is difficult to ascertain whether [the Hawaiian Electric utilities'] increasing capital investments are strategic investments or simply a series of unrelated capital projects that effectively expand utility rate base and increase profits but appear to provide limited or little customer value."

Tucson Electric Power

In Q2, Tucson Electric Power entered into a settlement that approved the company's proposed lost fixed-cost recovery decoupling mechanism, which is targeted at fixed costs lost as a result of the commission's energy efficiency standard and distributed generation requirements. The adjustment is capped at 1% with any excess deferred. The settlement also approved an environmental compliance adjustor to help the company recover, between rate cases, any costs resulting from environmental standards established by federal agencies. Recovery through the adjustor is limited to 0.25% of the company's total retail revenue per year. The settlement increased the monthly residential customer charge from $7 to $10, the commercial single-phase service customer charge from $8 to $15.50, the commercial three-phase service customer charge from $14 to $20.50, and the large-customer customer charge from $371.88 to $775. The commission said that the $10 residential customer charge was a "small part of the overall average bill of over $84" and well less than the $56 average monthly fixed costs per residential customer. The commission disallowed the settlement's energy efficiency resource plan (EERP), which would have given the company a return of and on energy efficiency resource investments over five years through a demand-side management surcharge. [The company currently recovers energy efficiency (EE) program costs, including a performance incentive, through a demand side management (DSM) surcharge over one year.] The commission said "Adoption of the EERP . . . would represent a fundamental shift in the way we have addressed cost recovery of EE/DSM. While TEP's present EE/DSM recovery mechanism classifies EE/DSM costs as expenses, the proposed EERP would treat them as invested capital. . . . Although we are aware that EE/DSM programs can provide benefits to customers; nonetheless, the record before us shows that these programs come with substantial costs. . . . We want to be clear that we support cost effective energy efficiency. However, we believe the time has come for us to engage in a full consideration of the issues related to EE/DSM programs and their cost recovery, including whether EE/DSM should be considered as a resource in integrated resource plans." The commission opened a new generic docket on the issue. One of the five commissioners voted no on the settlement and order without written dissent.

Puget Sound Energy in Washington

Puget Sound Energy filed an expedited rate case in response to the commission's interest in breaking "the current pattern of almost continuous rate cases." The filing was for delivery services only and excluded power costs and property taxes. A settlement allowed for the company to establish a rate plan consisting of a series of 3% annual increases intended to avoid the need to file a general rate case over a period of years, and a decoupling mechanism with a baseline revenue per customer for the rate plan period. The rate plan period extends at least until March 2016, the next time the company will be allowed to file a new rate case, or until March 2017, if the company decides not to file another case first.■

Consolidated Edison Inc. (ED) - NYSE

55.42 0.63(1.15%) 4:02PM EDT | After Hours : **55.27** 0.15 (0.27%) 4:45PM EDT

Analyst Estimates

Get Analyst Estimates for: GO

Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	1.45	0.70	3.74	3.82
No. of Analysts	8.00	8.00	18.00	20.00
Low Estimate	1.35	0.64	3.65	3.68
High Estimate	1.61	0.85	3.82	3.90
Year Ago EPS	1.44	0.69	3.75	3.74

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	3.61B	3.04B	12.58B	12.87B
No. of Analysts	4	4	11	12
Low Estimate	3.40B	2.83B	12.23B	12.36B
High Estimate	4.02B	3.36B	14.17B	14.49B
Year Ago Sales	3.44B	2.90B	12.19B	12.58B
Sales Growth (year/est)	4.90%	4.80%	3.20%	2.40%

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	1.38	0.73	1.05	0.57
EPS Actual	1.44	0.69	1.08	0.55
Difference	0.06	-0.04	0.03	-0.02
Surprise %	4.30%	-5.50%	2.90%	-3.50%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Current Estimate	1.45	0.70	3.74	3.82
7 Days Ago	1.45	0.70	3.75	3.82
30 Days Ago	1.46	0.71	3.75	3.83
60 Days Ago	1.46	0.71	3.75	3.83
90 Days Ago	1.44	0.71	3.79	3.84

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	1	0
Down Last 30 Days	0	0	1	1
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	ED	Industry	Sector	S&P 500
Current Qtr.	0.70%	21.00%	-15.00%	14.70%
Next Qtr.	1.40%	10.70%	-10.50%	19.30%
This Year	-0.30%	17.80%	2.50%	8.50%
Next Year	2.10%	17.70%	16.40%	12.80%
Past 5 Years (per annum)	5.15%	N/A	N/A	N/A
Next 5 Years (per annum)	1.78%	5.06%	6.76%	9.43%
Price/Earnings (avg. for	14.65	16.88	12.98	15.73

comparison categories)	14.65	16.88	12.98	15.73
PEG Ratio (avg. for comparison categories)	8.23	2.95	2.18	1.54

Currency in USD.

Tue, Oct 8, 2013, 6:14pm EDT - US Markets are closed

Dow 1.07% Nasdaq 2.00%

NextEra Energy, Inc. (NEE) - NYSE

Add to Portfolio

79.69 0.34(0.43%) 4:00PM EDT | After Hours : **79.87** 0.18 (0.22%) 4:42PM EDT

Analyst Estimates

Get Analyst Estimates for: GO

Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	1.41	1.02	4.95	5.29
No. of Analysts	11.00	11.00	23.00	25.00
Low Estimate	1.32	0.95	4.83	5.14
High Estimate	1.57	1.13	5.10	5.40
Year Ago EPS	1.26	1.03	4.57	4.95

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	4.46B	3.92B	15.61B	16.43B
No. of Analysts	5	5	16	16
Low Estimate	4.13B	3.57B	15.04B	15.73B
High Estimate	4.59B	4.69B	16.60B	17.43B
Year Ago Sales	3.84B	3.38B	14.26B	15.61B
Sales Growth (year/est)	16.10%	16.30%	9.50%	5.20%

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	1.40	0.95	1.02	1.28
EPS Actual	1.26	1.03	1.12	1.46
Difference	-0.14	0.08	0.10	0.18
Surprise %	-10.00%	8.40%	9.80%	14.10%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Current Estimate	1.41	1.02	4.95	5.29
7 Days Ago	1.44	0.99	4.95	5.29
30 Days Ago	1.41	1.02	4.95	5.29
60 Days Ago	1.45	0.98	4.95	5.30
90 Days Ago	1.52	1.04	4.94	5.30

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Up Last 7 Days	0	0	0	1
Up Last 30 Days	0	1	0	1
Down Last 30 Days	0	0	1	0
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	NEE	Industry	Sector	S&P 500
Current Qtr.	11.90%	21.00%	-15.00%	14.70%
Next Qtr.	-1.00%	10.70%	-10.50%	19.30%
This Year	8.30%	17.80%	2.50%	8.50%
Next Year	6.90%	17.70%	16.40%	12.80%
Past 5 Years (per annum)	4.37%	N/A	N/A	N/A
Next 5 Years (per annum)	6.54%	5.06%	6.76%	9.43%
Price/Earnings (avg. for	16.03	16.88	12.08	15.73

comparison categories)	16.03	16.88	12.98	15.73
PEG Ratio (avg. for comparison categories)	2.45	2.95	2.18	1.54

Currency in USD.

Tue, Oct 8, 2013, 6:14pm EDT - US Markets are closed

Dow 1.07% Nasdaq 2.00%

Northeast Utilities (NU) - NYSE

Add to Portfolio Like 11

41.02 0.34(0.84%) 4:00PM EDT

Analyst Estimates

Get Analyst Estimates for: GO

Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	0.73	0.58	2.55	2.72
No. of Analysts	10.00	10.00	18.00	19.00
Low Estimate	0.70	0.52	2.50	2.67
High Estimate	0.77	0.60	2.59	2.83
Year Ago EPS	0.70	0.56	2.28	2.55

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	1.91B	1.66B	6.98B	7.32B
No. of Analysts	4	4	11	11
Low Estimate	1.81B	1.58B	3.92B	6.89B
High Estimate	2.02B	1.74B	7.95B	8.15B
Year Ago Sales	1.86B	1.68B	6.27B	6.98B
Sales Growth (year/est)	2.50%	-1.40%	11.30%	4.80%

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	0.66	0.58	0.65	0.50
EPS Actual	0.70	0.56	0.72	0.54
Difference	0.04	-0.02	0.07	0.04
Surprise %	6.10%	-3.40%	10.80%	8.00%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Current Estimate	0.73	0.58	2.55	2.72
7 Days Ago	0.73	0.58	2.55	2.72
30 Days Ago	0.73	0.58	2.55	2.72
60 Days Ago	0.73	0.58	2.55	2.72
90 Days Ago	0.73	0.61	2.55	2.73

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Up Last 7 Days	2	0	0	0
Up Last 30 Days	2	1	1	1
Down Last 30 Days	0	1	0	1
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	NU	Industry	Sector	S&P 500
Current Qtr.	4.30%	21.00%	-15.00%	14.70%
Next Qtr.	3.60%	10.70%	-10.50%	19.30%
This Year	11.80%	17.80%	2.50%	8.50%
Next Year	6.70%	17.70%	16.40%	12.80%
Past 5 Years (per annum)	7.81%	N/A	N/A	N/A
Next 5 Years (per annum)	7.62%	5.06%	6.76%	9.43%
Price/Earnings (avg. for	[illegible]	[illegible]	[illegible]	[illegible]

comparison categories)	15.95	16.88	12.98	15.73
PEG Ratio (avg. for comparison categories)	2.09	2.95	2.18	1.54

Currency in USD.

Southern Company (SO) - NYSE

41.01 0.52(1.28%) 4:04PM EDT | After Hours : **40.86** 0.15 (0.37%) 5:02PM EDT - Nasdaq Real Time Price

Analyst Estimates

Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	1.13	0.45	2.73	2.83
No. of Analysts	13.00	12.00	21.00	22.00
Low Estimate	1.10	0.41	2.66	2.65
High Estimate	1.15	0.52	2.80	2.91
Year Ago EPS	1.11	0.44	2.70	2.73

Next Earnings Date: Oct 29, 2013 - Set a Reminder

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	5.37B	3.62B	17.14B	17.78B
No. of Analysts	6	6	12	12
Low Estimate	5.15B	2.57B	16.70B	17.10B
High Estimate	6.14B	3.92B	17.48B	18.28B
Year Ago Sales	5.05B	3.70B	16.54B	17.14B
Sales Growth (year/est)	6.40%	-2.20%	3.60%	3.70%

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	1.13	0.40	0.50	0.68
EPS Actual	1.11	0.44	0.49	0.66
Difference	-0.02	0.04	-0.01	-0.02
Surprise %	-1.80%	10.00%	-2.00%	-2.90%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Current Estimate	1.13	0.45	2.73	2.83
7 Days Ago	1.14	0.45	2.74	2.84
30 Days Ago	1.14	0.45	2.74	2.84
60 Days Ago	1.14	0.44	2.74	2.84
90 Days Ago	1.14	0.43	2.76	2.88

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Up Last 7 Days	0	1	0	0
Up Last 30 Days	0	1	0	0
Down Last 30 Days	1	0	1	3
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	SO	Industry	Sector	S&P 500
Current Qtr.	1.80%	21.00%	-15.00%	14.70%
Next Qtr.	2.30%	10.70%	-10.50%	19.30%
This Year	1.10%	17.80%	2.50%	8.50%
Next Year	3.70%	17.70%	16.40%	12.80%
Past 5 Years (per annum)	1.42%	N/A	N/A	N/A

Next 5 Years (per annum)	4.28%	5.06%	6.76%	9.43%
Price/Earnings (avg. for comparison categories)	14.83	16.88	12.98	15.73
PEG Ratio (avg. for comparison categories)	3.46	2.95	2.18	1.54

Currency in USD.

Wisconsin Energy Corp. (WEC) - NYSE

40.24 **0.30(0.75%)** 4:02PM EDT | After Hours : **40.24** 0.00 (0.00%) 4:29PM EDT

Analyst Estimates

Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	0.57	0.61	2.45	2.57
No. of Analysts	7.00	7.00	19.00	19.00
Low Estimate	0.54	0.54	2.40	2.50
High Estimate	0.62	0.66	2.51	2.68
Year Ago EPS	0.67	0.43	2.35	2.45

Next Earnings Date: Oct 29, 2013 - Set a Reminder

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	1.03B	1.14B	4.48B	4.59B
No. of Analysts	3	3	11	12
Low Estimate	1.00B	1.12B	4.26B	4.32B
High Estimate	1.05B	1.18B	4.77B	4.85B
Year Ago Sales	1.04B	1.07B	4.25B	4.48B
Sales Growth (year/est)	-1.20%	6.10%	5.60%	2.30%

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	0.57	0.41	0.71	0.46
EPS Actual	0.67	0.43	0.76	0.52
Difference	0.10	0.02	0.05	0.06
Surprise %	17.50%	4.90%	7.00%	13.00%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Current Estimate	0.57	0.61	2.45	2.57
7 Days Ago	0.57	0.61	2.45	2.57
30 Days Ago	0.57	0.61	2.45	2.57
60 Days Ago	0.57	0.61	2.45	2.56
90 Days Ago	0.66	0.57	2.44	2.55

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	WEC	Industry	Sector	S&P 500
Current Qtr.	-14.90%	21.00%	-15.00%	14.70%
Next Qtr.	41.90%	10.70%	-10.50%	19.30%
This Year	4.30%	17.80%	2.50%	8.50%
Next Year	4.90%	17.70%	16.40%	12.80%
Past 5 Years (per annum)	14.45%	N/A	N/A	N/A

Next 5 Years (per annum)	5.21%	5.06%	6.76%	9.43%
Price/Earnings (avg. for comparison categories)	16.36	16.88	12.98	15.73
PEG Ratio (avg. for comparison categories)	3.14	2.95	2.18	1.54

Currency in USD.

Tue, Oct 8, 2013, 6:15pm EDT - US Markets are closed

Dow 1.07% Nasdaq 2.00%

Xcel Energy Inc. (XEL) - NYSE

27.58 0.41(1.51%) 4:02PM EDT | After Hours : **27.58** 0.00 (0.00%) 4:29PM EDT

Analyst Estimates

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Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	0.75	0.27	1.91	1.99
No. of Analysts	10.00	9.00	18.00	19.00
Low Estimate	0.69	0.21	1.89	1.96
High Estimate	0.82	0.30	1.93	2.05
Year Ago EPS	0.78	0.29	1.82	1.91

Next Earnings Date: Oct 23, 2013 - Set a Reminder

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	3.00B	2.61B	10.86B	11.21B
No. of Analysts	7	7	12	12
Low Estimate	2.63B	2.08B	10.44B	10.74B
High Estimate	3.91B	3.25B	11.71B	11.94B
Year Ago Sales	2.72B	2.55B	10.13B	10.86B
Sales Growth (year/est)	10.00%	2.20%	7.30%	3.20%

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	0.73	0.27	0.45	0.39
EPS Actual	0.78	0.29	0.48	0.40
Difference	0.05	0.02	0.03	0.01
Surprise %	6.80%	7.40%	6.70%	2.60%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Current Estimate	0.75	0.27	1.91	1.99
7 Days Ago	0.75	0.27	1.91	1.99
30 Days Ago	0.75	0.27	1.90	1.99
60 Days Ago	0.75	0.28	1.90	1.99
90 Days Ago	0.76	0.35	1.90	1.99

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Up Last 7 Days	0	0	1	1
Up Last 30 Days	0	0	1	2
Down Last 30 Days	0	0	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	XEL	Industry	Sector	S&P 500
Current Qtr.	-3.80%	21.00%	-15.00%	14.70%
Next Qtr.	-6.90%	10.70%	-10.50%	19.30%
This Year	4.90%	17.80%	2.50%	8.50%
Next Year	4.20%	17.70%	16.40%	12.80%
Past 5 Years (per annum)	5.23%	N/A	N/A	N/A

Next 5 Years (per annum)	4.91%	5.06%	6.76%	9.43%
Price/Earnings (avg. for comparison categories)	14.23	16.88	12.98	15.73
PEG Ratio (avg. for comparison categories)	2.90	2.95	2.18	1.54

Currency in USD.

Tue, Oct 8, 2013, 6:15pm EDT - US Markets are closed

Dow ↓1.07% Nasdaq ↓2.00%

Canadian Utilities Ltd. (CU.TO) - Toronto

Add to Portfolio Like 0

35.36 ↓ 0.16 (0.45%) 3:59PM EDT

Analyst Estimates

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Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	0.40	0.61	2.19	2.38
No. of Analysts	4.00	3.00	8.00	7.00
Low Estimate	0.39	0.56	2.10	2.30
High Estimate	0.44	0.67	2.26	2.53
Year Ago EPS	0.39	0.55	2.02	2.19

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	652.93M	1.08B	3.53B	3.93B
No. of Analysts	1	1	2	2
Low Estimate	652.93M	1.08B	3.49B	3.85B
High Estimate	652.93M	1.08B	3.57B	4.01B
Year Ago Sales	NaN	855.00M	3.14B	3.53B
Sales Growth (year/est)	N/A	26.00%	12.50%	11.20%

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	0.41	0.52	0.72	0.47
EPS Actual	0.39	0.55	0.70	0.51
Difference	-0.02	0.03	-0.02	0.04
Surprise %	-4.90%	5.80%	-2.80%	8.50%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Current Estimate	0.40	0.61	2.19	2.38
7 Days Ago	0.40	0.61	2.18	2.38
30 Days Ago	0.40	0.61	2.19	2.39
60 Days Ago	0.40	0.61	2.18	2.37
90 Days Ago	0.42	0.61	2.15	2.37

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	1
Down Last 30 Days	0	0	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	CU.TO	Industry	Sector	S&P 500
Current Qtr.	2.60%	36.20%	34.70%	14.70%
Next Qtr.	10.90%	195.10%	22.90%	19.30%
This Year	8.40%	42.40%	2.80%	8.50%
Next Year	8.70%	1.50%	8.20%	12.80%
Past 5 Years (per annum)	8.54%	N/A	N/A	N/A
Next 5 Years (per annum)	6.70%	5.34%	6.12%	9.43%
Price/Earnings (avg. for	16.28	21.40	20.79	15.73

comparison categories)	16.28	21.40	20.79	15.73
PEG Ratio (avg. for comparison categories)	2.43	3.37	-4.81	1.54

Currency in CAD.

Tue, Oct 8, 2013, 6:17pm EDT - US Markets are closed

Dow 1.07% Nasdaq 2.00%

Fortis Inc. (FTS.TO) - Toronto

Add to Portfolio Like 0

30.94 0.02 (0.06%) 3:59PM EDT

Analyst Estimates

Get Analyst Estimates for: GO

Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	0.27	0.48	1.71	1.81
No. of Analysts	4.00	4.00	7.00	7.00
Low Estimate	0.24	0.46	1.67	1.75
High Estimate	0.29	0.50	1.75	1.84
Year Ago EPS	0.24	0.45	1.70	1.71

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	764.38M	1.17B	4.09B	4.45B
No. of Analysts	2	2	6	6
Low Estimate	758.76M	1.13B	3.80B	3.94B
High Estimate	770.00M	1.21B	4.47B	4.85B
Year Ago Sales	714.00M	999.00M	3.65B	4.09B
Sales Growth (year/est)	7.10%	17.00%	11.80%	8.90%

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	0.26	0.49	0.67	0.32
EPS Actual	0.24	0.45	0.67	0.31
Difference	-0.02	-0.04	0.00	-0.01
Surprise %	-7.70%	-8.20%	0.00%	-3.10%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Current Estimate	0.27	0.48	1.71	1.81
7 Days Ago	0.27	0.48	1.71	1.81
30 Days Ago	0.26	0.48	1.71	1.81
60 Days Ago	0.26	0.48	1.71	1.81
90 Days Ago	0.25	0.50	1.72	1.83

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	1
Down Last 30 Days	0	0	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	FTS.TO	Industry	Sector	S&P 500
Current Qtr.	12.50%	81.10%	82.00%	14.70%
Next Qtr.	6.70%	N/A	46.50%	19.30%
This Year	0.60%	78.30%	63.30%	8.50%
Next Year	5.80%	81.10%	54.00%	12.80%
Past 5 Years (per annum)	4.11%	N/A	N/A	N/A
Next 5 Years (per annum)	4.60%	-30.88%	16.05%	9.43%
Price/Earnings (avg. for	18.27	4.40	7.83	15.73

comparison categories)	18.27	-4.40	7.83	15.73
PEG Ratio (avg. for comparison categories)	3.97	1.65	3.59	1.54

Currency in CAD.

Tue, Oct 8, 2013, 6:16pm EDT - US Markets are closed

Dow ↓1.07% Nasdaq ↓2.00%

Emera Incorporated (EMA.TO) - Toronto

Add to Portfolio Like 1

29.37 ↓0.19 (0.64%) 3:59PM EDT

Analyst Estimates

Get Analyst Estimates for: GO

Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	0.35	0.43	1.76	1.88
No. of Analysts	7.00	6.00	9.00	11.00
Low Estimate	0.33	0.38	1.68	1.73
High Estimate	0.38	0.51	1.86	2.13
Year Ago EPS	0.33	0.46	1.85	1.76

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	567.13M	618.06M	2.37B	2.64B
No. of Analysts	1	1	3	3
Low Estimate	567.13M	618.06M	2.22B	2.50B
High Estimate	567.13M	618.06M	2.54B	2.79B
Year Ago Sales	476.40M	512.90M	2.06B	2.37B
Sales Growth (year/est)	19.00%	20.50%	15.10%	11.20%

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	0.37	0.41	0.67	0.30
EPS Actual	0.33	0.46	0.68	0.32
Difference	-0.04	0.05	0.01	0.02
Surprise %	-10.80%	12.20%	1.50%	6.70%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Current Estimate	0.35	0.43	1.76	1.88
7 Days Ago	0.35	0.43	1.76	1.88
30 Days Ago	0.35	0.44	1.76	1.88
60 Days Ago	0.35	0.46	1.76	1.92
90 Days Ago	0.35	0.46	1.77	1.92

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	EMA.TO	Industry	Sector	S&P 500
Current Qtr.	6.10%	36.20%	34.70%	14.70%
Next Qtr.	-6.50%	195.10%	22.90%	19.30%
This Year	-4.90%	42.40%	2.80%	8.50%
Next Year	6.80%	1.50%	8.20%	12.80%
Past 5 Years (per annum)	13.89%	N/A	N/A	N/A
Next 5 Years (per annum)	5.90%	5.34%	6.12%	9.43%
Price/Earnings (avg. for	16.90	21.40	20.70	15.73

comparison categories)	16.90	21.40	20.79	15.73
PEG Ratio (avg. for comparison categories)	2.86	3.37	-4.81	1.54

Currency in CAD.

Enbridge Inc. (ENB.TO) - Toronto

42.25 0.07 (0.17%) 3:59PM EDT

Analyst Estimates

Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	0.36	0.47	1.81	2.11
No. of Analysts	12.00	10.00	15.00	15.00
Low Estimate	0.34	0.43	1.72	1.98
High Estimate	0.43	0.52	1.86	2.40
Year Ago EPS	0.34	0.41	1.59	1.81

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	6.20B	7.21B	29.41B	29.37B
No. of Analysts	4	4	7	7
Low Estimate	5.12B	5.98B	26.73B	23.64B
High Estimate	7.72B	8.57B	32.66B	34.53B
Year Ago Sales	5.79B	7.17B	25.31B	29.41B
Sales Growth (year/est)	7.10%	0.50%	16.20%	-0.10%

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	0.35	0.44	0.52	0.39
EPS Actual	0.34	0.41	0.62	0.38
Difference	-0.01	-0.03	0.10	-0.01
Surprise %	-2.90%	-6.80%	19.20%	-2.60%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Current Estimate	0.36	0.47	1.81	2.11
7 Days Ago	0.36	0.47	1.82	2.12
30 Days Ago	0.36	0.47	1.81	2.12
60 Days Ago	0.36	0.47	1.82	2.12
90 Days Ago	0.36	0.48	1.82	2.13

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Up Last 7 Days	0	0	1	0
Up Last 30 Days	0	0	2	0
Down Last 30 Days	1	1	1	2
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	ENB.TO	Industry	Sector	S&P 500
Current Qtr.	5.90%	11.80%	34.70%	14.70%
Next Qtr.	14.60%	15.90%	22.90%	19.30%
This Year	13.80%	9.30%	2.80%	8.50%
Next Year	16.60%	14.50%	8.20%	12.80%
Past 5 Years (per annum)	16.89%	N/A	N/A	N/A
Next 5 Years (per annum)	15.90%	3.93%	6.12%	9.43%
Price/Earnings (avg. for	23.30	21.00	20.70	15.73

comparison categories)	23.30	21.99	20.79	15.73
PEG Ratio (avg. for comparison categories)	1.47	-33.31	-4.81	1.54

Currency in CAD.

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TransCanada Corp. (TRP.TO) - Toronto

44.00 0.18(0.41%) 4:29PM EDT

Analyst Estimates

Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	0.59	0.62	2.25	2.52
No. of Analysts	10.00	9.00	13.00	13.00
Low Estimate	0.56	0.52	2.13	2.43
High Estimate	0.61	0.70	2.45	2.70
Year Ago EPS	0.50	0.45	1.89	2.25

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Avg. Estimate	2.27B	2.39B	9.16B	9.90B
No. of Analysts	3	3	6	6
Low Estimate	2.11B	2.24B	8.44B	9.04B
High Estimate	2.47B	2.61B	10.38B	11.23B
Year Ago Sales	2.13B	2.09B	8.01B	9.16B
Sales Growth (year/est)	6.80%	14.60%	14.40%	8.10%

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	0.52	0.49	0.53	0.51
EPS Actual	0.50	0.45	0.52	0.51
Difference	-0.02	-0.04	-0.01	0.00
Surprise %	-3.80%	-8.20%	-1.90%	0.00%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Current Estimate	0.59	0.62	2.25	2.52
7 Days Ago	0.59	0.62	2.25	2.53
30 Days Ago	0.59	0.62	2.26	2.53
60 Days Ago	0.58	0.62	2.25	2.53
90 Days Ago	0.58	0.62	2.25	2.53

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Dec 13	Next Year Dec 14
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Down Last 30 Days	0	0	1	1
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	TRP.TO	Industry	Sector	S&P 500
Current Qtr.	18.00%	11.80%	34.70%	14.70%
Next Qtr.	37.80%	15.90%	22.90%	19.30%
This Year	19.00%	9.30%	2.80%	8.50%
Next Year	12.00%	14.50%	8.20%	12.80%
Past 5 Years (per annum)	-1.48%	N/A	N/A	N/A
Next 5 Years (per annum)	1.00%	3.93%	6.12%	9.43%
Price/Earnings (avg. for	19.64	21.99	20.79	15.73

comparison categories)	19.64	21.99	20.79	15.73
PEG Ratio (avg. for comparison categories)	19.64	-33.31	-4.81	1.54

Currency in CAD.

Tue, Oct 8, 2013, 6:18pm EDT - US Markets are closed

Dow ↓1.07% Nasdaq ↓2.00%

Valener Inc (VNR.TO) - Toronto

Add to Portfolio Like 0

15.50 ↑0.18 (1.17%) 3:59PM EDT

Analyst Estimates

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Earnings Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Sep 13	Next Year Sep 14
Avg. Estimate	-0.15	N/A	0.87	0.97
No. of Analysts	4.00	N/A	5.00	5.00
Low Estimate	-0.18	N/A	0.83	0.90
High Estimate	-0.13	N/A	0.89	1.02
Year Ago EPS	-0.08	0.38	0.81	0.87

Revenue Est	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Sep 13	Next Year Sep 14
Avg. Estimate	NaN	NaN	NaN	NaN
No. of Analysts				
Low Estimate	NaN	NaN	NaN	NaN
High Estimate	NaN	NaN	NaN	NaN
Year Ago Sales	NaN	NaN	NaN	NaN
Sales Growth (year/est)	N/A	N/A	N/A	N/A

Earnings History	Sep 12	Dec 12	Mar 13	Jun 13
EPS Est	-0.11	0.28	0.60	0.01
EPS Actual	-0.08	0.38	0.64	-0.01
Difference	0.03	0.10	0.04	-0.02
Surprise %	27.30%	35.70%	6.70%	-200.00%

EPS Trends	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Sep 13	Next Year Sep 14
Current Estimate	-0.15	N/A	0.87	0.97
7 Days Ago	-0.15	N/A	0.87	0.97
30 Days Ago	-0.15	N/A	0.87	0.97
60 Days Ago	-0.16	N/A	0.89	0.97
90 Days Ago	-0.15	N/A	0.90	0.95

EPS Revisions	Current Qtr. Sep 13	Next Qtr. Dec 13	Current Year Sep 13	Next Year Sep 14
Up Last 7 Days	0	N/A	0	0
Up Last 30 Days	0	N/A	0	0
Down Last 30 Days	0	N/A	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	VNR.TO	Industry	Sector	S&P 500
Current Qtr.	-87.50%	82.60%	82.00%	14.70%
Next Qtr.	N/A	25.70%	46.50%	19.30%
This Year	7.40%	54.70%	63.30%	8.50%
Next Year	11.50%	10.90%	54.00%	12.80%
Past 5 Years (per annum)	13.99%	N/A	N/A	N/A
Next 5 Years (per annum)	8.00%	8.30%	16.05%	9.43%
Price/Earnings (avg. for	18.00	127.36	7.83	15.73

comparison categories)	18.09	127.36	7.83	15.73
PEG Ratio (avg. for comparison categories)	2.26	3.85	3.59	1.54

Currency in CAD.