BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 080006-WS

UTILITIES, INC.

REBUTTAL TESTIMONY OF

PAULINE M. AHERN

REGARDING WATER AND WASTEWATER INDUSTRY

ANNUAL REESTABLISHMENT OF AUTHORIZED RATE OF

RETURN ON COMMON EQUITY FOR WATER AND WASTEWATER

UTILITIES PURSUANT TO SECTION 367.081(4)(f), F.S.

REBUTTAL TESTIMONY OF PAULINE M. AHERN, CRRA

I. INTRODUCTION

Q. Please state your name, occupation and business address.

A. My name is Pauline M. Ahern and I am a Principal of AUS Consultants. My business address is 155 Gaither Drive, Suite A, Mt. Laurel, New Jersey 08054.

Q. Are you the same Pauline M. Ahern who previously submitted direct testimony in this proceeding?

A. Yes, I am.

Q. Have you prepared exhibits which support your rebuttal testimony?

A. Yes, I have. They have been marked for identification as Exhibit (PMA-2)__ through (PMA-28)__.

II. PURPOSE

Q. What is the purpose of this testimony?

A. The purpose of this testimony is to rebut certain aspects of the direct testimony of James A. Rothschild, witness for the Office of the Public Counsel (OPC) on behalf of the Citizens of the State of Florida regarding his recommended changes to the current leverage formula as well as his recommended base common equity cost rate to be utilized in the leverage formula. Specifically, I will address OPC Witness Rothschild's erroneous assumption that the cost rate of common equity must move in tandem with interest rate levels; his suggested changes to the leverage formula, including his misinterpretation of the Modigliani / Miller principle; his unnecessary assumption that the debt cost rate must change as the level of debt in the capital structure changes; and his rejection of the Florida Public Service Commission's (FL PSC) recommendation of

the addition of a bond yield differential, private placement premium and small utility risk premium as well as a flotation cost adjustment to the base common equity cost rate to be applied in the leverage formula; his reliance upon retention growth plus reinvestment growth (BR + SV) in his application of the Discounted Cash Flow Model (DCF), and his application of the Capital Asset Pricing Model (CAPM). Finally, I will present a common equity cost rate analysis which demonstrates that the results of the leverage formula are reasonable for establishing a return on common equity for water and wastewater utilities in Florida.

III. SUMMARY

Q. Please summarize your rebuttal testimony.

A. My testimony describes the errors contained in the direct testimony of OPC Witness Rothschild with regard to the reasonableness of the leverage formula applied to the return on common equity of water and wastewater utilities in the state of Florida. In doing so, my testimony explains how the assumption made by OPC Witness Rothschild that the cost of common equity must move in tandem with the movement in interest rates is fundamentally correct if all else is equal, but in reality is incorrect due to the multiple factors that affect the common equity cost rate.

My testimony also explains why OPC Witness Rothschild is theoretically correct in assuming that the debt cost rate should change with the company's common equity ratio but will demonstrate why it is reasonable for the debt cost rate to remain constant for the entire spread of common equity ratios.

In addition, my testimony will demonstrate OPC Witness Rothschild's misinterpretation of the Modigliani / Miller principle and his subsequent misapplication

of the principle to the overall cost of capital for water and wastewater utilities.

Further, my testimony will also explain why it is necessary for the addition of a bond differential, private placement premium, a small utility risk premium, as well as a flotation cost adjustment to the common equity cost rate to be applied in the leverage formula.

I will also explain why OPC Witness Rothschild's DCF method of retention growth plus reinvestment growth (BR + SV) is flawed and should be disregarded in this proceeding and I will demonstrate how OPC Witness Rothschild's CAPM analysis is not really a CAPM analysis, and should also be disregarded.

Finally, I will demonstrate the reasonableness of the leverage formula with regard to the common equity cost rate of water and wastewater utilities in the state of Florida by an independent analysis of four cost of capital models; the DCF, CAPM, Risk Premium Model, and the Comparable Earnings Model applied to the market data of a proxy group of six AUS Utility Reports water companies and the Florida PSC Natural Gas Index.

IV. OPC WITNESS ROTHSCHILD'S ASSUMPTION REGARDING COMMON EQUITY COST RATE AND INTEREST RATE LEVELS

Q. On page 6, lines 9-15 of his direct testimony, OPC Witness Rothschild asserts that, since interest rates have fallen between the 2001 leverage finding by the FL PSC and the current 2008 update to the leverage formula, that "one should be highly confident that the cost of equity has also dropped." Please comment.

A. Theoretically, OPC Witness Rothschild is correct, providing that all else is equal, meaning that all other capital market and economic conditions and factors which affect

investors' expected return rate on common equity capital, are identical in 2008 to those prevailing in 2001. However, all else is not equal. When the 2001 leverage formula was developed by the FL PSC Staff in the summer of 2001[1], the United States (U.S.) had not yet experienced: 1) the terrorist attacks of September 11, 2001 and their aftermath, including the continuing wars in Afghanistan and Iraq; 2) the recent run-up of energy prices and their effect on both the U.S. and world economies; 3) the recent mortgage and subsequent housing and credit crises in both the U.S. and the world; 4) the current weak U.S. economy which is facing a potential recession; 5) the current unemployment rate which is the highest in five years; 5) rising interest rates; and 6) the increased riskiness of the utility industry as evidenced by rising betas.

As can be gleaned from pages 1 and 2 of Exhibit (PMA-2)__ which show the Blue Chip Financial Forecasts (Blue Chip) of August 1, 2001 (used by FL PSC Staff in its 2001 leverage formulation) and September 1, 2008 (the most recently available), the consensus of 50 economists relative to Gross Domestic Product (GDP), a measure of the strength of the U.S. economy, indicates that the expected growth in the economy was greater in 2001 than currently in 2008. The August 1, 2001 Blue Chip shows an expected consensus average growth in GDP of 3.0% for the six quarters ending with the fourth quarter 2002 in contrast to currently expected growth in GDP of 1.5% for the six quarters ending with the fourth quarter 2009 based upon the September 1, 2008 Blue Chip. Likewise, expected inflationary pressures are greater in 2008 than they were in 2001, as the consensus Blue Chip expected inflation as measured by the GDP price

[1] See Attachment A to Order No. PSC-01-2514-FOF-WS issued December 24, 2001 which presents FL PSC Staff's leverage formula analysis based upon market data from the summer of 2001.

deflator was 2.0% for the six quarters ending with the fourth quarter 2002 compared with currently expected inflation of 2.5% for the six quarters ending with the fourth quarter 2009 as can be gleaned from the information shown on pages 1 and 2 of Exhibit (PMA-2)__ . The contrast in the GDP price deflator is even more pronounced for the third quarter 2001 relative to the third quarter 2008, as the August 1, 2001 Blue Chip consensus shows the GDP price deflator at 2.0% for the third quarter 2001 compared with 3.1% shown in the September 1, 2008 Blue Chip for the third quarter 2008. Similarly, another measure of inflation, the Consumer Price Index (CPI), also shows that expected inflation is currently greater in 2008 than in 2001. As can also be gleaned from the information shown on the August 1, 2001 Blue Chip, the CPI was expected to average 2.4% for the six quarters ending with the fourth quarter 2002 in contrast to the September 1, 2008 Blue Chip from which can be gleaned an average 3.0% expected CPI for the six quarters ending with the fourth quarter 2009. And, as with the GDP price deflator, the August 1, 2001 Blue Chip indicates a significantly lower expectation for CPI, 2.4% for the third quarter 2002 than the 5.7% shown for the third quarter 2008 shown in the September 1, 2008, Blue Chip.

Contributing to and evidence of the stressed U.S. economy and increasing inflationary pressures are the run-up in oil prices since 2001 as well as the highest U.S. unemployment rate in five years. Exhibit (PMA-3)__ demonstrates quite dramatically how U.S. oil prices have skyrocketed exponentially since 2001. In the summer of 2001, when the FL PSC prepared the 2001 leverage formula, oil cost approximately $25 per barrel in the U.S. The most recent price of a barrel of oil, August 29, 2008, was approximately $110, down from a high of about $134 in mid-July 2008. Since the U.S.

economy is heavily energy dependent, the high current price of oil has a significant impact on both GDP and the CPI. Further evidence of an economy under greater stress in 2008 than in 2001 is shown on Exhibit (PMA-4)__ which shows the Bureau of Labor Statistics reporting the U.S. unemployment rate of 6.1% in August 2008, the highest level in five years and in stark contrast to an unemployment rate of 4.9% in August 2001.

In addition, interest rates, as evidenced by Moody's A-rated public utility bond yields, are currently rising and expected to continue to rise, while interest rates were declining in 2001 as shown on Exhibit (PMA-5)__. Also, although the August 1, 2001 Blue Chip indicated expected rising interest rates over the six quarters ending with the fourth quarter 2002, the expected increase was, on average, smaller than the increase in interest rates currently anticipated by the September 1, 2008 Blue Chip for the six quarters ending with the fourth quarter 2009. For example, as shown on page 1 of Exhibit (PMA-2)__ , the August 1, 2001 Blue Chip, the 30-year U.S. Treasury bond was expected to fall from 5.66% on June 29, 2001 to 5.6% in the third quarter 2001 and then to rise 24 basis points to 5.9% by the fourth quarter 2002; the Aaa corporate bond was expected to rise from 7.17% on June 29, 2001 to 7.8% in the third quarter 2001 and then to rise 13 basis points by the fourth quarter 2002 and the Baa corporate bond was expected to fall from 7.98% on June 29, 2001 to 7.8% in the third quarter 2001 and then to rise 20 basis points by the fourth quarter 2002. In contrast, based upon the current September 1, 2008 shown on page 2 of Exhibit (PMA-2)__, the 30-year U.S. Treasury bond was expected to fall from 4.66% on July 25, 2008 to 4.6% in the third quarter 2008 and then to rise 44 basis points to 5.1% by the fourth quarter 2009; the Aaa

corporate bond was expected to fall from 5.78% on July 25, 2008 to 5.7% in the third quarter 2009 and then to rise 32 basis points by the fourth quarter 2009; and the Baa corporate bond was expected to fall from 7.27% on July 25, 2008 to 7.1% in the third quarter 2008 and then to rise 13 basis points by the fourth quarter 2009. Clearly, the magnitude of the expected rise in current interest rates is greater than that expected in 2001.

In addition, the currently expected total return on the stock market is higher in the next 3-5 years than it was in the summer of 2001. Exhibit (PMA-6)__ contains the Value Line Investment Survey (Value Line) Summary & Index cover sheets from August 3, 2001 and August 29, 2008. Page 1 shows that the expected price appreciation was 70% in August 2001 which translates to 14.10% per annum ((1.70^{25}) - 1) which, when added to the dividend yield of 1.90%, equates to a forecasted annual total return rate on the market as a whole of 16.09% as of August 3, 2001. In contrast, page 2 shows that the expected price appreciation was recently 75% on August 29, 2008, which translates to 15.02% per annum ((1.75^{25}) - 1) which, when added to the dividend yield of 2.30%, equates to a forecasted annual total return rate on the market as a whole of 17.32% as of August 29, 2008.

Regarding the stock market itself, the volatility of the Russell 2000 Index, which is comprised of small-cap securities including the majority of the gas distribution companies (LDCs) in the FL PSC Natural Gas Index as well as the majority of publicly traded water utilities, shown on Exhibit (PMA-7)__, indicates that the small-cap market is currently more volatile than in 2001. Exhibit (PMA-7)__ shows the volatility of the Russell 2000 Index for the twelve months ended June 30, 2001 and June 30, 2008 in

Columns 1 and 2, respectively, as measured by the coefficient of variation of the weekly closing index. The coefficient of variation, a standard measure of volatility and, hence, risk, for the twelve months ending June 30, 2001 was 5.27%, significantly lower than the 6.99% coefficient of variation in the weekly closing index of the Russell 2000 Index for the twelve months ending June 30, 2008. The data indicates that recent capital markets, especially for small cap companies such as the LDCs in Staff's Natural Gas Index and most water companies, have been more volatile and hence more risky than those prevailing in 2001.

This increased market volatility is also evident in the upswing in betas, a measure of systematic or non-diversifiable risk, for all AUS Utility Reports industries; electric, gas distribution and water companies, shown on Exhibit (PMA-8)__. The charts on page 1 plot the average adjusted betas as published by Value Line annually for the years 2000 through 2007 as well as June 2008. The charts on page 2 plot the average unadjusted betas for the same time periods. It is clear from the information on both pages that not only have the average betas of each utility group increased since 2000, the betas of the water utility industry exhibit the greatest increase, approaching those of the electric and gas distribution industries. The difference in the average beta of the FL PSC Staff's Natural Gas Index confirms the data presented on Exhibit (PMA-7)__. The average beta of the Index in the summer of 2001 was 0.61[2] while the average beta of the Index in 2008 is 0.87[3].

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[2] Order No. PSC-01-2514-FOF-WS, Attachment A, p. 28.

[3] Memo to: Office of Commission Clerk (Cole), from: Division of Economic Regulation (Springer, Maurey, Bulecza-Banks) / Office of the General Counsel (Hartman), re: Docket No. 080006-WS – Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S., Attachment 1, Page 4 of 6.

In view of all the foregoing, it is clear that the current economic and capital market environment is not equivalent to that of 2001. In fact, in my opinion, it is more risky and there is no basis to assume that the cost rate of common equity must have declined since 2001 just because interest rates have declined.

V. OPC WITNESS ROTHSCHILD'S SUGGESTED CHANGES TO THE LEVERAGE FORMULA

Q. OPC Witness Rothschild summarizes his recommended changes to the leverage formula currently in effect on page 13, lines 7-16 of his direct testimony. Please comment.

A. OPC Witness Rothschild suggests three changes to the leverage formula. They are:

1. Calculate the cost of common equity for a natural gas index but using his applications of the DCF and CAPM.

2. Calculate the cost of debt for a natural gas index based upon its bond rating.

3. Calculate an overall cost of capital (OCC) based upon the average capital structure ratios of the natural gas index.

I will address OPC Witness Rothschild's first suggestion later in this testimony when I address his applications of the DCF and CAPM. On page 13 of his direct testimony, OPC Witness Rothschild appears to be recommending no change in the leverage formula regarding suggestions two and three. However, this is far from the case.

Q. How is OPC Witness Rothschild's suggestion for deriving the debt cost rate different from the current FL PSC methodology?

A. The current FL PSC leverage formula holds the debt cost rate constant over a common equity ratio range of 40% to 100% as noted on page 3 of its May 8, 2008 memo to the

Office of Commission Clerk (Cole). However, OPC Witness Rothschild recommends that the debt cost rate also be changed as the debt ratio changes. On page 25, OPC Witness Rothschild notes that, in theory and consistent with the Modigliani / Miller principle which provides the basis for the leverage formula, the debt cost rate is a function of the debt ratio with debt cost rising as the debt ratio rises. While theoretically valid, once again OPC Witness Rothschild is assuming that all else is equal. However, in my opinion, the FL PSC's assumption that the debt cost rate is constant over a common equity range of 40% to 100% is reasonable.

Q. Why is holding the debt rate constant over such a broad common equity range reasonable?

A. It is reasonable for two reasons. First, the revenue requirement formula under which utilities are regulated provides that the regulated utility will be compensated for prudently incurred operation and maintenance expenses, depreciation, taxes and a return on its investment, comprised of a senior capital (debt and / or preferred stock) component and a common equity component. The revenue requirement formula ensures that the regulated utility will receive sufficient earnings to compensate it for the expenses it incurs to service both its debt and preferred stock obligations. To that end, it is typical, in the rate base / rate of return paradigm, to utilize the embedded cost of senior capital in the derivation of the allowed overall rate of return. The embedded cost of senior capital is a function of many factors, including but not limited to the timing of the various issues of senior capital, the capital market conditions at the time of issuance, the credit / bond rating (or equivalent in the case of private placements) of the regulated utility at the time of issuance, and the level of issuance costs and any premia / discounts

at the time of issuance.

Second, the bond rating process itself indicates that bond ratings are not simply and exclusively a function of debt ratios, especially historical or point in time debt ratios. In November 2007, Standard & Poor's (S&P) published its electric, gas, and water utility ratings rankings lists in a framework consistent with the manner in which it presents its rating conclusions across all other corporate sectors. As S&P stated[4]:

> Incorporating utility ratings into a shared framework to communicate the fundamental credit analysis of a company furthers the goals of transparency and comparability in the ratings process.
>
> * * *
>
> The utilities rating methodology remains unchanged, and the use of the corporate risk matrix has not resulted in any changes to ratings or outlooks. The same five factors that we analyzed to produce a business risk score in the familiar 10-point scale are used in determining whether a utility possesses an "Excellent," "Strong," "Satisfactory," "Weak," or "Vulnerable" business risk profile.

Pages 1 through 9 of Exhibit (PMA-9)__ describe the utility bond rating process. S&P's new business risk/financial risk matrix is shown in Table 1 on page 11 of Exhibit (PMA-9)__, while financial risk indicative ratios for utilities are shown in Table 2 on page 12. Notwithstanding the metrics published in Table 2, S&P states:

> Note that even after we assign a company a business risk and a financial risk, the committee does not arrive by rote at a rating based on the matrix. The matrix is a guide – it is not intended to convey precision in the ratings process or reduce the decision to plotting intersections on a graph.

As shown on Exhibit (PMA-28)__, page 12, the average S&P bond rating

[4] Standard & Poor's – Ratings Direct – "U.S. Utilities Ratings Analysis Now Portrayed In The S&P Corporate Ratings Matrix", November, 30, 2007, p. 2.

(issuer credit rating), business risk profile and financial risk profile of the six AUS Utility Reports water companies is A (A), Excellent and Intermediate, while the average for the FL PSC Staff's Natural Gas Index A/A- (A), Excellent and Intermediate.

The current leverage formula assumes that if the Florida water and wastewater utilities had bonds which were rated, they would be rated Baa3 by Moody's which is equivalent to a BBB- by S&P. As discussed above, the bond rating process is comprehensive, both qualitative and quantitative and does not focus exclusively on the debt ratio. On page 11 of Exhibit (PMA-9)__, Table 1, the Business Risk/ Financial Risk matrix indicates that utilities with a BBB- rating and a Weak business risk profile would likely have a Modest financial risk profile and those with a Strong business risk profile would likely have an Aggressive financial risk profile. The range of financial risk indicative ratios published by S&P on November 30, 2007 are shown on page 12 of Exhibit (PMA-9)__. The total debt to total capital indicative ratios for utilities with a Modest financial risk profile range from 25% to 40%, while those with an Aggressive financial risk profile range from 45% to 60%. It is clear, then, that utilities with BBB- bond ratings by S&P (and Baa3 by Moody's) could have debt ratios ranging from 25% to 60% and still maintain the BBB- (Baa3) bond rating.

In view of the foregoing, it is therefore reasonable to hold the debt rate constant over the common equity range of 40% to 100% in the leverage formula.

Q. How is OPC Witness Rothschild's suggestion for deriving the overall cost of capital (OCC) different from the current FL PSC methodology?

A. The current FL PSC leverage formula holds the after income tax OCC constant as the common equity ratio changes. In contrast, OPC Witness Rothschild recommends that

the before income tax OCC be held constant. On page 22, lines 1- 14 of his direct testimony, OPC Witness Rothschild correctly summarizes the Modigliani / Miller principle stating that "Modigliani and Miller showed that if it were not for income taxes and bankruptcy risk, the capital structure selected by a company would have no impact on the overall cost of capital." However, by holding the before income tax OCC constant, OPC Witness Rothschild has demonstrated the exact opposite, namely, that differing amounts of debt and equity in the capital structure have absolutely no impact on the revenue cost of capital. OPC Witness Rothschild has assumed a before income tax OCC of 10.61% (see page 12 lines 17-22 and Exhibit No. ___JAR-4, pages 1 and 2.) However, this violates the Modigliani / Miller principle. Using the information shown on Exhibit No. ___(JAR-4), I have produced Exhibit (PMA-10)__ which derives the debt cost rates and common equity cost rates for each of the equity ratios shown on page 3 of Exhibit No. ___(JAR-4). On the left half of the schedule, I have held the before income tax OCC constant at OPC Witness Rothschild's recommended 10.61%, while on the right side of Exhibit (PMA-10)__, I have held the after income tax OCC or 7.71% constant. The before income tax OCC when multiplied by rate base represents the revenue cost of capital, e.g., a before income tax OCC of 10.61% equates to $10.61 which must be recovered from ratepayers for each $100 of rate base. It is clear from the left side of Exhibit (PMA-10)__, that no matter what the common equity ratio, 100.00%, 40.00% or something in between, that by holding the before income tax OCC of 10.61% constant, the revenue cost of capital will be $10.61 / $100 rate base. In other words, various capital structure ratios have no impact on the revenue cost of capital because no matter what the common equity ratio, 100.00% or 40.00%, ratepayers will

be paying $10.61 per $100 of rate base. Hence, holding the before income tax OCC constant demonstrates that capital structure is irrelevant, contrary to the Modigliani/Miller principle when income taxes are taken into account, and provides no incentive to maintain a reasonable capital structure because there is no change in the revenue cost of capital, i.e., the rates recovered from ratepayers, as the common equity ratio changes as discussed below.

As OPC Witness Rothschild states in lines 7-9 on page 23 of his direct testimony, "[i]t is because investor owned water and wastewater companies do have to pay income taxes that the overall cost of capital becomes too high if a company uses an excessive percentage of common equity in the capital structure." It is precisely for this reason that it is necessary to hold the after income tax OCC constant, as is assumed by the current FL PSC leverage formula, because then the revenue cost of capital will vary with varying capital structure ratios. On the right half of Exhibit (PMA-10)__, it is clear that the before income tax OCC rises as the common equity ratio rises in contrast to OPC Witness Rothschild's constant after income tax OCC as the common equity ratio rises. For example, at a 40.00% common equity ratio, the before income tax OCC is 10.19% and the revenue cost of capital is $10.19 per $100 of rate base and rises to 12.55% at a 100.00% common equity ratio for a revenue cost of capital of $12.55 per $100 of rate base. The revenue cost of capital rises as the equity ratio rises, holding the after-income tax OCC constant, consistent with the Modigliani / Miller principle upon which the FL PSC leverage formula is based. Hence, OPC Witness Rothschild's recommendation that the before income tax OCC be held constant in the leverage formula should be rejected in this proceeding, because as OPC Witness Rothschild states on lines 9-12 of

his direct testimony: "[t]he Commission should be concerned that a company prudently do what it can to lower its income tax expenses. Investors might not care if these taxes are paid for by ratepayers, but the Commission should care that ratepayers not be charged incomes taxes that a company could reasonably have avoided." Continuing to hold the after income tax OCC constant in the FL PSC leverage formula accomplishes this goal.

Q. Do you have any comments on OPC Witness Rothschild's example of how his proposed leverage formula would be used for water utilities?

A. Yes, I do. On page 14, line 15 through page 16, line 3, OPC Witness Rothschild presents his suggestion for the application of his proposed leverage formula to water utilities. Curiously, in his example, he has correctly held the after tax OCC constant. However, his example is not accurate for three reasons. First, OPC Witness Rothschild's calculation on lines 7-10 on page 15 of his direct testimony incorrectly uses a debt cost rate of 7.63%, when he has stated, correctly, on line 22 on page 14, that the debt cost rate should be 7.36%. Second, contrary to his own adjustment of common equity cost rate for changes in the common equity ratio, he has applied his recommended 9.40% common equity cost rate which is applicable to a common equity ratio of 49.12% to a common equity cost ratio of 46.37%. The correct common equity cost rate to be applied to a 46.37% common equity ratio based upon the leverage formula and OPC Witness Rothschild's common equity cost rate of 9.40% is 9.60% as derived in the top half of Exhibit (PMA-11)__. Third, on lines 16 and 17 of page 15 of his direct testimony, OPC Witness Rothschild says that he calculated a debt cost rate applicable to a 65% common equity ratio by "taking the difference between this

company's ER of 65% and the comparative group's ER of 53.63% and multiplying this difference by 0.0197%." While a correct characterization of his suggested calculation in general terms, OPC Witness Rothschild actually took the difference between a common equity ratio of 65% and the comparative group's total debt ratio of 53.63% (line 9 on page 15 of his direct testimony). The correct calculation would have taken the difference between a common equity ratio of 65% and the comparative group's common equity ratio of 46.37%.

The bottom half of Exhibit (PMA-11)__ correctly shows the calculation of OPC Witness Rothschild's example for a water utility with a common equity ratio of 65% correctly using the 9.60% common equity cost rate applicable to a common equity ratio of 46.37% and the correct debt cost rate of 7.36% derived in the top half of Exhibit (PMA-10)__.

VI. OPC WITNESS ROTHSCHILD'S ASSERTION OF AN IMPROPER COST OF EQUITY CHANGE

Q. Do you agree that the 2008 leverage formula calculation reflects an "improper cost of equity change".

A. No. On pages 16-21 of his direct testimony, OPC Witness Rothschild asserts that the *prime reason* for what he terms the "improper cost of equity change" since the 2001 adoption of the current leverage formula is due to the FL PSC Staff's CAPM calculation. His main criticism of the FL PSC Staff's CAPM calculation is its derivation of the market return used to develop the market equity risk premium. The FL PSC Staff utilizes a quarterly DCF model for approximately 650 dividend paying Value Line companies using Value Line's five-year projected growth in earnings per

share (EPS) and dividends per share (DPS). While it is true that the quarterly model differs in application from the two-stage growth model the FL PSC Staff utilizes for the Natural Gas Index, the resulting market return 12.20% is reasonable relative to the arithmetic mean total market return for the years 1926-2007 as published by Morningstar's Ibbotson SBBI – 2008 Valuation Yearbook – Market Results for Stocks, Bonds, Bills, and Inflation – 1926-2007 (SBBI) of 12.3% which is appropriate for cost of capital purposes as will be discussed subsequently in relation to OPC Witness Rothschild's so called "CAPM" calculation. Given that both ratemaking and the cost of capital are prospective, it is also reasonable to assess an expected market return when developing the market return used in the CAPM. As previously discussed, the current Value Line expected total market return 3-5 years hence is 17.32%. Therefore, the 12.20% expected market return used by the FL PSC Staff is conservative.

Although the current 12.20% expected market return used by the FL PSC Staff is higher than that used in the 2001 leverage formula, 10.89%, it is my opinion that the 10.89% understated the expected market return in 2001 when compared with a 13.0% SBBI arithmetic mean total market return for the years 1926-2000 and the Value Line expected total market return in August 2001 of 16.09%. This is especially true given a currently less stable economic environment, the current potential for an economic recession, worsening economic indicators, and rising interest rates as discussed previously.

Q. On lines 9-11 on page 20 of his direct testimony, OPC Witness Rothschild claims that "the DCF method using short term earnings and dividends to compute growth is currently materially overstating the cost of equity." Please comment.

A. To evaluate whether or not either the simplified, single-stage growth or quarterly versions of the DCF model using what OPC Witness Rothschild characterizes as "short-term" growth in EPS and DPS "currently materially" overstates the cost of common equity as claimed by OPC Witness Rothschild, I calculated DCF cost rates using both versions of the DCF for the companies in FL PSC Staff's Natural Gas Index. The results are shown on Exhibit (PMA-12)__. As shown in column 6 on page 1, the quarterly DCF results in an average common equity cost rate of 8.58% and a median of 8.65% and the simplified DCF results in an average common equity cost rate of 8.63% and a median of 8.60% as shown in column 5. Both of these results are below the two-stage growth DCF results for the Natural Gas Index of 9.68% derived on page 3 of Attachment 1 to Staff's May 8, 2008 memo and used in conjunction with its CAPM results in the current calculation of the leverage formula. In fact, both DCF results are lower than OPC Witness Rothschild's own DCF results of 9.42%-9.43% for the Natural Gas Index shown on Exhibit No. ___(JAR-2), page 1. Hence, OPC Witness Rothschild provides no basis for his generalization the "the DCF method using short-term earnings and dividends to compute growth is currently materially overstating the cost of equity".

VII. COST OF EQUITY ADDERS

Q. OPC Witness Rothschild states on page 29 of his direct testimony that he believes that the four cost of common equity adders provided for in the 2001 Order and utilized by the FL PSC in the current 2008 leverage formula are inappropriate. Do you agree?

A. No. It is entirely appropriate to include the bond yield differential, the private placement premium, the small-utility risk premium and a flotation cost adjustment in

the derivation of the leverage formula.

Q. Why is it appropriate to add a bond yield differential to the cost of common equity in the leverage formula?

A. It is appropriate to include the bond yield differential in the cost of common equity calculation in the leverage formula because the bond yield differential reflected in the debt cost rate only compensates bond holders for the increased riskiness inherent in Baa3 public utility bonds relative to the riskiness inherent in A rated public utility bonds. I have previously demonstrated that it is neither necessary nor appropriate to change the debt cost rate as common equity ratios change. Consequently, there is no mechanism in the leverage formula to compensate common equity holders for the increased risk to which they are exposed for investing in the common shares of utilities with Baa3 rated bonds.

In addition, to not reflect the bond yield differential in the common equity cost rate is in contradiction to OPC Witness Rothschild's own testimony that the cost of common equity and interest rates move in the same direction and in approximately the same magnitude as he states on page 9, lines 1-4 of his direct testimony. Based upon his testimony on page 9, as the debt cost rate rises from 6.08%, the A-rated public utility bond yield, to 7.36%, the Baa3-rated public utility bond yield, or 128 basis points (1.28%), the common equity cost rate of 9.40% applicable to the 49.12% average common equity ratio of Natural Gas Index (see Exhibit No. ___(JAR-8), page 1) should rise approximately 128 basis points as well, to 10.68% (10.68% = 9.40% + 1.28%). Instead, OPC Witness Rothschild has assumed that the 9.40% common equity cost rate is equally applicable to a utility whose bonds are rated Baa3 by Moody's as it is to a

utility whose bonds are rated A2 by Moody's. Such an assumption is contrary to financial theory.

Moreover, financial theory indicates that there is an inverse relationship between the level of interest rates and equity risk premia. Exhibit (PMA-13)__ is an excerpt from Roger A. Morin's New Regulatory Finance concerning equity risk premium determinants. Dr. Morin presents a number of academic studies which demonstrate this inverse relationship, concluding that the equity risk premium falls as interest rates rise by an average of approximately 51 basis points (0.51%). The equity risk premium assumed by OPC Witness Rothschild for a utility whose bonds are rated A2 by Moody's, with a debt cost rate of 6.08% and a common equity cost rate of 9.40% is 3.32% (3.32% = 9.40% - 6.08%). Given that financial theory indicates that as interest rates rise, the equity risk premium falls by approximately 51 basis points (0.51%), a debt cost rate of 7.36%, or 128 basis points (1.28%) above the 6.08% debt cost rate, indicates that the equity risk premium applicable to a utility whose bonds are rated in Baa3 by Moody's should be approximately 65 basis points (0.65%) lower than the equity risk premium applicable to a utility whose bonds are rated A2 by Moody's. Since, the equity risk premium implicit in OPC Witness Rothschild's recommended common equity cost rate of 9.40% relative to a debt cost rate of 6.08% is 3.32%, this means that the implicit equity risk premium relative to a utility whose debt cost rate is 7.36% would be 2.67% (2.67% = 3.32% - 0.65%). However, by assuming that the 9.40% common equity cost rate is equally applicable to a utility with a debt cost rate of 7.36%, an equity risk premium of 2.04% (2.04% = 9.40% - 7.36%) is implied. A lower equity risk premium of 2.04% relative to a higher debt cost rate of 7.36%, compared

with a 3.32% equity risk premium relative to a lower debt cost rate of 6.08%, is at odds with the basis financial precept of risk and return, where investors demand greater compensation for assuming greater risk. Financial theory indicates that the equity risk premium, given 9.40% common equity cost rate and 6.08% debt cost rate adjusted to reflect a 7.36% debt cost rate should be 2.67%, 63 basis points (0.63%) greater than the equity risk premium implied in OPC Witness Rothschild's recommendation that his 9.40% common equity cost rate is applicable to a utility with a debt cost of 7.36%.

Q. Why is it appropriate to add a private placement premium to the cost of common equity in the leverage formula?

A. It is appropriate to include the private placement premium in the cost of common equity calculation in the leverage formula because investors in such debt demand compensation for the lack of liquidity relative to large, readily saleable publicly traded debt. Privately placed debt is typically held to maturity and does not, by definition, have a public market in which it is traded. Consequently, holders of privately placed debt therefore require a higher return than holders of publicly held debt and this higher return premium must also be reflected in common equity cost rate.

Q. Why is it appropriate to add a small-utility risk premium to the cost of common equity in the leverage formula?

A. It is appropriate to include the small-utility risk premium in the cost of common equity calculation in the leverage formula because size is a factor which affects business risk and must be reflected in the common equity cost rate in the leverage formula.

Q. *Please explain why size has a bearing on risk.*

A. Smaller companies are less capable of coping with significant events which affect sales,

revenues and earnings. The loss of revenues from a few larger customers, for example, would have a greater effect on a small company than on a much larger company with a larger customer base. The individual water and wastewater utilities within the FL PSC's jurisdiction are small regulated utilities. The ultimately allowed overall costs of capital and fair rates of return applied to those companies must reflect the impact of their small size on common equity cost rate. Size is an important factor which affects common equity cost rate, and the Florida water and wastewater utilities, including Utilities, Inc. on a consolidated basis are significantly smaller than the average company in the Natural Gas Utility Index whose market data are utilized in the leverage formula based upon market capitalization.

Table 1

	Market Capitalization(1) ($ Millions)
Ten Natural Gas Utilities In the Leverage Formula Natural Gas Index	$2,152.391
Utilities, Inc.	$356.392
Florida Water & Wastewater Utils.	$5.662
Utilities, Inc. Florida Subsidiaries	$6.518

(1) From page 1 of Exhibit (PMA-14)__.

I have also made a study of the market capitalization of the ten LDCs in the FL PSC's Natural Gas Index, Utilities, Inc., all Florida water and wastewater utilities filing 2007 Annual Reports to the FL PSC as well as the Florida operating subsidiaries of Utilities, Inc.. The results are shown on page 1 of Exhibit (PMA-14)__ which summarizes the market capitalizations as of August 29, 2008.

None of the common stock of Utilities, Inc. the Florida water and wastewater utilities nor Utilities, Inc.'s Florida subsidiaries is publicly traded. Consequently, I have assumed that if their common stocks were publicly traded, their common shares would be selling at the same market-to-book ratio as the ten LDCs in the Natural Gas Index, or 225.0% at August 29, 2008. Hence, the market capitalization of Utilities, Inc. is estimated at $356.392 million, of the Florida water and wastewater utilities is estimated at $5.662 million and that of the Florida subsidiaries of Utilities, Inc. is estimated at $6.518 as of August 29, 2008. In contrast, the market capitalization of the average LDC in the FL PSC Staff's Natural Gas Index was $2.152 billion on August 29, 2008. It is conventional wisdom, supported by actual returns over time, and a general premise contained in basic finance textbooks, that smaller companies tend to be more risky causing investors to expect greater returns as compensation for that risk.

Q. Does the financial literature affirm a relationship between size and common equity cost rate?

A. Yes. Exhibit (PMA-15)__ is an excerpt from Eugene F. Brigham's Fundamentals of Financial Management in which he states[5]:

> A number of researchers have observed that portfolios of small-firms have earned consistently higher average returns than those of large-firms stocks; this is called "small-firm effect." On the surface, it would seem to be advantageous to the small firms to provide average returns in a stock market that are higher than those of larger firms. In reality, it is bad news for the small firm; what *the small-firm effect means is that the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of the large firms.* (italics added)

Q. What small-utility size premia are indicated by comparison of the size of Utilities, Inc., the Florida water and wastewater utilities and the Florida operating

[5] Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition, The Dryden Press, 1989, p. 623.

subsidiaries of Utilities, Inc. relative to the Natural Gas Index used in the leverage formula?

A. They are 265 basis points, or 2.65%, relative to Utilities, Inc. and 428 basis points, of 4.28%, relative to the average Florida water and wastewater utility as well as the Florida subsidiaries of Utilities, Inc. These premia is based upon data contained in Chapter 7 entitled, "Firm Size and Return" from SBBI. The determinations are based on the size premiums for decile portfolios of New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and NASDAQ listed companies for the 1926-2007 period and related data shown on Exhibit (PMA-14)__. The average size premium for the 5th and 6th deciles between which the LDCs in the Natural Gas Index fall has been compared to the average size premium for the 9th and 10th decile between which Utilities, Inc. falls and the 10th decile in which all of the Florida water and wastewater utilities as well as the Florida subsidiaries of Utilities, Inc. fall, if their common stock were traded and sold at the August 29, 2008 average market/book ratio of 225.0% experienced by the ten LDCs in the Natural Gas Index. As shown on page 1 of Exhibit (PMA-14)__, the size premium spread between the ten LDCs in the Natural Gas Index and Utilities, Inc. is 2.65% and between the ten LDCs and the average Florida water and wastewater utility and the Florida operating subsidiaries of Utilities, Inc. is 4.28%. The 50 basis point leverage formula small-utility size premium is therefore an extremely conservatively reasonable estimate of the magnitude of an adjustment needed to reflect the business risk differential between Utilities, Inc., the Florida water and wastewater utilities and the Florida operating subsidiaries of Utilities, Inc. and the Natural Gas

Index.

Q. On page 32, at lines 14-21 of his direct testimony, OPC Witness Rothschild references a chart on Exhibit No. ___(JAR-3). Do you have any comment on this chart?

A. Yes. Exhibit No. ___(JAR-3) shows no such chart. Therefore, I believe OPC Witness Rothschild's reference is to the charts shown in Exhibit No. ___(JAR-7). OPC Witness Rothschild's statement that "the data indicates [sic] that if a small company has a lower beta it would also have a lower expected return and thus there is no reason for a small company to require a higher return just because of its size" is an apparent reference to the fact that the average beta of the FL PSC Staff's Natural Gas Index is either 0.87 or 0.88 (depending upon whether one is using the Staff's calculation or OPC Witness Rothschild's) relative to the betas of the ten deciles represented by the charts on Exhibit No. ___(JAR-7). However, such a comparison is a mismatch because the 0.87 or 0.88 average beta is calculated over a recent five-year period and the betas for the ten deciles shown on Exhibit No. ___(JAR-7) are calculated over an 82 years period, i.e., 1926-2007. Such a comparison is incorrect. Exhibit (PMA-16)__ is an excerpt from SBBI which compares betas for the 82 years with those derived over the five years ending December 2007 for each decile. Substantial differences are obvious. For every decile, except for the largest two deciles, i.e., 1 and 2, the long-term betas are substantially greater than those over the recent five years. It is also clear from page 2 of Exhibit (PMA-16)__ that the betas calculated over a recent five-year period are higher for the smallest deciles, the 8^{th} – 10^{th}, than they are for the larger deciles.

Q. Do you have any additional comments regarding OPC Witness Rothschild's

rejection of a small-utility risk premium?

A. Yes. As stated previously, it is the common equity portion of the jurisdictional rate bases of the Florida water and wastewater utilities to which the common equity cost rate set in this proceeding will be applied. Therefore, the return on common equity must reflect the risks which the shareholder / shareholders in the regulated utility bear and thus require in order to invest in the utility. As discussed previously as well, one of those risks is that of small size. And it is the use to which invested capital is put which gives rise to the risk and the risk-appropriate rate of return. Hence, each utility operating in Florida should be evaluated on a stand-alone basis. To do otherwise would be discriminatory and confiscatory. It is a generally-accepted financial principle that the risk of any investment is directly related to the assets in which the capital is invested. The PSC must focus on the risk and return on common equity investment in rate base for any utility under its jurisdiction, because it is each utility's rates which will be set based upon the leverage formula determined in this proceeding and its is each individual utility's rate base which serves its ratepayers.

The risk or investment in each Florida water and wastewater utility is independent of the ownership or loaners of that capital. It is a basic financial principle that it is the use of the funds invested which gives rise to the risk of the investment, not the source of those funds. As Richard A. Brealey and Stewart C. Myers state in Principals of Corporate Finance (see Exhibit (PMA-17)__):

> *The true cost of capital depends on the use to which the capital is put.* (italics in original)
>
> * * * *
>
> Each project should be evaluated at its own opportunity cost of capital;

the true cost of capital depends on the use to which the capital is put.

Hence, each water and wastewater utility operating within the jurisdiction of the FL PSC must be viewed on its own merits. Therefore, the specific risk of investment in each utility, including its small size and greater financial risk, relative to the Natural Gas Index utilized to estimate the leverage formula is most important in order to establish an appropriate common equity cost rate. As Bluefield[6] so clearly states:

> 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 at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; . . .

Bluefield is clear then that it is the "risks and uncertainties" surrounding the property employed for the "convenience of the public" which determines the appropriate level of rates and not the source of the capital financing that property. In this proceeding, the properties employed "for the convenience of the public" are the rate bases of the Florida water and wastewater utilities. Therefore, it is the total investment risk of each water and wastewater utility and their respective rate bases that are relevant.

In view of all the foregoing, the 50 basis point small-utility size premium included in the leverage formula is conservatively reasonable and should be accepted in this proceeding.

Q. Why is it appropriate to add a flotation cost adjustment, or "financing costs adder" to use OPC Witness Rothschild term, to the cost of common equity in the

[6] Bluefield Water Works Improvement Co. v. Public Serv. Comm'n, 252 U.S. 679 (1922).

leverage formula?

A. It is appropriate to include a flotation cost adjustment in the cost of common equity calculation because there is no other place in the revenue requirement formula previously discussed in which to recover the costs of common equity financing. Just as using the embedded cost of senior capital to set the authorized rate of return typically includes the necessary costs of issuances which raise the effective cost rate to maturity of senior capital above its stated coupon or dividend rates, a flotation cost adjustment must be added to the cost of common equity cost rate in order to adequately provide for the recovery of the necessary costs of issuing new common equity.

VIII. OPC WITNESS ROTHSCHILD'S APPLICATION OF THE DCF AND CAPM

A. Discounted Cash Flow Model

Q. Please comment upon OPC Witness Rothschild DCF analysis.

A. OPC Witness Rothschild's DCF application utilizes the sustainable growth methodology for determining the growth rate component. He calculates sustainable growth for each company "by solving for the Future Expected Return on Book Equity multiplied by the Retention Rate" and then adding "an allowance for growth caused by the sale of new common stock above book value." (lines 10-13 on page 46 of his direct testimony) and by estimating "the future expected return on book equity by reviewing the return on book equity published by Value Line, and considering that forecast in the context of historic actual returns on equity." (lines 17-19 on page 46 of his direct testimony.) On Exhibit No. ___(JAR-2), page 1, it is clear that the return on equity (ROE) utilized in OPC Witness Rothschild's growth rate analysis is based upon five-year expectations by Value Line and the return on equity necessary to achieve Zack's

growth (presumable in five-year projected growth in earnings per share). His allowance for growth caused by the sale of new common stock above book value was also based upon five-year forecasts as is evident from lines 5-8 on page 47 of his direct testimony. Hence, OPC Witness Rothschild's sustainable growth methodology is both a short-term forecast and inconsistent with his own testimony on page 18, lines 16-18 where he states that "[a]s I have argued for decades, these historical to short-term future five-year growth rates are NOT the kind of growth rate applicable for use in the DCF formula because they are not long-term sustainable growth rates." Moreover, his sustainable growth methodology is inherently circular.

OPC Witness Rothschild is correct when he states in lines 17-20 of page 44 of his direct testimony: "[t]he cost of equity is the return investors expect to receive on their investment at market price, while the return on equity used to compute growth is equal to the return investors expect a company will be able to earn on its book value at the time the DCF computation was being made." However, his exclusive reliance upon the sustainable growth method is circular because it relies upon an expected ROE on book common equity which is then used in a DCF analysis to establish a common equity cost rate related to the market value of the common stocks. Thus, the resultant allowed ROE on book common equity is lower than the expected ROE used to derive the allowed ROE. Exhibit (PMA-18)__ is an excerpt from Roger A. Morin's book New Regulatory Finance which states the following regarding the sustainable growth method:

> There are three problems in the practical application of the sustainable growth method. The first is that it may be even more difficult to estimate what b, r, s and v investors have in mind than it is to estimate what g is they envisage. It would appear far more economical and expeditious to use available growth forecasts and obtain g directly instead of relying on four

individual forecasts of the determinants of such growth. *It seems only logical that the measurement and forecasting errors inherent in using four different variables to predict growth far exceed the forecasting error inherent in the direct forecast of growth itself.*

Second, there is a potential element of circularity in estimating g by a forecast of b and ROE for the utility being regulated, since ROE is determined in large part by regulation. To estimate what ROE resides in the minds of investors is equivalent to estimating the market's assessment of the outcome of regulatory hearings. Expected ROE is exactly what regulatory commissions set in determining an allowed rate of return. In other words, the method requires an estimate of return on equity before it can even be implemented. *Common sense would dictate the inconsistency of a return on equity recommendation that is different than the expected ROE that the method assumes the utility will earn forever.* For example, using an expected return on equity of 11% to determine the growth rate and using the growth rate to recommend a return on equity of 9% is inconsistent. *It is not reasonable to assume that this regulatory utility company is expected to earn 11% forever, but recommend a 9% return on equity. The only way this utility can earn 11% is that rates be set by the regulator so that the utility will, in fact, earn 11%....*

Third, the empirical finance literature discussed earlier demonstrates that the sustainable growth method of determining growth is not as significantly correlated to measures of value, such as stock price and price/earnings ratios, as other historical measures or analysts' growth forecasts. *Other proxies for growth such as historical growth rates and analysts' growth forecasts outperform retention growth estimates.* (italics added)

In view of the foregoing, it is clear that OPC Witness Rothschild's application of the DCF is circular and ignores the basic principle of rate base /rate of return, namely, that the cost of equity which will be authorized in this proceeding will be applied to the jurisdictional book value rate bases of the various water utilities within the PSC's jurisdiction and become the allowed future earned return on book common equity, i.e., the expected ROE component of the sustainable growth method.

B. Capital Asset Pricing Model

Q. Please comment upon OPC Witness Rothschild's "CAPM".

A. OPC Witness Rothschild claims that he utilizes a CAPM. However, his application is not the application of the CAPM. In CAPM theory, the Security Market Line (SML) is a line that demonstrates the relationship between risk and return as measured by beta and the required rate of return for individual securities.[7] OPC Witness Rothschild's charts on Exhibit No. ___(JAR-7) show lines that do not represent the SML. Instead, he has merely plotted the compound annual returns from 1926 through 2007 for each of 10 portfolios of common stocks based upon size related to the betas of those deciles. The SML has its origin at the risk-free rate, i.e., the intercept, whereas OPC Witness Rothschild estimates an intercept that he claims to be the risk-free rate.

Q. The graphs on Exhibit No. ____(JAR-7) plot the compound returns for ten deciles based upon size from 1926 – 2007 related to the betas for the ten deciles calculated over the same 1926 – 2007 period. Please comment.

A. A comparison of five-year betas with those calculated from 1926-2007, i.e., 82 years, is incorrect. As discussed previously, Exhibit (PMA-16)__ compares betas for the 82 years with those derived over the five years ending December 2007 for each decile. Substantial differences are obvious. For every decile, except for the largest two deciles, i.e., 1 and 2, the long-term betas are substantially greater than those over the recent five years. Drawing inferences from compound returns and rolling 82-year betas to impute a return related to current five-year betas is a mismatch. Moreover, basing such an

[7] Eugene F. Brigham, Fundamentals of Financial Management, 5th Ed., The Dryden Press, 1989, p. 129.

analysis upon compound, or geometric, returns is not appropriate for cost of capital purposes.

Q. Why is the geometric mean return inappropriate when estimating the cost of capital?

A. The arithmetic mean return is appropriate for cost of capital purposes precisely because it captures the effect of changing economic conditions on risk premia over time. Because historical total returns and equity risk premium spreads differ in size and direction over time, the arithmetic mean provides insight into the variance and standard deviation of returns. The prospect for variance, i.e., standard deviation, captured in the arithmetic mean, provides the valuable insight needed by investors and rate of return analysts alike to estimate the expected risk of stocks. Absent such insight, investors cannot meaningfully evaluate prospective risk.

As noted on pages 77 through 83 of SBBI, shown in Exhibit (PMA-19)__, the arithmetic mean calculated over a very long period of time is the correct mean to use when estimating the cost of capital. SBBI[8] states:

> The equity risk premium data presented in this book are arithmetic average risk premia as opposed to geometric average risk premia. The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance, since it represents the compound average return.

[8] Id., p. 77.

> The argument for using the arithmetic average is quite straightforward. In looking at projected cash flows, the equity risk premium that should be employed is the equity risk premium that is expected to actually be incurred over the future time periods. Graph 5-3 shows the realized equity risk premium for each year based on the returns of the S&P 500 and the income return on long-term government bonds. (The actual, observed difference between the return on the stock market and the riskless rate is known as the realized equity risk premium.) There is considerable volatility in the year-by-year statistics. At times the realized equity risk premium is even negative.

As Ibbotson Associates[9] states in their 1999 Yearbook (see Exhibit (PMA-20)__:

> The expected equity risk premium should always be calculated using the arithmetic mean. The arithmetic mean is the rate of return which, when compounded over multiple periods, gives the mean of the probability distribution of ending wealth values....Stated another way, the arithmetic mean is correct because an investment with uncertain returns will have a higher expected ending wealth value than an investment which earns, with certainty, its compound or geometric rate of return every year....*Therefore, in the investment markets, where returns are described by a probability distribution, the arithmetic mean is the measure that accounts for uncertainty, and is the appropriate one for estimating discount rates and the cost of capital.* (italics added)

Ex-post (historical) total returns and equity risk premium spreads differ in size and direction over time. This is precisely why the arithmetic mean is important as it provides insight into the variance and standard deviation of returns. This prospect for variance, as captured in the arithmetic mean, provides the valuable insight needed by investors to estimate future risk when making a current investment. Absent such valuable insight into the potential variance of returns, investors cannot meaningfully evaluate prospective risk. If investors relied upon the geometric mean of ex-post spreads, they would have no insight into the potential variance of future returns because

[9] Ibbotson Associates, Stocks, Bonds, Bills and Inflation - 1999 Yearbook, pp. 157-158.

the geometric mean relates the change over many periods to a constant rate of change, thereby obviating the year-to-year fluctuations, or variance, *critical to risk analysis*.

The arithmetic mean return is appropriate for cost of capital purposes precisely because it captures the effect of changing economic conditions on risk premia over time. Because historical total returns and equity risk premium spreads differ in size and direction over time, the arithmetic mean provides insight into the variance and standard deviation of returns. The prospect for variance, i.e., standard deviation, captured in the arithmetic mean, provides the valuable insight needed by investors and rate of return analysts alike to estimate the expected risk of stocks. Absent such insight, investors cannot meaningfully evaluate prospective risk.

The financial literature is quite clear on this point, that risk is measured by the variability of expected returns, i.e., the probability distribution of returns. Exhibit (PMA-21)__ is an excerpt from Weston and Brigham[10] who provide the standard financial textbook definition of the riskiness of an asset when they state:

> The riskiness of an asset is defined in terms of the likely variability of future returns from the asset. (emphasis added)

And Morin[11] states on page 133 (see Exhibit (PMA-22)__):

> The geometric mean answers the question of what constant return you would have to achieve in each year to have your investment growth match the return achieved by the stock market. The arithmetic mean answers the question of what growth rate is the best estimate of the future amount of money that will be produced by continually reinvesting in the stock market. It is the rate of return which, compounded over multiple periods, gives the mean of the probability distribution of ending wealth. (emphasis added)

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[10] J. Fred Weston and Eugene F. Brigham, Essentials of Managerial Finance, 3rd Ed., The Dryden Press, 1974, p. 272.

[11] Roger A. Morin, New Regulatory Finance, Public Utility Reports, 2006, p. 133.

In addition, Brealey and Myers[12] note (see Exhibit (PMA-23)__):

> The proper uses of arithmetic and compound rates of return from past investments are often misunderstood. . . Thus the arithmetic average of the returns correctly measures the opportunity cost of capital for investments. . . *Moral*: If the cost of capital is estimated from historical returns or risk premiums, use arithmetic averages, not compound annual rates of return. (italics in original)

As previously discussed, investors gain insight into relative riskiness by analyzing expected future variability. This is accomplished by the use of the arithmetic mean of a distribution of returns / premia because it takes into account all of the returns / premia, hence, providing meaningful insight into the variance and standard deviation of those returns / premia.

Q. Can it be demonstrated that the arithmetic mean takes into account all of the returns and therefore, that the arithmetic mean is appropriate to use when estimating the opportunity cost of capital?

A. Yes. Exhibit (PMA-24)__, which consists of three pages, graphically demonstrates this premise. Page 1 charts the returns on large company stocks for each and every year, 1926 through 2007 from SBBI. It is clear from looking at the variation of these returns that stock market returns, and hence, equity risk premia, vary.

The distribution of each and every one of those returns for the entire period from 1926 through 2007 is shown on page 2. There is a clear bell-shaped pattern to the probability distribution of returns. The arithmetic mean of this distribution of returns takes into account all of the returns in the distribution and thus the potential variance

[12] Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, The McGraw-Hill Companies., Inc., 1996, pp. 146-147.

and standard deviation likely to be experienced in the future when estimating the rate of return based upon such historical returns. In contrast, page 3 of Exhibit (PMA-24)__, demonstrates that when the geometric mean is calculated, only two of the returns are taken into account, namely the initial and terminal years, which, in this case, are 1926 and 2007. Based only upon those two years, a constant rate of return is calculated by the geometric average. That constant return, when represented graphically, would be a flat line over the entire 1926 to 2006 time period which is obviously far different from reality, based upon the probability distribution of returns shown on page 2 and demonstrated on page 1.

In view of all the foregoing, it should be clear that the arithmetic mean long-term historical risk premium takes the standard deviation of returns which is critical to risk analysis into account. The geometric mean is appropriate only when measuring historical performance and should not be used to estimate the investors' required rate of return.

Q. On page 50 at line 22 through page 51, lines 4 of his direct testimony, OPC Witness Rothschild states that the average beta for the natural gas index, 0.88, indicates that the non-diversifiable risk for the LDCs is 88% of the average, with average risk implied as the risk of the market whose beta is 1.00 by definition. Please comment.

A. OPC Witness Rothschild is incorrect. Beta accounts for very little of total risk. Beta is a measure of market or systematic, non-diversifiable risk and not of non-systematic, company-specific or diversifiable risk. Exhibit (PMA-25)__ shows the R-squared (R^2), or coefficient of determination, of the betas for a proxy group of six AUS Utility

Reports water companies (which will be discussed subsequently) and the Florida PSC natural gas index. As shown, the average R^2 is approximately .19 for the water companies and .31 for the LDCs, which indicates that beta accounts for only about 19% and 31% of total risk for the two groups, respectively, with the remainder or 81% and 69%, being company-specific, diversifiable risk. Page 4 of Exhibit (PMA-25)__ shows the distribution of R^2 for the approximately 5,000 companies included in SBBI. It is clear from Graph 6-4, that most of the 5,000 companies have R^2 of less then 0.30

Q. What is the significance of the R^2, or coefficient of determination statistic?

A. It is an indication of the percentage of the total risk of a stock attributable to non-diversifiable risk. In other words, for the two groups, the non-diversifiable risk is equal to about 19% and 31% of their total risk, respectively, and not 88% as suggested by OPC Witness Rothschild.

Q. Does the academic literature substantiate that the coefficient of determination, or R^2, which represents that portion of a company's risk that is non-diversifiable and not its beta?

A. Yes. Exhibit (PMA-26)__ is an excerpt from Jack Clark Francis' book Investments: Analysis and Management which shows clearly on pages 3 and 4 that the coefficient of determination represents systematic, or non-diversifiable risk. As explained previously, for the group of water utilities and LDCs, respectively, that is equal to approximately 19% and 31% and not 88%.

Q. Did OPC Witness Rothschild calculate an equity risk premium in his "CAPM" analysis?

A. No. He never calculated an equity risk premium which is an integral component of the

CAPM formula. He merely deducted the interest rate on long-term inflation indexed U.S. Treasury Bonds from a spot yield on 30-year U.S. Treasury Bonds to estimate the expected rate of inflation with which to reduce the 1926-2007 returns for companies with an average beta of 0.88. In addition, he did not begin his analysis with a risk-free rate, i.e., the intercept and first component of the CAPM formula. Hence, his so-called "CAPM" is not really a CAPM.

Q. OPC Witness Rothschild cites SBBI as comparison with his CAPM results. Please comment.

A. The 9.66% return discussed by SBBI is based upon a geometric mean return. As discussed previously, OPC Witness Rothschild's use of the geometric mean is incorrect for cost of capital purposes. Exhibit (PMA-27)__ contains the pages from SBBI in which the Ibbotson-Chen supply model is discussed. It is very clear from the information shown on pages 5 and 6 of Exhibit (PMA-27)__, that the 9.66% equity return is based upon the geometric mean which includes an equity risk premium of 4.24% "on a geometric basis." Also, on page 7, SBBI states:

> The supply side equity risk premium calculated earlier is a geometric calculation. An arithmetic calculation, as mentioned earlier in the chapter, is most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the buildup approach, the arithmetic calculation is the relevant number.

On page 7 of Exhibit (PMA-27)__, SBBI also shows the conversion of the 4.24% geometric mean equity risk premium to an arithmetic mean equity risk premium. The conversion results in an arithmetic mean equity risk premium of 6.23% which is 1.99 percentage points greater than the geometric mean of 4.24%. Hence, an increase of equity risk premium of 1.99% and SBBI's emphasis upon the arithmetic mean for cost

of capital estimation purposes, a properly derived common equity cost rate using the Ibbotson-Chen method is 11.67% (9.66% + 1.99%). This implies a CAPM cost rate applicable to the LDCs with an average beta of 0.88 of 10.92% (11.67% - 6.23% = $R_{F,}$, of 5.44%. And, 5.44% + 0.88 * (11.67% - 5.44%) = 10.92%, thereby confirming the gross inadequacy of OPC Witness Rothschild's so called "CAPM" cost rate.

IX. REASONABLENESS OF THE FL PSC STAFF'S LEVERAGE FORMULA

Q. Are the results of the FL PSC Staff's leverage formula reasonable ?

A. In view of all of the foregoing, it is my opinion that the results of the FL PSC Staff's leverage formula are reasonable. In my direct testimony in this proceeding I stated at lines 18-21 on page 2 that "based upon my experience as an expert witness on rate of return in numerous rate proceedings (see Exhibit (PMA-1)__ accompanying my direct testimony) and current capital market conditions, it is my opinion that the results of leverage formula are reasonable for establishing a return on equity for water and wastewater utilities in Florida." Exhibit (PMA-28)__ provides an analysis of the cost rate of common equity utilizing the applications of the DCF, Risk Premium Model (RPM), CAPM and Comparable Earnings Model (CEM) which I typically include in testimony on rate of return in the numerous rate proceedings listed on Exhibit (PMA-1)__ accompanying my direct testimony. A description of my application of these models is provided in Appendix A accompanying this rebuttal testimony. It is clear, especially from the DCF results and the CAPM results for both the proxy group of Six AUS Utility Reports water companies and the Florida PSC Natural Gas Index, that the DCF cost rate of 9.68% and CAPM cost rate of 11.40% are reasonable, if not conservative, prior to giving consideration to the bond yield differential, the private

placement premium, the small-utility risk premium and adjustment for common equity ratio. And as stated in the Hope decision[13]:

> Under the statutory standard of 'just and reasonable' it is the result reached, not the method employed which is controlling... It is not theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the act is at an end. The fact that the method employed to reach that result may contain infirmities is not then important.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

[13] Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944).

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 080006-WS

UTILITIES, INC.

APPENDIX A TO THE

REBUTTAL TESTIMONY OF

PAULINE M. AHERN

REGARDING WATER AND WASTEWATER INDUSTRY

ANNUAL REESTABLISHMENT OF AUTHORIZED RATE OF

RETURN ON COMMON EQUITY FOR WATER AND WASTEWATER

UTILITIES PURSUANT TO SECTION 367.081(4)(f), F.S.

APPENDIX A TO THE REBUTTAL TESTIMONY OF PAULINE M. AHERN, CRRA

Proxy Group

Q. Please explain how you chose the proxy group of six AUS Utility Reports water companies.

A. The basis of selection for the proxy group of six AUS Utility Reports water companies were those companies which meet the following criteria: 1) they are included in the Water Company Group of AUS Utility Reports (September 2008); 2) they have Value Line or Reuters consensus five-year EPS growth rate projections; 3) they have a Value Line adjusted beta; 4) they have not cut or omitted their common dividends during the five years ending 2007 or through the time of the preparation of this testimony; 5) they have 60% or greater of total net operating income derived from and 60% or greater of total assets devoted to regulated water operations; and 5) which, at the time of the preparation of this testimony, had not publicly announced that they were involved in any major merger or acquisition activity.

Discounted Cash Flow Model

Q. Please describe the dividend yield you used in your application of the DCF model.

A. The unadjusted dividend yields are based upon an average of a recent spot date (August 29, 2008) as well as an average of the three months ended August 29, 2008, respectively, which are derived on page 3 of Exhibit (PMA-28)__. The average unadjusted yield is 2.78% and the median unadjusted yield is 2.86% for the six AUS Utility Reports water companies and 3.62% and 3.63%, respectively, for the FL PSC Natural Gas Index.

Q. Please explain the dividend growth component shown on page 2 of Exhibit (PMA-28)__, Column 2.

A. Because dividends are paid quarterly, or periodically, as opposed to continuously (daily), an adjustment to the dividend yield must be made. This is often referred to as the discrete, or the Gordon Periodic, version of the DCF model.

Since the various companies in the proxy groups increase their quarterly dividend at various times during the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the D_1 expression, or $D_{1/2}$. This is a conservative approach which does not overstate the dividend yield which should be representative of the next twelve-month period. Therefore, the actual average dividend yields in Column 1 on page 2 of Exhibit (PMA-28)__ have been adjusted upward to reflect one-half the growth rates shown in Column 4.

Q. Please explain the basis of the growth rates of the proxy groups which you use in your application of the DCF model.

A. In my opinion, investors are likely to place great significance on the opinions expressed by financial information services, such as Value Line and Reuters, which are easily accessible and/or available on the Internet. Forecasts by analysts, including Value Line, are typically limited to five years. In my opinion, investors in water utilities would have little interest in historical growth rates beyond the most recent five years because an historical five-year period balances the five-year period for projected growth rates. Consequently, the use of five-year historical and five-year projected growth rates in earnings per share (EPS) and dividends per share (DPS) as well as the sum of internal and external growth in per share value (BR + SV) is appropriate to consider in the

determination of a growth rate for use in this application of the DCF model. In addition, investors realize that analysts have significant insight into the dynamics of the industries and they analyze individual companies as well as companies' abilities to effectively manage the effects of changing laws and regulations. Consequently, I have reviewed analysts' projected growth in EPS, as well as historical and projected five-year compound growth rates in EPS, DPS and (BR + SV) for each company in the proxy groups. Because the gas distribution industry has been partially deregulated, it is my opinion that investors rely upon forecasted EPS growth rates when arriving at their required return on common equity for gas distribution companies. Therefore, for these companies, I will rely exclusively upon forecasted growth rates in EPS in my application of the DCF. However, for the water companies, because the industry has not experienced the deregulation experienced by the gas distribution companies, I will also rely upon historical growth rates in my application of the DCF. The historical growth rates are from Value Line or are calculated in a manner similar to Value Line, while the projected growth rates in earnings are from Value Line and Reuters forecasts. Reuters growth rate estimates are not available for DPS and internal growth, and they do not include the Value Line projections.

For the water companies, in addition to evaluating EPS and DPS growth rates, it is reasonable to assume that investors also assess (BR + SV). The concept is based on well documented financial theory that future dividend growth is a function of the portion of the overall return to investors which is reinvested in the firm plus the sales of new common stock. Consequently, the growth component as proxied by internal and external growth is defined as follows:

$$g = BR + SV$$

Where:

B = the fraction of earnings retained by the firm, i.e., retention ratio

R = the return on common equity

S = the growth in common shares outstanding

V = the premium/discount of a company's stock price relative to its book value, i.e., one minus the complement of the market/book ratio.

Consistent with the use of five-year historical and five-year projected growth rates in EPS and DPS, I have derived five-year historical and five-year projected (BR + SV) growth. Projected EPS growth rate averages and medians are shown in Column 4 on the lower half of Schedule PMA-7, while historical and projected growth rates in DPS, EPS, and BR + SV are shown in Column 4 on the upper half of page 2 of Exhibit (PMA-28)__. The bases of these growth rates are summarized for the companies in the proxy groups on page 4, Exhibit (PMA-28)__. Supporting growth rate data are detailed on pages 5 through 10 of Exhibit (PMA-28)__, while pages 31 through 46 contain all of the most current Value Line Investment Survey data for the companies in the two proxy groups.

Q. Please summarize the DCF model result.

A. As shown on page 2 of Exhibit (PMA-28)__, the result of the application of the DCF model is 11.47% using the average and 11.46% when using the median value of the six AUS Utility Reports water companies results. As also shown on page 2 of Exhibit (PMA-28)__, the results of the application of the DCF model is 9.82% using the average and 9.43% when using the median value of the FL PSC Natural Gas Index

result. In arriving at conclusions of indicated common equity cost rate for the proxy groups, I have relied upon the median of the results of the DCF. I utilize the median due to the wide range of DCF results as well as the currently extremely volatile capital market condition. In my opinion, the median is a more accurate and reliable measure of central tendency, and provides recognition to all the DCF results.

In view of the foregoing, as shown on page 2 of Exhibit (PMA-28)__, the indicated common equity cost rate based upon the application of the DCF model is 11.66% for the six AUS Utility Reports water companies and 9.43% for the FL PSC Natural Gas Index.

The Risk Premium Model (RPM)

Q. Please describe the theoretical basis of the RPM.

A. Risk Premium theory indicates that the cost of common equity capital is greater than the prospective company-specific cost rate for long-term debt capital. In other words, the cost of common equity equals the expected cost rate for long-term debt capital plus a risk premium to compensate common shareholders for the added risk of being unsecured and last-in-line for any claim on the corporation's assets and earnings.

Q. Please explain the basis of the expected bond yields of 6.58% and 6.76% applicable to the average company in each proxy group, respectively.

A. Because the cost of common equity is prospective, a prospective yield on similarly-rated long-term debt is essential. As shown on page 12 of Exhibit (PMA-28)__, although based upon only one water company, the average Moody's bond rating is A2 for the six AUS Utility Reports water companies while the average Moody's bond rating is A3 for the FL PSC Natural Gas Index. I relied upon a consensus forecast of

about 50 economists of the expected yield on Aaa rated corporate bonds for the six calendar quarters ending with the fourth calendar quarter of 2009 as derived from the September 1, 2008 Blue Chip Financial Forecasts (shown on page 2 of Exhibit (PMA-12)__. As shown on Line No. 1 of page 11 of Exhibit (PMA-28)__, the average expected yield on Moody's Aaa rated corporate bonds is 5.87%. It is necessary to adjust that average yield to be equivalent to a Moody's A2 rated public utility bond. Consequently, an adjustment to the average prospective yield on Aaa rated corporate bonds of 0.71% was required. It is shown on Line No. 2, page 12 and explained in Note 2 at the bottom of the page. After adjustment, the expected bond yield applicable to a Moody's A rated public utility bond is 6.58% as shown on Line No. 3.

Because the proxy group of six AUS Utility Reports water companies average Moody's bond rating is A2, no adjustment is necessary to make the prospective bond yield applicable to an A2 public utility bond. However, because the average Moody's bond rating of the FL PSC Natural Gas Index is A3, an adjustment of 18 basis points (0.18%) is necessary to make the prospective bond yield applicable to an A3 public utility bond. Therefore, the expected specific bond yields is 6.58% for the proxy group of water companies and 6.76% for the FL PSC Natural Gas Index.

Q. Please explain the method utilized to estimate the equity risk premium.

A. I evaluated the results of two different historical equity risk premium studies, as well as Value Line's forecasted total annual market return in excess of the prospective yield on high grade corporate bonds, as detailed on pages 15, 16 and 17 of Exhibit (PMA-28)__. As shown on Line No. 3, page 15, the mean equity risk premium is 5.58% applicable to the proxy group of six AUS Utility Reports water companies and 4.96% applicable to

the FL PSC Natural Gas Index. These estimates are the result of an average of a beta-derived historical equity risk premium exclusively as will be discussed subsequently as well as the mean historical equity risk premium applicable to public utilities with bonds rated A based upon holding period returns.

The basis of the beta-derived equity risk premium applicable to the proxy group is shown on page 16 of Exhibit (PMA-28)__. The beta-determined equity risk premium should receive substantial weight because betas are derived from the market prices of common stocks over a recent five-year period. Beta is a meaningful measure of prospective relative risk to the market as a whole and is a logical means by which to allocate a relative share of the market's total equity risk premium.

> The total market equity risk premium utilized is 6.20% and is based exclusively upon the long-term historical market risk premium after a review of both the long-term historical and forecasted market risk premia. Because it is my opinion that the current and recent substantial volatility in the stock market is extraordinary and not representative of the expected long-term, neither is the current forecasted market risk premium as shown on page 16 of Exhibit (PMA-28)__. To derive the historical market equity risk premium, I used the most recent Morningstar[1] data on holding period returns for the S&P 500 Composite Index and the average historical yield on Moody's Aaa and A rated corporate bonds for the period 1926-2007.

The long-term arithmetic mean total return rate on the market as a whole of 12.30% and the long-term arithmetic mean yield on corporate bonds of 6.10% were used, as shown at Line Nos. 1 and 2 of page 16 of Exhibit (PMA-28)__. As shown on Line No. 3 of page 16, the resultant long-term historical equity risk premium on the market as a whole is 6.20%. I used arithmetic mean return rates because they are appropriate for cost of capital purposes as discussed previously.

[1] Morningstar, Inc. acquired Ibbotson Associates in 2006.

The basis of the forecasted market equity risk premium can be found on Line Nos. 4 through 6 on page 16 of Exhibit (PMA-28)__. It is derived from an average of the most recent 3-month (using the months of June 2008 through August 2008) and a recent spot (August 29, 2008) median market price appreciation potentials by Value Line as explained in detail in Note 1 on page 21 of Exhibit (PMA-28)__.

The average expected price appreciation is 78% which translates to 15.51% per annum and, when added to the average (similarly calculated) dividend yield of 2.32% equates to a forecasted annual total return rate on the market as a whole of 17.83%. Thus, this methodology is consistent with the use of the 3-month and spot dividend yields in my application of the DCF model. To derive the forecasted total market equity risk premium of 11.96% shown on Exhibit (PMA-28)__, page 16, Line No. 6, the September 1, 2008 forecast of about 50 economists of the expected yield on Moody's Aaa rated corporate bonds for the six calendar quarters ending with the fourth calendar quarter 2009 of 5.87% from Blue Chip Financial Forecasts was deducted from the Value Line total market return of 17.83%. The calculation resulted in an expected market risk premium of 11.96%.

However, because I believe the current and recent substantial volatility in the stock market is extraordinary and not representative of the expected long-term, in this instance, I will not rely upon the forecasted market equity risk premium but rather, will rely upon this historical long-term arithmetic market equity risk premium of 6.20%.

On page 18 of Exhibit (PMA-28)__, the most current Value Line betas for the companies in the two groups are shown. Applying the median beta of the proxy group, consistent with my reliance upon the median DCF results as previously discussed, to the

market equity risk premium of 6.20% results in a beta adjusted equity risk premium of 6.51% for the proxy group of six AUS Utility Reports water companies and 5.27% for the FL PSC Natural Gas Index as shown on Line No. 9.

A mean equity risk premium of 4.65% applicable to companies with A rated public utility bonds was calculated based upon holding period returns from a study using public utilities, as shown on Line No. 2, page 15 of Exhibit (PMA-28)__, and detailed on page 17 of the same Exhibit.

The equity risk premia applicable to the proxy group of six AUS Utility Reports water companies and FL PSC Natural Gas Index are the averages of the beta-derived premia and that based upon the holding period returns of public utilities with A rated bonds, as summarized on Exhibit (PMA-28)__, page 15, i.e., 5.58% and 4.96%, respectively.

Q. What are the indicated RPM common equity cost rates?

A. They are 12.16% for the six AUS Utility Reports water companies, 11.72% for the FL PSC Natural Gas Index as shown on Exhibit (PMA-28)__, page 1.

The Capital Asset Pricing Model (CAPM)

Q. Please explain the theoretical basis of the CAPM.

A. CAPM theory defines risk as the covariability of a security's returns with the market's returns. This covariability is measured by beta ("β"), an index measure of an individual security's variability relative to the market. A beta less than 1.0 indicates lower variability while a beta greater than 1.0 indicates greater variability than the market.

The CAPM assumes that all other risk, i.e., all non-market or unsystematic risk, can be eliminated through diversification. The risk that cannot be eliminated through

diversification is called market, or systematic, risk. The CAPM presumes that investors require compensation for risks that cannot be eliminated through diversification. Systematic risks are caused by macroeconomic and other events that affect the returns on all assets. Essentially, the model is applied by adding a risk-free rate of return to a market risk premium. This market risk premium is adjusted proportionately to reflect the systematic risk of the individual security relative to the market as measured by beta. The traditional CAPM model is expressed as:

$$R_s = R_f + \beta(R_m - R_f)$$

Where:

R_s	=	Return rate on the common stock
R_f	=	Risk-free rate of return
R_m	=	Return rate on the market as a whole
β	=	Adjusted beta (volatility of the security relative to the market as a whole)

Numerous tests of the CAPM have confirmed its validity. These tests have measured the extent to which security returns and betas are related as predicted by the CAPM. However, Morin observes that while the results support the notion that beta is related to security returns, it has been determined that the empirical Security Market Line (SML) described by the CAPM formula is not as steeply sloped as the predicted SML. Morin[2] states:

> With few exceptions, the empirical studies agree that ... low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.

* * *

[2] Id., at p. 175.

Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

$$K = R_F + x\,\beta(R_M - R_F) + (1-x)\,\beta(R_M - R_F)$$

where x is a fraction to be determined empirically. The value of x that best explains the observed relationship Return = 0.0829 + 0.0520 β is between 0.25 and 0.30. If x = 0.25, the equation becomes:

$$K = R_F + 0.25(R_M - R_F) + 0.75\,\beta(R_M - R_F)^3$$

In view of theory and practical research, I have applied both the traditional CAPM and the empirical CAPM to the companies in the proxy group and averaged the results.

Q. Please describe your selection of a risk-free rate of return.

A. As shown at the top of column 3 on page 20 of Exhibit (PMA-28)__, the risk-free rate adopted for both applications of the CAPM is 4.78%. It is based upon the average consensus forecast of the reporting economists in the September 1, 2008 Blue Chip Financial Forecasts as shown in Note 2, page 21, of the expected yields on 30-year U.S. Treasury bonds for the six quarters ending with the fourth calendar quarter 2009.

Q. Please explain the estimation of the expected equity risk premium for the market.

A. After estimating investors' expected total return rate for the market, I subtract the expected risk-free rate from the expected total return rate for the market to arrive at an expected equity risk premium for the market, some proportion of which must be allocated to the companies in the proxy group through the use of beta. The total market equity risk premium utilized was 7.1% and, in this instance, is based upon the long-term historical market risk premia because, in my opinion, the current and recent substantial

[3] Id., at p. 190.

volatility in the stock market is extraordinary and not representative of the expected long-term.

The basis of the projected median market equity risk premium is explained in detail in Note 1 on page 21 of Exhibit (PMA-28)__. As previously discussed, it is derived from an average of the most recent 3-month (using the months of June 2008 through August 2008) and a recent spot (August 29, 2008) 3 - 5 year median total market price appreciation projections from Value Line, and the long-term historical average from Morningstar. The appreciation projections by Value Line plus average dividend yield equate to a forecasted annual total return rate on the market of 17.83%. The long-term historical return rate of 12.30% on the market as a whole is from SBBI. In each instance, the relevant risk-free rate was deducted from the total market return rate. For example, from the Value Line projected total market return of 17.83%, the forecasted average risk-free rate of 4.78% was deducted indicating a forecasted market risk premium of 13.05%. From the Ibbotson Associates' long-term historical total return rate of 12.30%, the long-term historical income return rate on long-term U.S. Government Securities of 5.20% was deducted indicating an historical equity risk premium of 7.10%. Thus, the average of the projected and historical total market risk premia of 13.11% and 7.10%, respectively, is 10.08%. However, as stated previously, I will rely upon the historical market equity risk premium of 7.10%.

Q. What are the results of your application of the traditional and empirical CAPM to the two groups?

A. As shown on Exhibit (PMA-28)__, Line No. 1 of page 19, the traditional CAPM cost rate is 12.24% for the proxy group of six AUS Utility Reports water companies and

10.95% for the FL PSC Natural Gas Index. And, as shown on Line No. 2 of page 20, the empirical CAPM cost rate is 12.15% for the six AUS Utility Reports water companies and 11.08% for the FL PSC Natural Gas Index. The traditional and empirical CAPM cost rates are shown individually by company on Exhibit (PMA-28)__. As with the DCF results discussed previously, and for the same reasons, namely the wide range of results and the current extremely volatile capital markets, I rely upon the median results of the traditional CAPM and ECAPM for the proxy group. As shown on Line No. 3, the CAPM cost rate applicable to the proxy group of six AUS Utility Reports water companies is 12.20%, while the CAPM cost rate applicable to the FL PSC Natural Gas Index is 11.95% based upon the traditional and empirical CAPM.

Comparable Earnings Model (CEM)

Q. **Please describe your application of the comparable earnings model and how it is used to determine common equity cost rate.**

A. My applications of the CEM are summarized on pages 22 through 30 of Exhibit (PMA-28)__. Pages 22 through 24 show the CEM results for the proxy group of six AUS Utility Reports water companies and page 25 shows the CEM results for the FL PSC Natural Gas Index. Supporting data are shown on pages 26 through 29 and page 30 contains notes related to pages 22 through 29.

The comparable earnings approach is derived from the "corresponding risk" standard of the landmark cases of the U.S. Supreme Court. Therefore, it is consistent with the Hope doctrine that the return to the equity investor should be commensurate with returns on investments in other firms having corresponding risks.

The CEM is based upon the fundamental economic concept of opportunity cost

which maintains that the true cost of an investment is equal to the cost of the best available alternative use of the funds to be invested. The opportunity cost principle is also consistent with one of the fundamental principles upon which regulation rests: that regulation is intended to act as a surrogate for competition and to provide a fair rate of return to investors.

The CEM is designed to measure the returns expected to be earned on the book common equity, in this case net worth, of similar risk enterprises. Thus, it provides a direct measure of return, since it translates into practice the competitive principle upon which regulation rests. In my opinion, it is inappropriate to use the achieved returns of regulated utilities of similar risk because to do so would be circular and inconsistent with the principle of equality of risk with non-price regulated firms.

The difficulty in application of the CEM is to select a proxy group of companies which are similar in risk, but are not price regulated utilities. Consequently, the first step in determining a cost of common equity using the comparable earnings model is to choose an appropriate proxy group or groups of non-price regulated firms. The proxy group(s) should be broad-based in order to obviate any company-specific aberrations. As stated previously, utilities need to be eliminated to avoid circularity since the returns on book common equity of utilities are substantially influenced by regulatory awards and are therefore not representative of the returns that could be earned in a truly competitive market.

Q. Please describe your application of the CEM.

A. My application of the CEM is market-based in that the selection of non-price regulated firms of comparable risk is based upon statistics derived from the market prices paid by

investors.

I have chosen two proxy groups of domestic, non-price regulated firms to reflect both the systematic and unsystematic risks of the proxy groups of six AUS Utility Reports water companies and the FL PSC Natural Gas Index, respectively. The proxy group of two hundred twenty-two non-utility companies similar in risk to the proxy group of six AUS Utility Reports water companies and forty-nine non-utility companies similar in risk to the FL PSC Natural Gas Index are listed on pages 22 through 25, Exhibit (PMA-28)__. The criteria used in the selection of these proxy companies were that they be domestic non-utility companies and have a meaningful rate of return on net worth, common equity or partners' capital reported in Value Line (Std. Ed.) for each of the five years ended 2007, or projected for 2011-2013. Value Line betas were used as a measure of systematic risk. The standard error of the regression was used as a measure of each firm's unsystematic or specific risk. The standard error of the regression reflects the extent to which events specific to a company's operations will affect its stock price and, therefore, is a measure of diversifiable, unsystematic, company-specific risk. *In essence, companies which have similar betas and standard errors of the regressions, have similar investment risk, i.e., the sum of systematic (market) risk as reflected by beta and unsystematic (business and financial) risk, as reflected by the standard error of the regression, respectively. Those statistics are derived from regression analyses using market prices which, under the EMH reflect all relevant risks. The application of these criteria results in proxy groups of non-price regulated firms similar in risk to the average company in each proxy group.*

Using a Value Line, Inc. proprietary database dated June 16, 2008, the proxy

group of two hundred twenty-two non-price regulated companies were chosen based upon ranges of unadjusted beta and standard error of the regression. The ranges were based upon the average standard deviations of the unadjusted beta and the average standard error of the regression for the proxy group of six AUS Utility Reports water companies.

The six AUS Utility Reports water companies have an average unadjusted beta of 0.91 whose standard deviation is 0.1219 as of June 16, 2008, as shown on page 24, Exhibit (PMA-28)__. The average standard error of the regression is 3.2465 as also shown on page 24, with a standard deviation of 0.1426 as derived in Note 5, page 30. Ranges of unadjusted betas from 0.54 to 1.28 and of standard errors of the regression from 2.8187 to 3.6743 were used to select the proxy group of two hundred twenty-two domestic non-utility companies comparable to the profile of the proxy group of six AUS Utility Reports water companies as can be gleaned from pages 22 through 24 and explained in Note 1 on page 30 of Exhibit (PMA-28)__. These ranges are based upon the proxy group's average unadjusted beta of 0.91 and average standard error of the regression of 3.2465 plus or minus three standard deviations of beta (0.1219 x 3 = 0.3657) and standard error of the regressions (0.1426 x 3 = 0.4278). The use of three standard deviations assures capturing 99.73% of the distribution of unadjusted betas and standard errors, assuring comparability.

Likewise, using the same Value Line, Inc. proprietary database dated June 16, 2008, the proxy group of forty-nine non-price regulated companies were chosen based upon ranges of unadjusted beta and standard error of the regression. The ranges were based upon the average standard deviations of the unadjusted beta and the average

standard error of the regression for the FL PSC Natural Gas Index.

The LDCs in the Natural Gas Index have an average unadjusted beta of 0.78 whose standard deviation is 0.0731 as of June 16, 2008, as shown on page 29 of Exhibit (PMA-28)__. The average standard error of the regression is 1.9461 as also shown on page 29 with a standard deviation of 0.0855 as derived in Note 10, page 30. Ranges of unadjusted betas from 0.56 to 1.00 and of standard errors of the regression from 1.6896 to 2.2026 were used to select the proxy group of forty-nine domestic non-utility companies comparable to the profile of the FL PSC Natural Gas Index as can be gleaned from page 29 and explained in Note 9 on page 30. These ranges are based upon the proxy group's average unadjusted beta of 0.78 and average standard error of the regression of 1.9461 plus or minus three standard deviations of beta (0.0731 x 3 = 0.2565) and standard error of the regressions (0.0855 x 3 = 0.2565). The use of three standard deviations assures capturing 99.73% of the distribution of unadjusted betas and standard errors, assuring comparability.

I believe that this methodology for selecting non-price regulated firms of similar total risk (i.e., non-diversifiable systematic and diversifiable non-systematic risk) is meaningful and effectively responds to the criticisms normally associated with the selection of firms presumed to be comparable in total risk. This is because the selection of non-price regulated companies comparable in total risk is based upon regression analyses of market prices which reflect investors' assessment of all risks, diversifiable and non-diversifiable. Thus, the empirical selection process results in companies comparable in both systematic and unsystematic risks, i.e., total risk.

Once proxy groups of non-price regulated companies are selected, it is then

necessary to derive returns on book common equity, net worth or partners' capital for the companies in the groups. I have measured these returns using the rate of return on net worth, common equity or partners' capital reported by Value Line (Standard Edition). It is reasonable to measure these returns over both the most recent historical five-year period as well as those projected over the ensuing five-year period.

Q. What is your conclusion of CEM cost rate?

A. My conclusion of CEM cost rate based upon the average of the median of all of the five-year median historical and projected returns on book common equity, net worth or partners' capital is 13.77% for the proxy group of six AUS Utility Reports water companies as shown on page 24 of Exhibit (PMA-28)__. For reasons discussed previously relative to my reliance upon forecasted EPS growth rates in my DCF for the FL PSC Natural Gas Index, in my CEM analysis for the Index, I rely only upon the projected ROEs. Based upon the average of the median of all of the five-year median historical and projected results on book common equity, net worth or partners' capital is 16.00%.

As with the DCF and CAPM results discussed previously, I have again relied upon median and for the same reasons, namely, the wide range of returns and the extreme volatility of the current capital markets. After I apply a test of significance (Student's t-statistic) to determine whether any of the projected returns are significantly different from their respective means at the 95% confidence level, the projected means of several companies have been excluded. After excluding these outliers, my conclusion of CEM cost rate is 13.56% for the six water companies and 15.75% for FL PSC Natural Gas Index.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 080006-WS

UTILITIES, INC.

EXHIBIT

TO ACCOMPANY THE

REBUTTAL TESTIMONY OF

PAULINE M. AHERN

REGARDING WATER AND WASTEWATER INDUSTRY

ANNUAL REESTABLISHMENT OF AUTHORIZED RATE OF

RETURN ON COMMON EQUITY FOR WATER AND WASTEWATER

UTILITIES PURSUANT TO SECTION 367.081(4)(f), F.S.

Consensus Forecasts Of U.S. Interest Rates And Key Assumptions[1]

	History							
	Avg. For Week Ending				Month			Latest Q
Interest Rates	July 20	July 13	July 6	June 29	June	May	Apr.	2Q 2001
Federal Funds Rate	3.76	3.67	3.89	3.91	3.97	4.21	4.80	4.33
Prime Rate	6.75	6.75	6.75	7.00	6.98	7.24	7.80	7.34
LIBOR, 3-mo.	3.74	3.77	3.82	3.75	3.84	4.10	4.63	4.19
Commercial Paper, 1-mo.	3.70	3.71	3.74	3.69	3.82	4.06	4.71	4.20
Treasury bill, 3-mo.	3.57	3.62	3.65	3.55	3.57	3.70	3.97	3.75
Treasury bill, 6-mo.	3.56	3.58	3.61	3.55	3.56	3.74	3.99	3.76
Treasury bill, 1 yr.	3.60	3.62	3.70	3.60	3.58	3.78	3.98	3.78
Treasury note, 2 yr.	4.02	4.10	4.21	4.10	4.08	4.26	4.23	4.19
Treasury note, 5 yr.	4.72	4.83	4.91	4.82	4.81	4.93	4.76	4.83
Treasury note, 10 yr.	5.17	5.31	5.41	5.29	5.28	5.39	5.14	5.27
Treasury bond, 30 yr.	5.55	5.67	5.74	5.66	5.67	5.78	5.65	5.70
Corporate Aaa bond	7.09	7.19	7.24	7.17	7.18	7.29	7.20	7.22
Corporate Baa bond	7.93	8.03	8.08	7.98	7.97	8.07	8.07	8.04
State & Local bonds	5.17	5.22	5.26	5.21	5.20	5.29	5.27	5.25
Home mortgage rate	7.06	7.21	7.19	7.11	7.16	7.15	7.08	7.13

	History							
Key Assumptions	3Q 1999	4Q 1999	1Q 2000	2Q 2000	3Q 2000	4Q 2000	1Q 2001	2Q 2001
Major Currency Index	94.5	92.7	94.7	97.5	99.2	102.3	101.9	105.3
Real GDP	4.7	8.3	2.3	5.7	1.3	1.9	1.3	0.7
GDP Price Index	1.4	1.8	3.8	2.1	1.9	1.8	3.3	2.3
Consumer Price Index	2.9	3.1	4.3	2.8	3.5	3.0	4.2	3.0

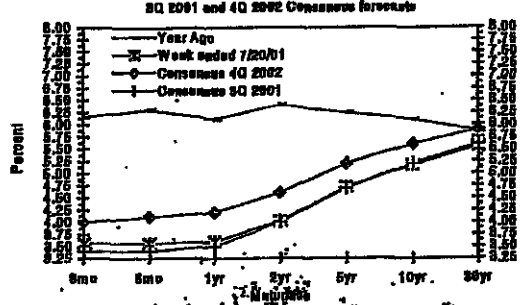
Consensus Forecasts - Quarterly Avg.						
3Q 2001	4Q 2001	1Q 2002	2Q 2002	3Q 2002	4Q 2002
3.6	3.5	3.5	3.6	3.9	4.1
6.6	6.5	6.5	6.6	6.9	7.1
3.7	3.6	3.7	3.8	4.1	4.3
3.7	3.6	3.6	3.8	4.0	4.3
3.4	3.3	3.4	3.5	3.8	4.0
3.4	3.4	3.5	3.6	3.9	4.1
3.5	3.4	3.7	3.8	4.0	4.2
4.0	4.0	4.1	4.3	4.5	4.6
4.7	4.7	4.8	5.0	5.1	5.2
5.2	5.2	5.3	5.4	5.5	5.6
5.6	5.6	5.7	5.7	5.8	5.9
7.0	7.0	7.1	7.1	7.2	7.3
7.8	7.8	7.8	7.8	7.9	8.0
5.1	5.1	5.1	5.2	5.3	5.4
7.1	7.1	7.1	7.2	7.3	7.3

Consensus Forecasts - Quarterly Avg.						
3Q 2001	4Q 2001	1Q 2002	2Q 2002	3Q 2002	4Q 2002
105.3	104.9	104.1	103.5	102.9	102.7
1.8	2.8	3.2	3.3	3.4	3.4
2.0	2.6	2.1	2.1	2.0	2.0
2.4	2.3	2.4	2.4	2.4	2.5

[1]Individual panel members' forecasts are on pages 4 through 9. Historical data for interest rates except LIBOR is from Federal Reserve Release (FRSR) H.15. LIBOR quotes available from *The Wall Street Journal* and *Telerate*. Definitions reported here are same as those in FRSR H.15. *All Treasury yields are reported on a constant maturity basis.* Historical data for the U.S. Federal Reserve Board's Major Currency Index is from FRSR H.10 and G.5. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).

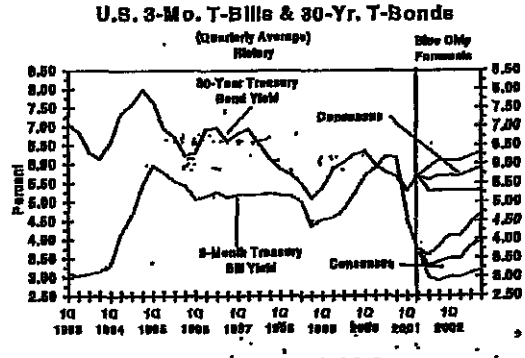
U.S. Treasury Yield Curve

Week ended July 20, 2001 and Year Ago vs. 3Q 2001 and 4Q 2002 Consensus forecasts



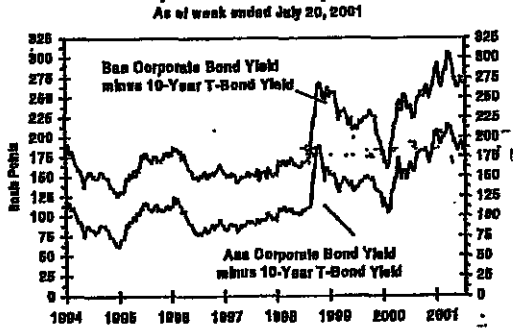
U.S. 3-Mo. T-Bills & 30-Yr. T-Bonds

(Quarterly Average)



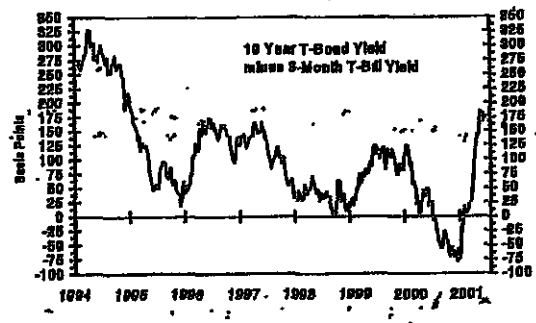
Corporate Bond Spreads

As of week ended July 20, 2001



U.S. Treasury Yield Curve

As of week ended July 20, 2001



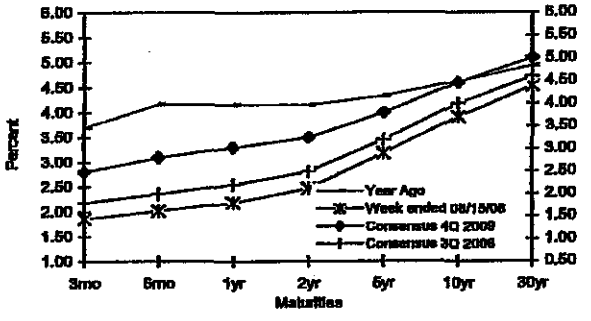
Consensus Forecasts Of U.S. Interest Rates And Key Assumptions[1]

	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week End				Average For Month			Latest Q	3Q	4Q	1Q	2Q	3Q	4Q
Interest Rates	Aug. 15	Aug. 8	Aug. 1	July 25	Jul.	Jun.	May	2Q 2008	2008	2008	2009	2009	2009	2009
Federal Funds Rate	1.99	2.02	2.08	1.99	2.01	2.00	1.98	2.09	2.0	2.0	2.0	2.2	2.6	2.9
Prime Rate	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.08	5.0	5.0	5.1	5.3	5.6	5.9
LIBOR, 3-mo.	2.80	2.80	2.79	2.79	2.79	2.77	2.69	2.75	2.8	2.8	2.8	2.9	3.1	3.4
Commercial Paper, 1-mo.	2.03	2.03	2.05	2.03	2.08	2.14	1.99	2.08	2.3	2.3	2.4	2.5	2.9	3.2
Treasury bill, 3-mo.	1.86	1.70	1.70	1.60	1.66	1.89	1.76	1.65	1.8	1.8	2.0	2.2	2.5	2.8
Treasury bill, 6-mo.	2.02	1.95	1.91	1.93	1.98	2.19	1.86	1.88	2.0	2.0	2.2	2.4	2.8	3.1
Treasury bill, 1 yr.	2.18	2.23	2.30	2.33	2.28	2.42	2.06	2.07	2.2	2.3	2.4	2.7	3.0	3.3
Treasury note, 2 yr.	2.47	2.51	2.58	2.70	2.57	2.77	2.45	2.42	2.5	2.6	2.7	2.9	3.2	3.5
Treasury note, 5 yr.	3.18	3.24	3.31	3.44	3.30	3.49	3.15	3.16	3.2	3.3	3.4	3.6	3.8	4.0
Treasury note, 10 yr.	3.91	3.99	4.04	4.11	4.01	4.10	3.88	3.89	4.0	4.0	4.1	4.3	4.4	4.6
Treasury note, 30 yr.	4.54	4.60	4.61	4.66	4.57	4.69	4.60	4.58	4.6	4.6	4.7	4.8	4.9	5.1
Corporate Aaa bond	5.68	5.74	5.73	5.78	5.67	5.68	5.57	5.60	5.7	5.7	5.8	5.9	6.0	6.1
Corporate Baa bond	7.17	7.22	7.21	7.27	7.16	7.07	6.93	6.99	7.1	7.1	7.1	7.2	7.3	7.4
State & Local bonds	4.67	4.75	4.74	4.77	4.68	4.69	4.58	4.66	4.7	4.7	4.7	4.8	4.9	5.0
Home mortgage rate	6.52	6.52	6.52	6.63	6.43	6.32	6.04	6.09	6.4	6.4	6.4	6.4	6.5	6.6
	History								Consensus Forecasts-Quarterly Avg.					
	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Key Assumptions	2006	2006	2007	2007	2007	2007	2008	2008	2008	2008	2009	2009	2009	2009
Major Currency Index	81.7	81.6	81.9	79.3	77.0	73.3	72.0	70.9	72.4	73.3	74.2	74.9	75.5	76.2
Real GDP	0.8	1.5	0.1	4.8	4.8	-0.2	0.9	1.9	1.0	0.2	0.9	1.9	2.3	2.6
GDP Price Index	2.8	2.2	4.1	2.0	1.5	2.8	2.6	1.1	3.1	2.7	2.5	2.0	2.2	2.2
Consumer Price Index	3.8	-1.6	3.8	4.6	2.7	5.1	4.2	5.0	5.7	2.8	2.6	2.2	2.4	2.4

Individual panel members' forecasts are on pages 4 through 9. Historical data for interest rates except LIBOR is from Federal Reserve Release (FRSR) H.15. LIBOR quotes available from *The Wall Street Journal*. Definitions reported here are same as those in FRSR H.15. Treasury yields are reported on a constant maturity basis. Historical data for the U.S. Federal Reserve Board's Major Currency Index is from FRSR H.10 and G.5. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).

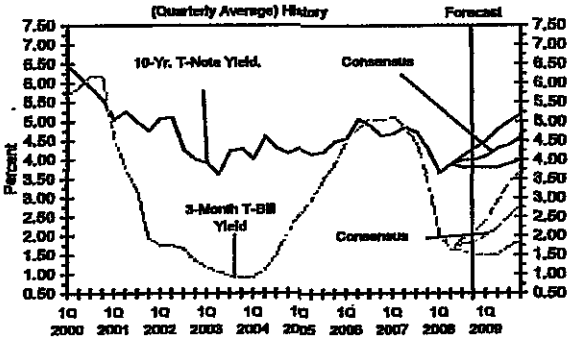
U.S. Treasury Yield Curve

Week ended August 15th, 2008 and Year Ago vs.
3Q 2008 and 4Q 2009 Consensus forecasts



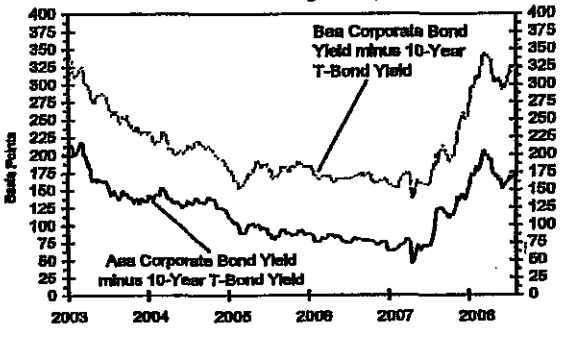
U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield

(Quarterly Average) History — Forecast



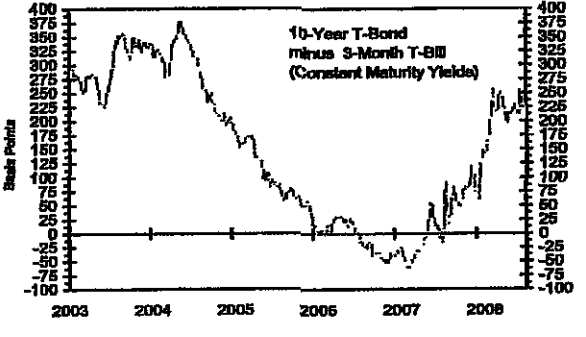
Corporate Bond Spreads

As of week ended August 15th, 2008



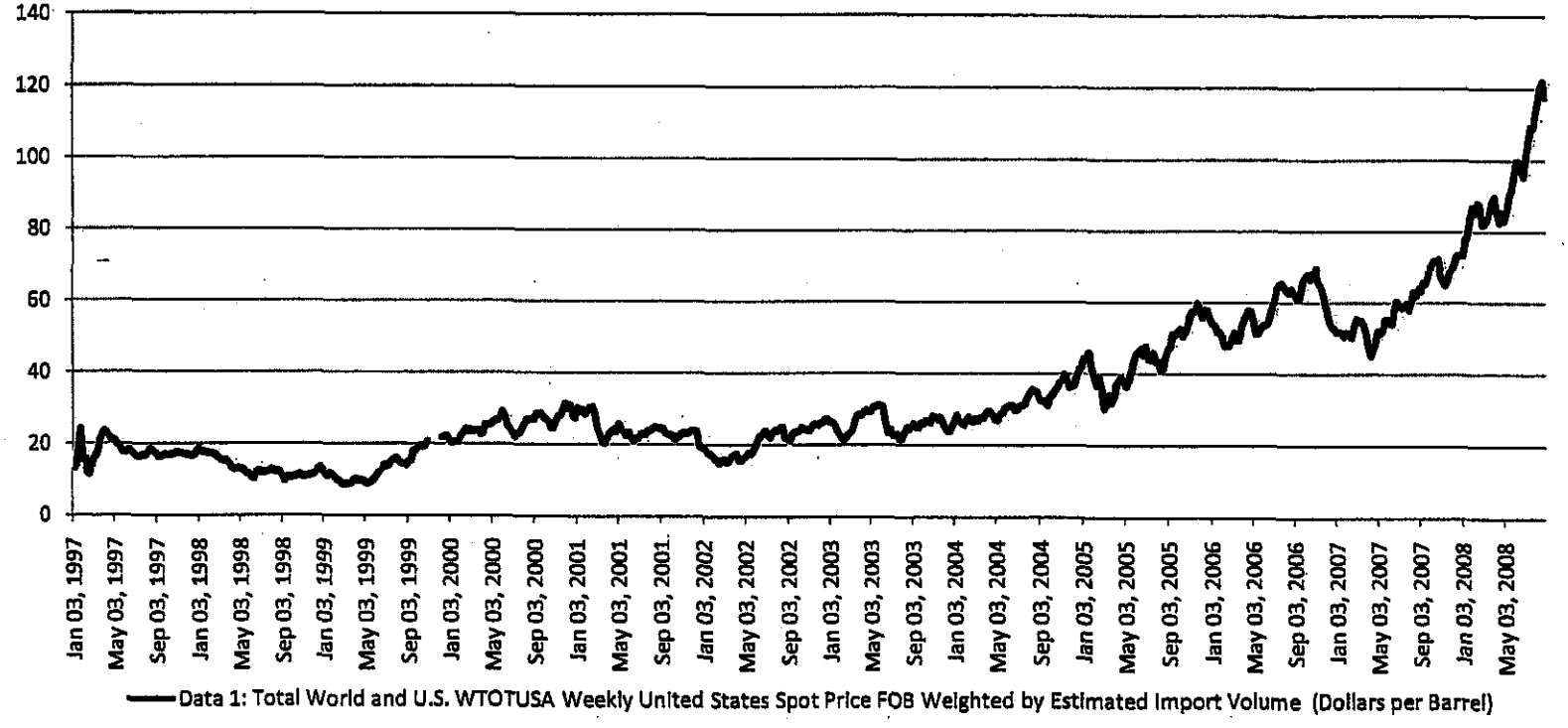
U.S. Treasury Yield Curve

As of week ended August 15th, 2008



Utilities, Inc.

Weekly U. S. Spot Price of Oil Weighted by Estimated Import Volume (Dollars per Barrel)



Source of Information: U.S. Energy Information Administration

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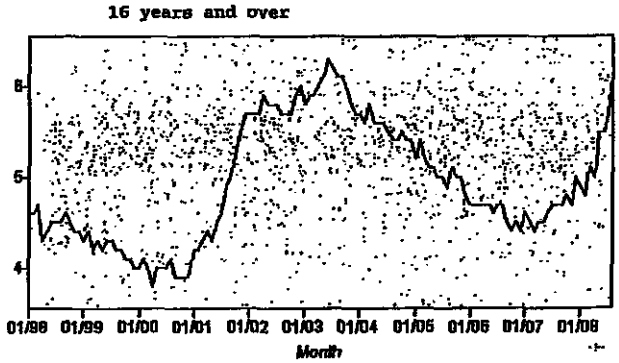
Seasonal Adjusted
Series title: (Seas) Unemployment Rate
Labor force status: Unemployment rate
Type of data: Percent
Age: 16 years and over



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1998	4.6	4.6	4.7	4.3	4.44	.5	4.5	4.5	4.6	4.5	4.4	4.4	
1999	4.3	4.4	4.2	4.3	4.24	.3	4.3	4.2	4.2	4.1	4.1	4.0	
2000	4.0	4.1	4.0	3.8	4.04	.0	4.0	4.1	3.9	3.9	3.9	3.9	
2001	4.2	4.2	4.3	4.4	4.34	.5	4.6	4.9	5.0	5.3	5.5	5.7	
2002	5.7	5.7	5.7	5.9	5.85	.8	5.8	5.7	5.7	5.7	5.9	6.0	
2003	5.8	5.9	5.9	6.0	6.16	.3	6.2	6.1	6.1	6.0	5.8	5.7	
2004	5.7	5.6	5.8	5.6	5.65	.6	5.5	5.4	5.4	5.5	5.4	5.4	
2005	5.2	5.4	5.2	5.1	5.15	.0	5.0	4.9	5.1	5.0	5.0	4.8	
2006	4.7	4.7	4.7	4.7	4.74	.6	4.7	4.7	4.5	4.4	4.5	4.4	
2007	4.6	4.5	4.4	4.5	4.54	.6	4.7	4.7	4.7	4.8	4.7	5.0	
2008	4.9	4.8	5.1	5.0	5.55	.5	5.7	6.1					

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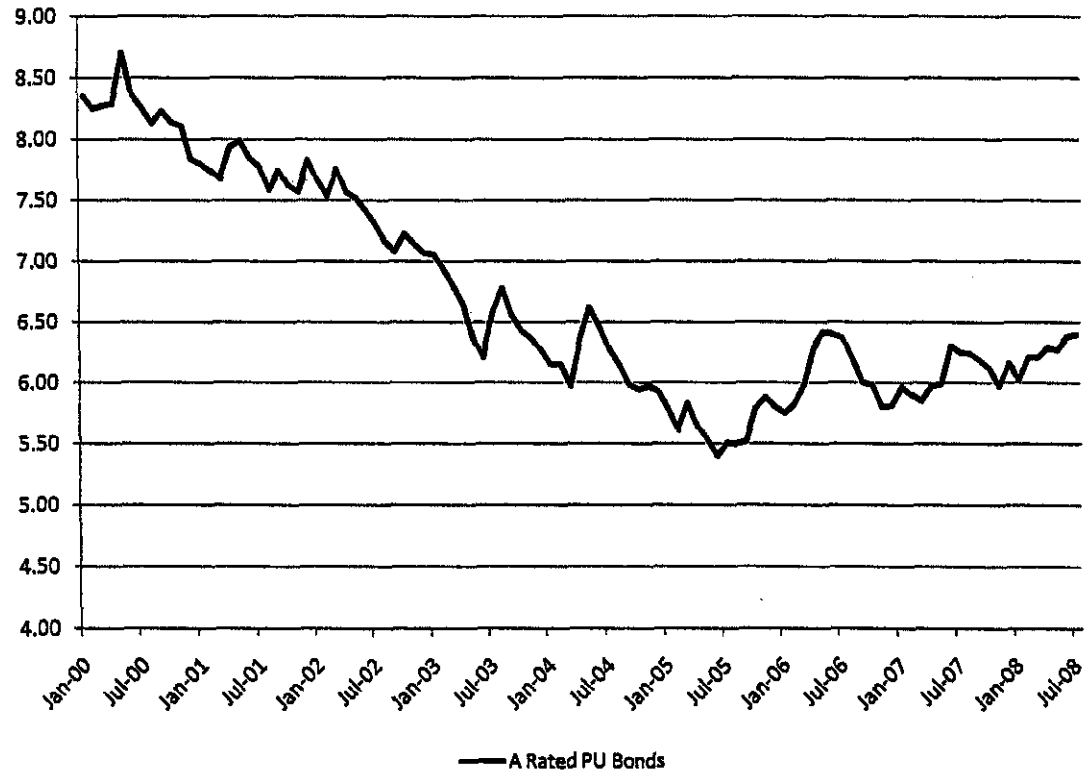
Utilities, Inc.

Moody's A-Rated Public Utility Bonds Yields

January 2000 - July 2008



Source of Information:
Mergent Bond Record

Exhibit (PMA-5)_
Page 1 of 2

Corporate Bond Yield Averages

	AV. CORP.	CORPORATE BY RATING				CORPORATE BY GROUPS			PUBLIC UTILITY BONDS				INDUSTRIAL BONDS				RAILROAD BONDS			
		Aaa	Aa	A	Baa	P.U.	IND.	R.R.	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa
2003																				
Jan.	6.84	6.17	6.59	6.76	7.35	7.13	6.54	—	—	6.87	7.06	7.47	6.17	6.30	6.46	7.23	—	—	—	—
Feb.	6.62	5.95	6.34	6.63	7.06	6.92	6.31	—	—	6.66	6.93	7.17	5.95	6.02	6.33	6.94	—	—	—	—
Mar.	6.53	5.89	6.28	6.54	6.95	6.80	6.26	—	—	6.56	6.79	7.05	5.89	6.04	6.30	6.84	—	—	—	—
Apr.	6.44	5.74	6.22	6.45	6.85	6.68	6.18	—	—	6.47	6.64	6.94	5.74	5.97	6.26	6.76	—	—	—	—
May	6.02	5.22	5.85	6.08	6.38	6.35	5.70	—	—	6.20	6.36	6.47	5.22	5.48	5.79	6.29	—	—	—	—
June	5.85	4.97	5.72	5.92	6.19	6.21	5.49	—	—	6.12	6.21	6.30	4.97	5.31	5.62	6.07	—	—	—	—
July	6.26	5.49	6.07	6.34	6.62	6.54	5.98	—	—	6.37	6.57	6.67	5.49	5.77	6.11	6.56	—	—	—	—
Aug.	6.57	5.87	6.31	6.63	7.01	6.78	6.35	—	—	6.48	6.78	7.08	5.87	6.13	6.48	6.92	—	—	—	—
Sep.	6.37	5.72	6.13	6.42	6.79	6.58	6.16	—	—	6.30	6.56	6.87	5.72	5.95	6.27	6.71	—	—	—	—
Oct.	6.32	5.70	6.11	6.33	6.73	6.50	6.14	—	—	6.28	6.43	6.79	5.70	5.94	6.23	6.67	—	—	—	—
Nov.	6.27	5.65	6.08	6.28	6.66	6.44	6.09	—	—	6.26	6.37	6.69	5.65	5.91	6.18	6.63	—	—	—	—
Dec.	6.20	5.65	6.02	6.19	6.60	6.36	6.04	—	—	6.18	6.27	6.61	5.62	5.85	6.11	6.58	—	—	—	—
2004																				
Jan.	6.08	5.54	5.91	6.08	6.44	6.23	5.92	—	—	6.06	6.15	6.47	5.54	5.74	6.02	6.40	—	—	—	—
Feb.	6.00	5.50	5.87	6.04	6.27	6.17	5.83	—	—	6.10	6.15	6.28	5.50	5.65	5.93	6.24	—	—	—	—
Mar.	5.84	5.33	5.70	5.86	6.11	6.01	5.67	—	—	5.93	5.97	6.12	5.33	5.48	5.75	6.10	—	—	—	—
Apr.	6.22	5.73	6.10	6.25	6.46	6.38	6.05	—	—	6.33	6.35	6.46	5.73	5.85	6.15	6.45	—	—	—	—
May	6.51	6.04	6.40	6.54	6.75	6.68	6.34	—	—	6.66	6.62	6.75	6.04	6.13	6.45	6.73	—	—	—	—
June	6.42	6.01	6.21	6.42	6.78	6.53	6.31	—	—	6.30	6.46	6.84	6.01	6.12	6.37	6.72	—	—	—	—
July	6.24	5.82	6.02	6.23	6.62	6.34	6.13	—	—	6.09	6.27	6.67	5.82	5.94	6.18	6.57	—	—	—	—
Aug.	6.08	5.65	5.87	6.08	6.48	6.18	5.98	—	—	5.95	6.14	6.45	5.65	5.79	6.02	6.47	—	—	—	—
Sep.	5.91	5.46	5.73	5.91	6.27	6.01	5.81	—	—	5.79	5.98	6.27	5.46	5.67	5.84	6.27	—	—	—	—
Oct.	5.87	5.47	5.69	5.86	6.21	5.95	5.78	—	—	5.74	5.94	6.17	5.47	5.63	5.78	6.24	—	—	—	—
Nov.	5.89	5.52	5.72	5.88	6.21	5.97	5.80	—	—	5.79	5.97	6.16	5.52	5.65	5.78	6.25	—	—	—	—
Dec.	5.84	5.47	5.69	5.82	6.15	5.93	5.75	—	—	5.78	5.92	6.10	5.47	5.60	5.72	6.20	—	—	—	—
2005																				
Jan.	5.72	5.36	5.58	5.68	6.02	5.80	5.63	—	—	5.68	5.78	5.95	5.36	5.48	5.58	6.08	—	—	—	—
Feb.	5.55	5.20	5.44	5.51	5.82	5.64	5.45	—	—	5.55	5.61	5.76	5.20	5.32	5.40	5.87	—	—	—	—
Mar.	5.77	5.40	5.64	5.73	6.06	5.86	5.67	—	—	5.76	5.83	6.01	5.40	5.53	5.63	6.11	—	—	—	—
Apr.	5.65	5.33	5.44	5.58	6.05	5.72	5.58	—	—	5.56	5.64	5.95	5.33	5.31	5.52	6.15	—	—	—	—
May	5.54	5.15	5.29	5.49	6.01	5.60	5.48	—	—	5.39	5.53	5.88	5.15	5.18	5.45	6.13	—	—	—	—
June	5.35	4.96	5.02	5.33	5.86	5.39	5.31	—	—	5.05	5.40	5.70	4.96	4.99	5.26	6.01	—	—	—	—
July	5.46	5.06	5.14	5.44	5.95	5.50	5.41	—	—	5.18	5.51	5.81	5.06	5.10	5.37	6.10	—	—	—	—
Aug.	5.49	5.09	5.20	5.48	5.96	5.51	5.46	—	—	5.23	5.50	5.80	5.09	5.16	5.45	6.12	—	—	—	—
Sept.	5.53	5.13	5.24	5.50	6.03	5.54	5.51	—	—	5.27	5.52	5.83	5.13	5.21	5.47	6.22	—	—	—	—
Oct.	5.77	5.34	5.46	5.75	6.29	5.79	5.74	—	—	5.50	5.79	6.08	5.34	5.42	5.70	6.49	—	—	—	—
Nov.	5.86	5.42	5.55	5.83	6.39	5.88	5.83	—	—	5.59	5.88	6.19	5.42	5.52	5.78	6.59	—	—	—	—
Dec.	5.81	5.38	5.51	5.84	6.33	5.83	5.80	—	—	5.55	5.80	6.14	5.38	5.45	5.88	6.51	—	—	—	—
2006																				
Jan.	5.75	5.29	5.45	5.79	6.24	5.77	5.73	—	—	5.50	5.75	6.06	5.29	5.39	5.83	6.41	—	—	—	—
Feb.	5.80	5.35	5.51	5.85	6.27	5.83	5.78	—	—	5.55	5.82	6.11	5.35	5.46	5.87	6.43	—	—	—	—
Mar.	5.95	5.52	5.67	5.98	6.41	5.98	5.92	—	—	5.71	5.98	6.26	5.52	5.64	5.96	6.55	—	—	—	—
Apr.	6.26	5.84	6.00	6.27	6.68	6.28	6.23	—	—	6.02	6.29	6.54	5.84	5.98	6.26	6.82	—	—	—	—
May	6.36	5.95	6.13	6.40	6.75	6.39	6.33	—	—	6.16	6.42	6.59	5.95	6.10	6.37	6.90	—	—	—	—
June	6.35	5.89	6.11	6.39	6.78	6.39	6.31	—	—	6.16	6.40	6.61	5.89	6.05	6.36	6.94	—	—	—	—
July	6.33	5.85	6.08	6.36	6.76	6.37	6.28	—	—	6.13	6.37	6.61	5.85	6.02	6.35	6.91	—	—	—	—
Aug.	6.16	5.68	5.91	6.19	6.59	6.20	6.11	—	—	5.97	6.20	6.43	5.68	5.85	6.18	6.74	—	—	—	—
Sep.	5.98	5.51	5.75	5.98	6.43	6.03	5.94	—	—	5.81	6.00	6.26	5.51	5.68	5.95	6.59	—	—	—	—
Oct.	5.97	5.51	5.74	5.94	6.42	6.01	5.93	—	—	5.80	5.98	6.24	5.51	5.68	5.90	6.60	—	—	—	—
Nov.	5.78	5.33	5.57	5.76	6.20	5.82	5.73	—	—	5.61	5.80	6.04	5.33	5.52	5.72	6.36	—	—	—	—
Dec.	5.79	5.29	5.58	5.78	6.22	5.83	5.74	—	—	5.62	5.81	6.05	5.29	5.53	5.75	6.38	—	—	—	—
2007																				
Jan.	5.92	5.40	5.75	5.93	6.34	5.96	5.88	—	—	5.78	5.96	6.16	5.40	5.71	5.91	6.52	—	—	—	—
Feb.	5.88	5.39	5.72	5.88	6.28	5.91	5.85	—	—	5.73	5.90	6.10	5.39	5.70	5.86	6.44	—	—	—	—
Mar.	5.84	5.30	5.66	5.84	6.27	5.87	5.80	—	—	5.66	5.85	6.10	5.30	5.66	5.83	6.43	—	—	—	—
Apr.	5.99	5.47	5.83	5.99	6.39	6.01	5.96	—	—	5.83	5.97	6.24	5.47	5.82	6.00	6.54	—	—	—	—
May	6.00	5.47	5.85	6.01	6.39	6.03	5.97	—	—	5.86	5.99	6.23	5.47	5.84	6.04	6.54	—	—	—	—
June	6.32	5.79	6.17	6.33	6.70	6.34	6.29	—	—	6.18	6.30	6.54	5.79	6.15	6.36	6.84	—	—	—	—
July	6.26	5.73	6.09	6.30	6.65	6.28	6.24	—	—	6.11	6.25	6.49	5.73	6.07	6.34	6.81	—	—	—	—
Aug.	6.26	5.79	6.06	6.29	6.65	6.28	6.23	—	—	6.11	6.24	6.51	5.79	6.01	6.35	6.79	—	—	—	—
Sept.	6.21	5.74	6.02	6.23	6.59	6.24	6.17	—	—	6.10	6.18	6.45	5.74	5.95	6.28	6.73	—	—	—	—
Oct.	6.12	5.66	5.94	6.13	6.48	6.17	6.06	—	—	6.04	6.11	6.36	5.66	5.84	6.14	6.60	—	—	—	—
Nov.	5.97	5.44	5.78	5.97	6.40	6.04	5.90	—	—	5.87	5.97	6.27	5.44	5.67	5.97	6.51	—	—	—	—
Dec.	6.15	5.49	5.91	6.19	6.65	6.23	6.07	—	—	6.03	6.16	6.51	5.49	5.78	6.22	6.78	—	—	—	—
2008																				
Jan.	6.02	5.33	5.78	6.06	6.54	6.08	5.96	—	—	5.87	6.02	6.35	5.33	5.68	6.10	6.73	—	—	—	—
Feb.	6.24	5.53	5.97	6.26	6.82	6.28	6.19	—	—	6.04	6.21	6.60	5.53	5.90	6.30	7.04	—	—	—	—
Mar.	6.24	5.51	5.90	6.24	6.89	6.29	6.17	—	—	5.99	6.21	6.68	5.51	5.80	6.27	7.10	—	—	—	—
Apr.	6.29	5.55	5.93	6.30	6.97	6.36	6.21	—	—	5.99	6.29	6.81	5.55	5.86	6.31	7.12	—	—	—	—
May	6.30	5.57	6.00	6.30	6.92	6.38	6.22	—	—	6.07	6.27	6.79	5.57	5.93	6.33	7.05	—	—	—	—
June	6.42	5.68	6.11	6.43	7.07	6.50	6.35	—	—	6.19	6.38	6.93	5.68	6.02	6.48	7.22	—	—	—	—
July	6.44	5.67	6.05	6.47	7.16	6.50	6.38	—	—	6.13	6.40	6.97	5.67	5.97	6.54	7.35	—	—	—	—

Notes: Moody's® Long-Term Corporate Bond Yield Averages have been published daily since 1929. They are derived from pricing data on a regularly-replenished population of nearly 75 seasoned corporate bonds in the US market, each with current outstandings over $100 million. The bonds have maturities as close as possible to 30 years; they are dropped from the list if their remaining life falls below 28 years, if their ratings change. Bonds with steep discounts or steep premiums to par are generally excluded. All yields are yield-to-maturity calculated on a semi-annual basis. Each observation is an unweighted average, with Average Corporate Yields representing the unweighted average of the corresponding Average Industrial and Average Public Utility observations. Because of the dearth of Aaa -rated railroad long bond issues, Moody's® Aaa railroad bond yield average was discontinued as of December 18, 1967. Moody's® Aaa public utility average suspended from Jan. 1984 thru Sept. 1984. Oct. 1984 figure for last 14 business days only. The Railroad Bond Averages were discontinued as of July 17, 1989 because of insufficient frequently tradable bonds. The July figures were based on 8 business days.
Because of the dearth of Aaa rated public utility bond issues, Moody's Aaa public utility bond yield average was discontinued as of December 18, 2001.
Note: October 2002 figures have been adjusted.
Note: January 2003 figures have been adjusted.

THE VALUE LINE Investment Survey

Part 1
Summary & Index

File at the front of the *Ratings & Reports* binder. Last week's *Summary & Index* should be removed.

August 3, 2001

TABLE OF SUMMARY & INDEX CONTENTS

The Median of Estimated
PRICE-EARNINGS RATIOS
of all stocks with earnings

17.9

26 Weeks Ago	Market Low 10-28-87	Market High 4-22-98
15.8	10.6	19.7

The Median of Estimated
DIVIDEND YIELDS
(next 12 months) of all dividend paying stocks under review

1.9%

26 Weeks Ago	Market Low 10-28-87	Market High 4-22-98
2.0%	3.7%	1.6%

The Estimated Median Price
APPRECIATION POTENTIAL
of all 1700 stocks in the hypothesized economic environment 3 to 5 years hence

70%

26 Weeks Ago	Market Low 10-28-87	Market High 4-22-98
70%	120%	35%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

*Reviewed in this week's edition.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LVI, No. 48.
Published weekly by VALUE LINE PUBLISHING, INC. 220 East 42nd Street, New York, N.Y. 10017-6891

THE VALUE LINE Investment Survey®

Part 1 Summary & Index

File at the front of the *Ratings & Reports* binder. Last week's *Summary & Index* should be removed.

August 29, 2008

TABLE OF SUMMARY & INDEX CONTENTS

SCREENS

The Median of Estimated **PRICE-EARNINGS RATIOS** of all stocks with earnings

15.4

26 Weeks Ago	Market Low	Market High
15.7	10-9-02 14.1	7-13-07 19.7

The Median of Estimated **DIVIDEND YIELDS** (next 12 months) of all dividend paying stocks under review

2.3%

26 Weeks Ago	Market Low	Market High
2.1%	10-9-02 2.4%	7-13-07 1.6%

The Estimated Median Price **APPRECIATION POTENTIAL** of all 1700 stocks in the hypothesized economic environment 3 to 5 years hence

75%

26 Weeks Ago	Market Low	Market High
70%	10-9-02 115%	7-13-07 35%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

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Published weekly by VALUE LINE PUBLISHING, INC. 220 East 42nd Street, New York, N.Y. 10017-5891

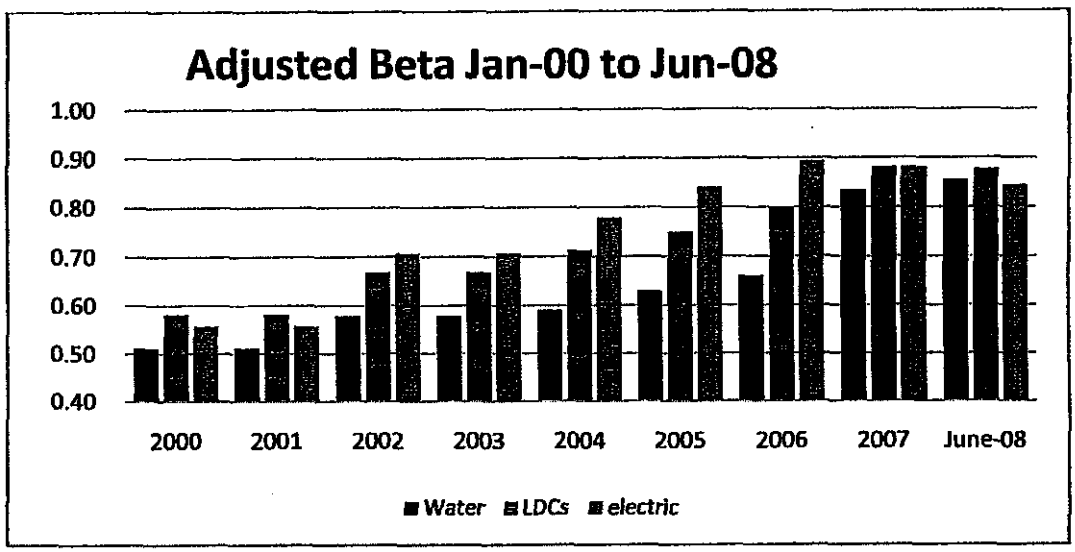
Exhibit (PMA-7)__

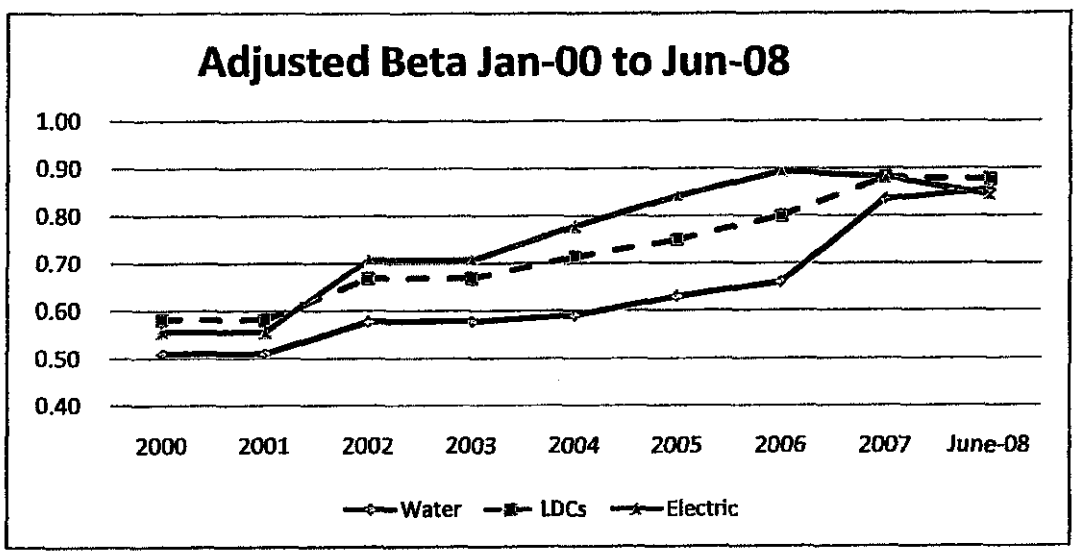
Utilities, Inc.
Calculation of Mean, Standard Deviation,
and Coefficient of Variation for the Russell 2000
for the 12 months ending June 2001 and June 2008

Date	Close	Date	Close
30-Jun-00	517.23	2-Jul-07	852.31
3-Jul-00	528.22	9-Jul-07	855.77
10-Jul-00	542.53	16-Jul-07	836.44
17-Jul-00	522.7	23-Jul-07	777.83
24-Jul-00	490.22	30-Jul-07	755.42
31-Jul-00	503.63	6-Aug-07	788.78
7-Aug-00	510.27	13-Aug-07	786.03
14-Aug-00	515.51	20-Aug-07	798.93
21-Aug-00	525.11	27-Aug-07	792.86
28-Aug-00	541.91	4-Sep-07	775.79
5-Sep-00	535.7	10-Sep-07	783.49
11-Sep-00	530.68	17-Sep-07	813.11
18-Sep-00	518.82	24-Sep-07	805.45
25-Sep-00	521.37	1-Oct-07	844.86
2-Oct-00	491.02	8-Oct-07	841.17
9-Oct-00	480.39	15-Oct-07	798.79
16-Oct-00	487.45	22-Oct-07	821.39
23-Oct-00	479.85	29-Oct-07	797.78
30-Oct-00	507.75	5-Nov-07	772.36
6-Nov-00	490.9	12-Nov-07	769.5
13-Nov-00	482.61	19-Nov-07	755.03
20-Nov-00	471.87	26-Nov-07	767.77
27-Nov-00	456.84	3-Dec-07	785.52
4-Dec-00	479.07	10-Dec-07	753.93
11-Dec-00	458.03	17-Dec-07	785.6
18-Dec-00	462.99	24-Dec-07	771.76
25-Dec-00	463.53	31-Dec-07	721.6
2-Jan-01	463.14	7-Jan-08	704.65
8-Jan-01	485.75	14-Jan-08	673.18
16-Jan-01	488.09	22-Jan-08	688.6
22-Jan-01	498.68	28-Jan-08	730.5
29-Jan-01	501.5	4-Feb-08	698.9
5-Feb-01	497.05	11-Feb-08	701.52
12-Feb-01	499.28	19-Feb-08	695.43
20-Feb-01	477.45	25-Feb-08	686.18
26-Feb-01	476.88	3-Mar-08	660.11
5-Mar-01	473.65	10-Mar-08	662.9
12-Mar-01	441.8	17-Mar-08	681.42
19-Mar-01	443.27	24-Mar-08	693.18
26-Mar-01	450.53	31-Mar-08	713.73
2-Apr-01	434.66	7-Apr-08	688.16
9-Apr-01	455.02	14-Apr-08	721.07
16-Apr-01	466.71	21-Apr-08	721.88
23-Apr-01	483.97	28-Apr-08	725.74
30-Apr-01	492.89	5-May-08	720.05
7-May-01	487.36	12-May-08	741.17
14-May-01	506.28	19-May-08	724.1
21-May-01	508.62	27-May-08	748.28
29-May-01	501.72	2-Jun-08	740.37
4-Jun-01	511.64	9-Jun-08	733.61
11-Jun-01	495.13	16-Jun-08	725.73
18-Jun-01	488.65	23-Jun-08	698.14
25-Jun-01	512.64	30-Jun-08	689.66
Mean	491.87		750.33
Std. Dev	25.94		52.47
Coefficient of Variation	5.27%		6.99%

Source of Information:
Yahoo! Finance

Utilities, Inc.
Comparison of Adjusted Betas of the AUS Utility Reports Water, Gas Distribution, and Electric Companies from December 2000 through June 2008





Source of Information:

Value Line Proprietary Data Base December 2000-December 2007 and June 2008

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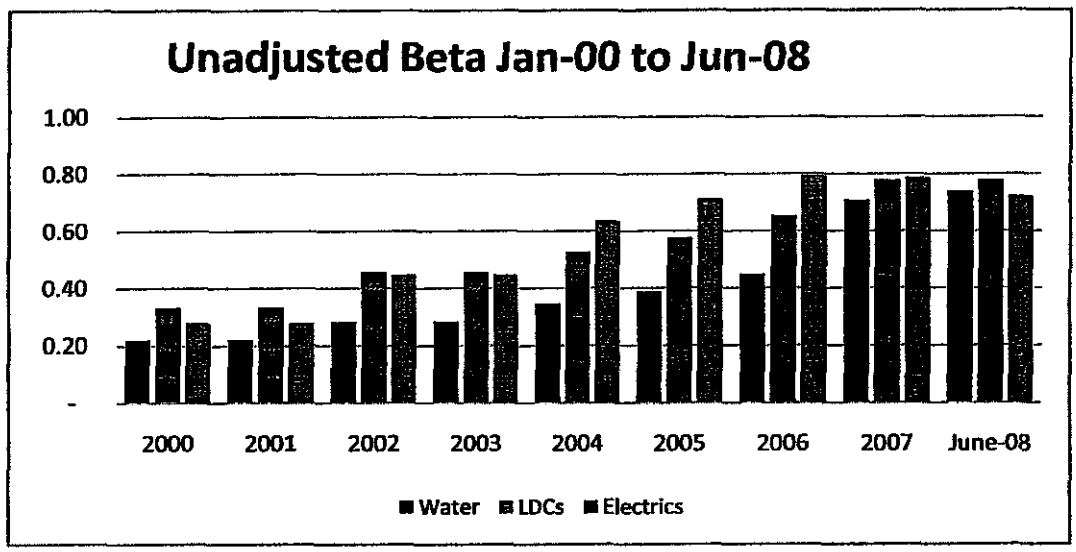

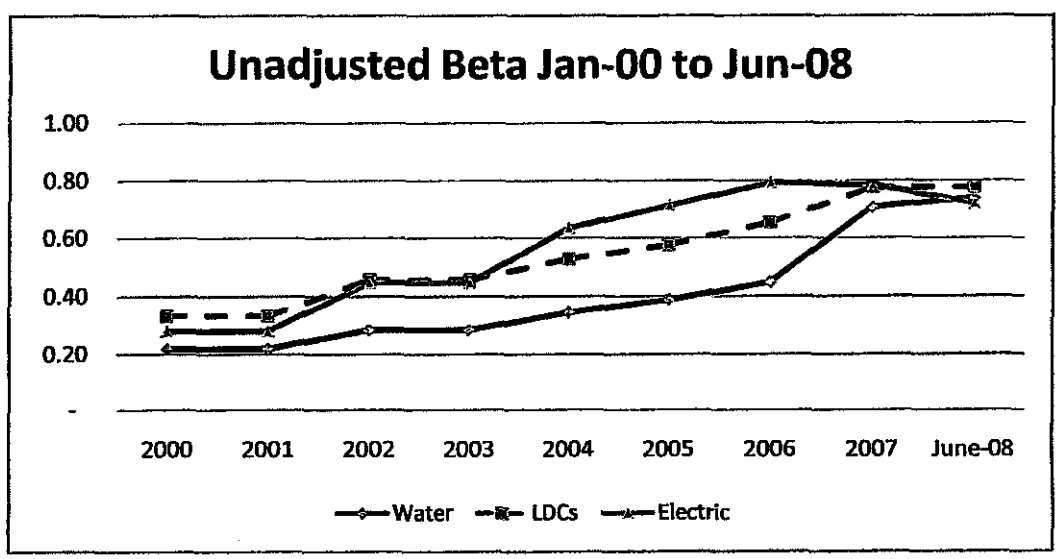

Source of Information:

Value Line Proprietary Data Base December 2000-December 2007 and June 2008

Standard & Poor's Ratings Services

Standard & Poor's CORPORATE RATINGS CRITERIA

STANDARD & POOR'S

CORPORATE RATINGS CRITERIA

Dear Reader,

This volume updates the 1994 edition of *Corporate Finance Criteria*. There are several new chapters, covering our recently introduced Bank Loan Ratings, criteria for "notching" junior obligations, and the role of cyclicality in ratings. Naturally, the ratio medians have been brought up to date.

Standard & Poor's criteria publications represent our endeavor to convey the thought processes and methodologies employed in determining Standard & Poor's ratings. They describe both the quantitative and qualitative aspects of the analysis. We believe that our rating product has the most value if users appreciate all that has gone into producing the letter symbols.

Bear in mind, though, that a rating is, in the end, an opinion. The rating experience is as much an art as it is a science.

Solomon B. Samson
Chairman, Corporate Ratings Criteria Committee

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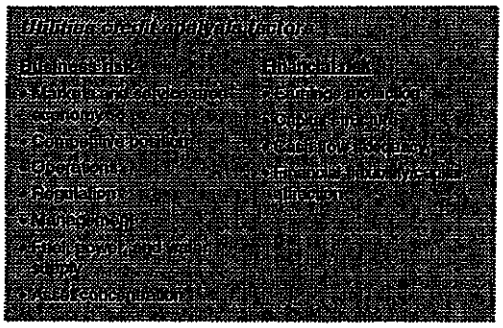
Utilities

The utilities rating methodology encompasses two basic components: business risk analysis and financial analysis. Evaluation of industry characteristics, the utility's position within that industry, its regulation, and its management provides the context for assessing a firm's financial condition.

Historical analysis is a tool for identifying strengths and weaknesses, and provides a starting point for evaluating financial condition. Business position assessment is the qualitative measure of a utility's fundamental creditworthiness. It focuses on the forces that will shape the utilities' future.



The credit analysis of utilities is quickly evolving, as utilities are treated less as regulated monopolies and more as entities faced with a host of challengers in a competitive environment. Marketplace dynamics are supplanting the power of regulation, making it critically important to reduce costs and/or market new services in order to thwart competitors' inroads.

Markets and service area economy

Assessing service territory begins with the economic and demographic evaluation of the area in which the utility has its franchise. Strength of long-term demand for the product is examined from a macroeconomic perspective. This enables Standard & Poor's to evaluate the affordability of rates and the staying power of demand.

Standard & Poor's tries to discern any secular consumption trends and, more importantly, the reasons for them. Specific items examined include the size and growth rate of the market, strength of the franchise, historical and projected sales growth, income levels and trends in population, employment, and per capita income. A utility with a healthy economy and customer base—as illustrated by diverse employment opportunities, average or above-average wealth and income statistics, and low unemployment—will have a greater capacity to support its operations.

For electric and gas utilities, distribution by customer class is scrutinized to assess the depth and diversity of the utility's customer mix. For example, heavy industrial concentration is viewed cautiously, since a utility may have significant exposure to cyclical volatility. Alternatively, a large residential component yields a stable and more predictable revenue stream. The largest utility customers are identified to determine their importance to the bottom line and assess the risk of their loss and potential adverse effect on the utility's financial position. Credit concerns arise when individual customers represent more than 5% of revenues. The company or industry may play a significant role in the overall economic base of the service area. Moreover, large customers may turn to cogeneration or alternative power supplies to meet their energy needs, potentially leading to reduced cash flow for the utility (even in cases where a large customer pays discounted rates and is not a profitable account for the utility). Customer concentration is less significant for water and telecommunication utilities.

Competitive position

As competitive pressures have intensified in the utilities industry, Standard & Poor's analysis has deepened to include a more thorough review of competitive position.

Electric utility competition

For electric utilities, competitive factors examined include: percentage of firm wholesale revenues that are most vulnerable to competition; industrial load concentration; exposure of key customers to alternative suppliers; commercial concentrations; rates for various customer classes; rate design and flexibility; production costs, both marginal and fixed; the regional capacity situation; and transmission constraints. A regional focus is evident, but high costs and rates relative to national averages are also of significant concern because of the potential for electricity substitutes over time.

Mounting competition in the electric utility industry derives from excess generating capacity, lower barriers to entering the electric generating business, and marginal costs that are below embedded costs. Standard & Poor's has already witnessed declining prices in wholesale markets, as *de facto* retail competition is already being seen in several parts of the country. Standard & Poor's believes that over the coming years more and more customers will want and demand lower prices. Initial concerns focus on the largest industrial loads, but other customer classes will be increasingly vulnerable. Competition will not necessar-

fly be driven by legislation. Other pressures will arise from global competition and improving technologies, whether it be the declining cost of incremental generation or advances in transmission capacity or substitute energy sources like the fuel cell. It is impossible to say precisely when wide-open retail competition will occur; this will be evolutionary. However, significantly greater competition in retail markets is inevitable.

Gas utility competition

Similarly, gas utilities are analyzed with regard to their competitive standing in the three major areas of demand: residential, commercial, and industrial. Although regulated as holders of monopoly power, natural gas utilities have for some time been actively competing for energy market share with fuel oil, electricity, coal, solar, wood, etc. The long-term staying power of market demand for natural gas cannot be taken for granted. In fact, as the electric utility industry restructures and reduces costs, electric power will become more cost competitive and threaten certain gas markets. In addition, independent gas marketers have made greater inroads behind the city gate and are competing for large gas users. Moreover, the recent trend by state regulators to unbundle utility services is creating opportunities for outsiders to market niche products. Distributors still have the upper hand, but those who do not reduce and control costs, and thus rates, could find competition even more difficult.

Natural gas pipelines are judged to carry a somewhat higher business risk than distribution companies because they face competition in every one of their markets. To the extent a pipeline serves utilities versus industrial end users, its stability is greater. Over the next five years, pipeline competition will heat up since many service contracts with customers are expiring. Most distributor or end-use customers are looking to reduce pipeline costs and are working to improve their load factor to do so. Thus, pipelines will likely find it difficult to recontract all capacity in coming years. Being the pipeline of choice is a function of attractive transportation rates, diversity and quality of services provided, and capacity available in each particular market. In all cases though, periodic discounting of rates to retain customers will occur and put pressure on profitability.

Water utility competition

As the last true utility monopoly, water utilities face very little competition and there is currently no challenge to the continuation of franchise areas. The only exceptions have been cases where investor-owned water companies have been subject to condemnation and municipalization because of poor service or political motivations. In that regard, Standard & Poor's pays close attention to costs and rates in relation to neighboring utilities and national averages. (In contrast, the privatization of public water facilities has begun, albeit at a slower pace than anticipated. This is occurring mostly in the form of operating contracts and public/private partnerships, and not in asset transfers. This trend should continue as cities look for ways to balance their tight budgets.) Also, water utilities are not fully immune to the forces of competition; in a few instances wholesale customers can access more than one supplier.

Telephone competition

The Telecommunications Act of 1996 accelerates the continuing challenge to the local exchange companies' (LECs) century-old monopoly in the local loop. Competitive access providers (CAPs), both facilities-based and resellers, are aggressively pursuing customers, generally targeting metropolitan areas, and promising lower rates and better service.

Most long-distance calls are still originated and terminated on the local telephone company network. To complete such a call, the long-distance provider (including AT&T, MCI, Sprint and a host of smaller interexchange carriers or "IXCs") must pay the local telephone company a steep "access" fee to compensate the local phone company for the use of its local network. CAPs, in contrast, build or lease facilities that directly connect customers to their long-distance carrier, bypassing the local telephone company and avoiding access fees, and thereby can offer lower long-distance rates. But the LECs are not standing still; they are combating the loss of business to CAPs by lowering access fees, thereby reducing the economic incentive for a high usage long-distance customer to use a CAP. LECs are attempting to make up for the loss of revenues from lower access fees by increasing basic local service rates (or at least not lowering them), since basic service is far less subject to competition. LECs are improving operating efficiency and marketing high margin, value-added new services. Additionally, in the wake of the Telecommunications Act, LECs will capture at least some of the inter-LATA long-distance market. As a result of these initiatives, LECs continue to rebuild themselves—from the traditional utility monopoly to leaner, more marketing oriented organizations.

While LECs, and indeed all segments of the telecommunications sector, face increasing competition, there are favorable industry factors that tend to offset heightened business risk and augur for overall ratings stability for most LECs. Importantly, telecommunications is a declining-cost business. With increased deployment of fiber optics, the cost of transport has fallen dramatically and digital switching hardware and software have yielded more capable, trouble-free and cost-efficient networks. As a result, the cost of network maintenance has dropped sharply, as illustrated by the ratio of employees per 10,000 access lines, an oft cited measurement of efficiency. Ratios as low as 25 employees per 10,000 lines are being seen, down from the typical 40 or more employees per 10,000 ratio of only a few years ago.

In addition, networks are far more capable. They are increasingly digitally switched and able to accommodate high-speed communications. The infrastructure needed to accommodate switched broadband services will be built into telephone networks over the next few years. These advanced networks will enable telephone companies to look to a greater variety of high-margin, value-added serv-

ices. In addition to those current services such as call waiting or caller ID, the delivery of hundreds of broadcast and interactive video channels will be possible. While these services offer the potential of new revenue streams, they will simultaneously present a formidable challenge. LECs will be entering the new (to them) arena of multimedia entertainment and will have to develop expertise in marketing and entertainment programming acumen; such skills stand in sharp contrast to LECs' traditional strengths in engineering and customer service.

Operations

Standard & Poor's focuses on the nature of operations from the perspective of cost, reliability, and quality of service. Here, emphasis is placed on those areas that require management attention in terms of time or money and which, if unresolved, may lead to political, regulatory, or competitive problems.

Operations of electric utilities

For electrics, the status of utility plant investment is reviewed with regard to generating plant availability and utilization, and also for compliance with existing and contemplated environmental and other regulatory standards. The record of plant outages, equivalent availability, load factors, heat rates, and capacity factors are examined. Also important is efficiency, as defined by total megawatt hour *per employee and customers per employee. Transmission* interconnections are evaluated in terms of the number of utilities to which the utility in question has access, the cost structures and available generating capacity of these other utilities, and the price paid for wholesale power.

Because of mounting competition and the substantial escalation in decommissioning estimates, significant weight is given to the operation of nuclear facilities. Nuclear plants are becoming more vulnerable to high production costs that make their rates uneconomic. Significant asset concentration may expose the utility to poor performance, unscheduled outages or premature shutdowns, and large deferrals or regulatory assets that may need to be written off for the utility to remain competitive. Also, nuclear facilities tend to represent significant portions of their operators' generating capability and assets. The loss of a productive nuclear unit from both power supply and rate base can interrupt the revenue stream and create substantial additional costs for repairs and improvements and replacement power. The ability to keep these stations running smoothly and economically directly influences the ability to meet electric demand, the stability of revenues and costs, and, by extension, the ability to maintain adequate creditworthiness. Thus, economic operation, safe operation, and long-term operation are examined in depth. Specifically, emphasis is placed on operation and maintenance costs, busbar costs, fuel costs, refueling outages, forced outages, plant statistics, NRC evaluations, the potential need for repairs, operating licenses, decommissioning estimates and amounts held in external trusts, spent fuel storage capacity, and management's nuclear experience. In essence, favorable nuclear operations offer significant opportunities but, if a nuclear unit runs poorly or not at all, the attendant risks can be great.

Operations of gas utilities

For gas pipeline and distribution companies, the degree of plant utilization, the physical condition of the mains and lines, adequacy of storage to meet seasonal needs, "lost and unaccounted for" gas levels, and per-unit nongas operating and construction costs are important factors. Efficiency statistics such as load factor, operating costs per customer, and operating income per employee are also evaluated in comparison to other utilities and the industry as a whole.

Operations of water utilities

As a group, water utilities are continually upgrading their physical plant to satisfy regulations and to develop additional supply. Over the next decade, water systems will increasingly face the task of maintaining compliance, as drinking water regulations change and infrastructure ages. Given that the Safe Drinking Water Act was authorized in 1974, the first generation of treatment plants built to conform with these rules are almost 20 years old. Additionally, because the focus during this period was on satisfying environmental standards, deferred maintenance of distribution systems has been common, especially in older urban areas. The increasing cost of supplying treated water argues against the high level of unaccounted for water *witnessed in the industry. Consequently, Standard &* Poor's anticipates capital plans for rebuilding distribution lines and major renewal and replacement efforts aimed at treatment plants.

Operations of telephone companies

For telephone companies, cost-of-service analysis focuses on plant capability and measures of efficiency and quality of service. Plant capability is ascertained by looking at such parameters as percentage of digitally switched lines; fiber optic deployment, in particular in those portions of the plant key to network survival; and the degree of broadband capacity fiber and coaxial deployment and broadband switching capacity. Efficiency measures include operating margins, the ratio of employees per 10,000 access lines, and the extent of network and operations consolidation. Quality of service encompasses examination of quantitative measures, such as trouble reports and repeat service calls, as well as an assessment of qualitative factors, that may include service quality goals mandated by regulators.

Regulation

Regulatory rate-setting actions are reviewed on a case-by-case basis with regard to the potential effect on creditworthiness. Regulators' authorizing high rates of return is of little value unless the returns are earnable. Furthermore, allowing high returns based on noncash items does not benefit bondholders. Also, to be viewed positively, regulatory treatment should allow consistent performance from

period to period, given the importance of financial stability as a rating consideration.

The utility group meets frequently with commission and staff members, both at Standard & Poor's offices and at commission headquarters, demonstrating the importance Standard & Poor's places on the regulatory arena for credit quality evaluation. Input from these meetings and from review of rate orders and their impact weigh heavily in Standard & Poor's analysis.

Standard & Poor's does not "rate" regulatory commissions. State commissions typically regulate a number of diverse industries, and regulatory approaches to different types of companies often differ within a single regulatory jurisdiction. This makes it all but impossible to develop inclusive "ratings" for regulators.

Standard & Poor's evaluation of regulation also encompasses the administrative, judicial, and legislative processes involved in state and federal regulation. These can affect rate-setting activities and other aspects of the business, such as competitive entry, environmental and safety rules, facility siting, and securities sales.

As the utility industry faces an increasingly deregulated environment, alternatives to traditional rate-making are becoming more critical to the ability of utilities to effectively compete, maintain earnings power, and sustain creditor protection. Thus, Standard & Poor's focuses on whether regulators, both state and federal, will help or hinder utilities as they are exposed to greater competition. There is much that regulators can do, from allocating costs to more captive customers to allowing pricing flexibility—and sometimes just stepping out of the way.

Under traditional rate-making, rates and earnings are tied to the amount of invested capital and the cost of capital. This can sometimes reward companies more for justifying costs than for containing them. Moreover, most current regulatory policies do not permit utilities to be flexible when responding to competitive pressures of a deregulated market. Lack of flexible tariffs for electric utilities may lure large customers to wheel cheaper power from other sources.

In general, a regulatory jurisdiction is viewed favorably if it permits earning a return based on the ability to sustain rates at competitive levels. In addition to performance-based rewards or penalties, flexible plans could include market-based rates, price caps, index-based prices, and rates premised on the value of customer service. Such rates more closely mirror the competitive environment that utilities are confronting.

Electric industry regulation

The ability to enter into long-term arrangements at negotiated rates without having to seek regulatory approval for each contract is also important in the electric industry. (While contracting at reduced rates constrains financial performance, it lessens the potential adverse impact in the event of retail wheeling. Since revenue losses associated with this strategy are not likely to be recovered from ratepayers, utilities must control costs well enough to remain competitive if they are to sustain current levels of bondholder protection.)

Natural gas industry regulation

In the gas industry, too, several state commission policies weigh heavily in the evaluation of regulatory support. Examples include stabilization mechanisms to adjust revenues for changes in weather or the economy, rate and service unbundling decisions, revenue and cost allocation between sales and transportation customers, flexible industrial rates, and the general supportiveness of construction costs and gas purchases.

Water industry regulation

In all water utility activities, federal and state environmental regulations continue to play a critical role. The legislative timetable to effect the 1986 amendments to the Safe Drinking Water Act of 1974 was quite aggressive. But environmental standards-setting has actually slowed over the past couple of years due largely to increasing sentiment that the stringent, costly standards have not been justified on the basis of public health. A moratorium on the promulgation of significant new environmental rules is anticipated.

Telecommunications industry regulation

Despite the advances in telecommunications deregulation, analysis of regulation of telephone operators will continue to be a key rating determinant for the foreseeable future. The method of regulation may be either classic rate-based rate of return or some form of price cap mechanism. The most important factor is to assess whether the regulatory framework—no matter which type—provides sufficient financial incentive to encourage the rated company to maintain its quality of service and to upgrade its plant to accommodate new services while facing increasing competition from wireless operators and cable television companies.

Where regulators do still set tariffs based on an authorized return, Standard & Poor's strives to explore with regulators their view of the rate-of-return components that can materially impact reported versus regulatory earnings. Specifically these include the allowable base upon which the authorized return can be earned, allowable expenses, and the authorized return. Since regulatory oversight runs the gamut from strict, adversarial relationships with the regulated operating companies to highly supportive postures, Standard & Poor's probes beyond the apparent regulatory environment to ascertain the actual impact of regulation on the rated company.

Management

Evaluating the management of a utility is of paramount importance to the analytical process since management's abilities and decisions affect all areas of a company's operations. While regulation, the economy, and other outside factors can influence results, it is ultimately the quality of management that determines the success of a company.

With emerging competition, utility management will be more closely scrutinized by Standard & Poor's and will become an increasingly critical component of the credit evaluation. Management strategies can be the key determinant in differentiating utilities and in establishing where companies lie on the business position spectrum. It is imperative that managements be adaptable, aggressive, and proactive if their utilities are to be viable in the future; this is especially important for utilities that are currently uncompetitive.

The assessment of management is accomplished through meetings, conversations, and reviews of company plans. It is based on such factors as tenure, industry experience, grasp of industry issues, knowledge of customers and their needs, knowledge of competitors, accounting and financing practices, and commitment to credit quality. Management's ability and willingness to develop workable strategies to address their systems' needs, to deal with the competitive pressures of free market, to execute reasonable and effective long-term plans, and to be proactive in leading their utilities into the future are assessed. Management quality is also indicated by thoughtful balancing of public and private priorities, a record of credibility, and effective communication with the public, regulatory bodies, and the financial community. Boards of directors will receive ever more attention with respect to their role in setting appropriate management incentives.

With competition the watchword, Standard & Poor's also focuses on management's efforts to enhance financial condition. Management can bolster bondholder protection by taking any number of discretionary actions, such as selling common equity, lowering the common dividend payout, and paying down debt. Also important for the electric industry will be creativity in entering into strategic alliances and working partnerships that improve efficiency, such as central dispatching for a number of utilities or locking up at-risk customers through long-term contracts or expanded flexible pricing agreements. Proactive management teams will also seek alternatives to traditional rate-base, rate-of-return rate-making, move to adopt higher depreciation rates for generating facilities, segment customers by individual market preferences, and attempt to create superior service organizations.

In general, management's ability to respond to mounting competition and changes in the utility industry in a swift and appropriate manner will be necessary to maintain credit health.

Fuel, power, and water supply

Assessment of present and prospective fuel and power supply is critical to every electric utility analysis, while gauging the long-term natural gas supply position for gas pipeline and distribution companies and the water resources of a water utility is equally important. There is no similar analytical category for telephone utilities.

Electric utilities

For electric utilities emphasis is placed on generating reserve margins, fuel mix, fuel contract terms, demand-side management techniques, and purchased power arrangements. The adequacy of generating margins is examined nationally, regionally, and for each individual company. However, the reserve margin picture is muddied by the imprecise nature of peak-load growth forecasting, and also supply uncertainty relating to such things as Canadian capacity availability and potential plant shutdowns due to age, new NRC rules, acid rain remedies, fuel shortages, problems associated with nontraditional technologies, and so forth. Even apparently ample reserves may not be what they seem. Moreover, the quality of capacity is just as important as the size of reserves. Companies' reserve requirements differ, depending upon individual operating characteristics.

Fuel diversity provides flexibility in a changing environment. Supply disruptions and price hikes can raise rates and ignite political and regulatory pressures that ultimately lead to erosion in financial performance. Thus, the ability to alter generating sources and take advantage of lower cost fuels is viewed favorably.

Dependence on any single fuel means exposure to that fuel's problems: electric utilities that rely on oil or gas face the potential for shortages and rapid price increases; utilities that own nuclear generating facilities face escalating costs for decommissioning; and coal-fired capacity entails environmental problems stemming from concerns over acid rain and the "greenhouse effect."

Buying power from neighboring utilities, qualifying facility projects, or independent power producers may be the best choice for a utility that faces increasing electricity demand. There has been a growing reliance on purchased power arrangements as an alternative to new plant construction. This can be an important advantage, since the purchasing utility avoids potential construction cost overruns as well as risking substantial capital. Also, utilities can avoid the financial risks typical of a multiyear construction program that are caused by regulatory lag and prudence reviews. Furthermore, purchased power may enhance supply flexibility, fuel resource diversity, and maximize load factors. Utilities that plan to meet demand projections with a portfolio of supply-side options also may be better able to adapt to future growth uncertainties. Notwithstanding the benefits of purchasing, such a strategy has risks associated with it. By entering into a firm long-term purchased power contract that contains a fixed-cost component, utilities can incur substantial market, operating, regulatory, and financial risks. Moreover, regulatory treatment of purchased power removes any upside potential that might help offset the risks. Utilities are not compensated through incentive rate-making; rather, purchased power is recovered dollar-for-dollar as an operating expense.

To analyze the financial impact of purchased power, Standard & Poor's first calculates the net present value of future annual capacity payments (discounted at 10%). This represents a potential debt equivalent—the off-balance-sheet obligation that a utility incurs when it enters into a long-term purchased power contract. However, Standard

& Poor's adds to the utility's balance sheet only a portion of this amount, recognizing that such a contractual arrangement is not entirely the equivalent of debt. What percentage is added is a function of Standard & Poor's qualitative analysis of the specific contract and the extent to which market, operating, and regulatory risks are borne by the utility (the risk factor). For unconditional, take-or-pay contracts, the risk factor range is from 40%-80%, with the average hovering around 60%. A lower risk factor is typically assigned for system purchases from coal-fired utilities and a higher risk factor is usually designated for unit-specific nuclear purchases. The range for take-and-pay performance obligations is between 10%-50%.

Gas utilities

For gas distribution utilities, long-term supply adequacy obviously is critical, but the supply role has become even more important in credit analysis since the Federal Energy Regulatory Commission's Order 636 eliminated the interstate pipeline merchant business. This thrust gas supply responsibilities squarely on local gas distributors. Standard & Poor's has always believed distributor management has the expertise and wherewithal to perform the job well, but the risks are significant since gas costs are such a large percentage of total utility costs. In that regard, it is important for utilities to get preapprovals of supply plans by state regulators or at least keep the staff and commissioners well informed. To minimize risks, a well-run program would diversify gas sources among different producers or marketers, different gas basins in the U.S. and Canada, and different pipeline routes. Also, purchase contracts should be firm, with minimal take-or-pay provisions, and have prices tied to an industry index. A modest percentage of fixed-price gas is not unreasonable. Contracts, whether of gas purchases or pipeline capacity, should be intermediate term. Staggering contract expirations (preferably annually) provides an opportunity to be an active market player. A modest degree of reliance on spot purchases provides flexibility, as does the use of market-based storage. Gas storage and on-property gas resources such as liquefied natural gas or propane air are effective peak-day and peak-season supply management tools.

Since pipeline companies no longer buy and sell natural gas and are just common carriers, connections with varied reserve basins and many wells within those basins are of great importance. Diversity of sources helps offset the risks arising from the natural production declines eventually experienced by all reserve basins and individual wells. Moreover, such diversity can enhance a pipeline's attractiveness as a transporter of natural gas to distributors and end users seeking to buy the most economical gas available for their needs.

Water utilities

Nearly all water systems throughout the U.S. have ample long-term water supplies. Yet to gain comfort, Standard & Poor's assesses the production capability of treatment plants and the ability to pump water from underground aquifers in relation to the usage demands from consumers. Having adequate treated water storage facilities has become important in recent years and has helped many systems meet demands during peak summer periods. Of interest is whether the resources are owned by the utility or purchased from other utilities or local authorities. Owning properties with water rights provides more supply security. This is especially so in states like California where water allocations are being reduced, particularly since recent droughts and environmental issues have created alarm. Since the primary cost for water companies is treatment, it makes little difference whether raw water is owned or bought. In fact, compliance with federal and state water regulations is very high, and the overall cost to deliver treated water to consumers remains relatively affordable.

Asset concentration in the electric utility industry

In the electric industry, Standard & Poor's follows the operations of major generating facilities to assess if they are well managed or troubled. Significant dependence on one generating facility or a large financial investment in a single asset suggests high risk. The size or magnitude of a particular asset relative to total generation, net plant in service, and common equity is evaluated. Where substantial asset concentration exists, the financial profile of a company may experience wide swings depending on the asset's performance. Heavy asset concentration is most prevalent among utilities with costly nuclear units.

Earnings protection

In this category, pretax cash income coverage of all interest charges is the primary ratio. For this calculation, allowance for funds used during construction (AFUDC) is removed from income and interest expense. AFUDC and other such noncash items do not provide any protection for bondholders. To identify total interest expense, the analyst reclassifies certain operating expenses. The interest component of various off-balance-sheet obligations, such as leases and some purchased-power contracts, is included in interest expense. This provides the most direct indication of a utility's ability to service its debt burden.

While considerable emphasis in assessing credit protection is placed on coverage ratios, this measure does not provide the entire earnings protection picture. Also important are a company's earned returns on both equity and capital, measures that highlight a firm's earnings performance. Consideration is given to the interaction of embedded costs, financial leverage, and pretax return on capital.

Capital structure

Analyzing debt leverage goes beyond the balance sheet and covers quasi-debt items and elements of hidden financial leverage. Noncapitalized leases (including sale/leaseback obligations), debt guarantees, receivables financing, and purchased-power contracts are all considered debt equivalents and are reflected as debt in calculating capital

structure ratios. By making debt level adjustments, the analyst can compare the degree of leverage used by each utility company.

Furthermore, assets are examined to identify undervalued or overvalued items. Assets of questionable value are discounted to more accurately evaluate asset protection.

Some firms use short-term debt as a permanent piece of their capital structure. Short-term debt also is considered part of permanent capital when it is used as a bridge to permanent financing. Seasonal, self-liquidating debt is excluded from the permanent debt amount, but this situation is rare—with the exception of certain gas utilities. Given the long life of almost all utility assets, short-term debt may expose these companies to interest-rate volatility, remarketing risk, bank line backup risk, and regulatory exposure that cannot be readily offset. The lower cost of shorter-term obligations (assuming a positively sloped yield curve) is a positive factor that partially mitigates the risk of interest-rate variability. As a rule of thumb, a level of short-term debt that exceeds 10% of total capital is cause for concern.

Similarly, if floating-rate debt and preferred stock constitute over one-third of total debt plus preferred stock, this level is viewed as unusually high and may be cause for concern. It might also indicate that management is aggressive in its financial policies.

A layer of preferred stock in the capital structure is usually viewed as equity—since dividends are discretionary and the subordinated claim on assets provides a cushion for providers of debt capital. A preferred component of up to 10% is typically viewed as a permanent wedge in the capital structure of utilities. However, as rate-of-return regulation is phased out, preferred stock may be viewed by utilities—as many industrial firms would—as a temporary option for companies that are not current taxpayers that do not benefit from the tax deductibility of interest. Even now, floating-rate preferred and money market perpetual preferred are problematic: a rise in the rate due to deteriorating credit quality tends to induce a company to take out such preferred stock with debt. Structures that convey tax deductibility to preferred stock have become very popular and do generally afford such financings with equity treatment.

Cash flow adequacy

Cash flow adequacy relates to a company's ability to generate funds internally relative to its needs. It is a basic component of credit analysis because it takes cash to pay expenses, fund capital spending, pay dividends, and make interest and principal payments. Since both common and preferred dividend payments are important to maintain capital market access, Standard & Poor's looks at cash flow measures both before and after dividends are paid.

To determine cash flow adequacy, several quantitative relationships are examined. Emphasis is placed on cash flow relative to debt, debt service requirements, and capital spending. Cash flow adequacy is evaluated with respect to a firm's ability to meet all fixed charges, including capacity payments under purchased-power contracts. Despite the conditional nature of some contracts, the purchaser is obligated to pay a minimum capacity charge. The ratio used is funds from operations plus interest and capacity payments divided by interest plus capacity payments.

Financial flexibility/capital attraction

Financing flexibility incorporates a utility's financing needs, plans, and alternatives, as well as its flexibility to accomplish its financing program under stress without damaging creditworthiness. External funding capability complements internal cash flow. Especially since utilities are so capital intensive, a firm's ability to tap capital markets on an ongoing basis must be considered. Debt capacity reflects all the earlier elements: earnings protection, debt leverage, and cash flow adequacy. Market access at reasonable rates is restricted if a reasonable capital structure is not maintained and the company's financial prospects dim. The analyst also reviews indenture restrictions and the impact of additional debt on covenant tests.

Standard & Poor's assesses a company's capacity and willingness to issue common equity. This is affected by various factors, including the market-to-book ratio, dividend policy, and any regulatory restrictions regarding the composition of the capital structure.

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U.S. Utilities Ratings Analysis Now Portrayed In The S&P Corporate Ratings Matrix

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U.S. Utilities Ratings Analysis Now Portrayed In The S&P Corporate Ratings Matrix

The electric, gas, and water utility ratings ranking lists published today by Standard & Poor's U.S. Utilities & Infrastructure Ratings practice are categorized under the business risk/financial risk matrix used by the Corporate Ratings group. This is designed to present our rating conclusions in a clear and standardized manner across all corporate sectors. Incorporating utility ratings into a shared framework to communicate the fundamental credit analysis of a company furthers the goals of transparency and comparability in the ratings process. Table 1 shows the matrix.

Table 1

Business Risk/Financial Risk

	Financial Risk Profile				
Business Risk Profile	**Minimal**	**Modest**	**Intermediate**	**Aggressive**	**Highly leveraged**
Excellent	AAA	AA	A	BBB	BB
Strong	AA	A	A-	BBB-	BB-
Satisfactory	A	BBB+	BBB	BB+	B+
Weak	BBB	BBB-	BB+	BB-	B
Vulnerable	BB	B+	B+	B	B-

The utilities rating methodology remains unchanged, and the use of the corporate risk matrix has not resulted in any changes to ratings or outlooks. The same five factors that we analyzed to produce a business risk score in the familiar 10-point scale are used in determining whether a utility possesses an "Excellent," "Strong," "Satisfactory," "Weak," or "Vulnerable" business risk profile:

- Regulation,
- Markets,
- Operations,
- Competitiveness, and
- Management.

Regulated utilities and holding companies that are utility-focused virtually always fall in the upper range ("Excellent" or "Strong") of business risk profiles. The defining characteristics of most utilities--a legally defined service territory generally free of significant competition, the provision of an essential or near-essential service, and the presence of regulators that have an abiding interest in supporting a healthy utility financial profile--underpin the business risk profiles of the electric, gas, and water utilities.

As the matrix concisely illustrates, the business risk profile loosely determines the level of financial risk appropriate for any given rating. Financial risk is analyzed both qualitatively and quantitatively, mainly with financial ratios and other metrics that are calculated after various analytical adjustments are performed on financial statements prepared under GAAP. Financial risk is assessed for utilities using, in part, the indicative ratio ranges in table 2.

Table 2

Financial Risk Indicative Ratios - U.S. Utilities

(Fully adjusted, historically demonstrated, and expected to consistently continue)

	Cash flow		Debt leverage
	(FFO/debt) (%)	(FFO/interest) (x)	(Total debt/capital) (%)
Modest	40 - 60	4.0 - 6.0	25 - 40
Intermediate	25 - 45	3.0 - 4.5	35 - 50
Aggressive	10 - 30	2.0 - 3.5	45 - 60
Highly leveraged	Below 15	2.5 or less	Over 50

The indicative ranges for utilities differ somewhat from the guidelines used for their unregulated counterparts because of several factors that distinguish the financial policy and profile of regulated entities. Utilities tend to finance with long-maturity capital and fixed rates. Financial performance is typically more uniform over time, avoiding the volatility of unregulated industrial entities. Also, utilities fare comparatively well in many of the less-quantitative aspects of financial risk. Financial flexibility is generally quite robust, given good access to capital, ample short-term liquidity, and the like. Utilities that exhibit such favorable credit characteristics will often see ratings based on the more accommodative end of the indicative ratio ranges, especially when the company's business risk profile is solidly within its category. Conversely, a utility that follows an atypical financial policy or manages its balance sheet less conservatively, or falls along the lower end of its business risk designation, would have to demonstrate an ability to achieve financial metrics along the more stringent end of the ratio ranges to reach a given rating.

Note that even after we assign a company a business risk and financial risk, the committee does not arrive by rote at a rating based on the matrix. The matrix is a guide--it is not intended to convey precision in the ratings process or reduce the decision to plotting intersections on a graph. Many small positives and negatives that affect credit quality can lead a committee to a different conclusion than what is indicated in the matrix. Most outcomes will fall within one notch on either side of the indicated rating. Larger exceptions for utilities would typically involve the influence of related unregulated entities or extraordinary disruptions in the regulatory environment.

We will use the matrix, the ranking list, and individual company reports to communicate the relative position of a company within its business risk peer group and the other factors that produce the ratings.

Exhibit (PMA-10)_

Utilities, Inc.
Comparison of the Impact on Revenue Cost of Capital of
Holding Before Income Tax Overall Cost of Capital Constant
and Holding After Incom Tax Overall Cost of Capital Constant

	Holding Before Income Tax Overall Cost of Capital Constant				Holding After Income Tax Overall Cost of Capital Constant			
			Weighted Cost Rate				Weighted Cost Rate	
Type of Capital	Ratios	Cost Rate	After Income Taxes	Before Income Taxes	Ratios	Cost Rate	After Income Taxes	Before Income Taxes
Debt	50.88%	6.08%	3.09%	3.09%	50.88%	6.08%	3.09%	3.09%
Common Equity	49.12%	9.40%	4.62%	7.52%	49.12%	9.40%	4.62%	7.52%
Overall Cost of Capital			7.71%	10.61%			7.71%	10.61%
Debt	60.00%	6.26%	3.76%	3.76%	60.00%	6.26%	3.76%	3.76%
Common Equity	40.00%	10.53%	4.21%	6.85%	40.00%	9.89%	3.95%	6.44%
Overall Cost of Capital			7.97%	10.61%			7.71%	10.19%
Debt	57.50%	6.21%	3.57%	3.57%	57.50%	6.21%	3.57%	3.57%
Common Equity	42.50%	10.17%	4.32%	7.04%	42.50%	9.74%	4.14%	6.74%
Overall Cost of Capital			7.88%	10.61%			7.71%	10.31%
Debt	55.00%	6.16%	3.39%	3.39%	55.00%	6.16%	3.39%	3.39%
Common Equity	45.00%	9.86%	4.44%	7.22%	45.00%	9.60%	4.32%	7.04%
Overall Cost of Capital			7.82%	10.61%			7.71%	10.43%
Debt	52.50%	6.11%	3.21%	3.21%	52.50%	6.11%	3.21%	3.21%
Common Equity	47.50%	9.57%	4.55%	7.40%	47.50%	9.48%	4.50%	7.33%
Overall Cost of Capital			7.76%	10.61%			7.71%	10.54%
Debt	50.00%	6.06%	3.03%	3.03%	50.00%	6.06%	3.03%	3.03%
Common Equity	50.00%	9.31%	4.66%	7.58%	50.00%	9.36%	4.68%	7.62%
Overall Cost of Capital			7.69%	10.61%			7.71%	10.65%
Debt	47.50%	6.01%	2.86%	2.86%	47.50%	6.01%	2.86%	2.86%
Common Equity	52.50%	9.07%	4.76%	7.75%	52.50%	9.25%	4.85%	7.90%
Overall Cost of Capital			7.62%	10.61%			7.71%	10.76%
Debt	45.00%	5.96%	2.68%	2.68%	45.00%	5.96%	2.68%	2.68%
Common Equity	55.00%	8.85%	4.87%	7.93%	55.00%	9.14%	5.03%	8.18%
Overall Cost of Capital			7.55%	10.61%			7.71%	10.87%
Debt	0.00%	5.08%	0.00%	0.00%	0.00%	5.08%	0.00%	0.00%
Common Equity	100.00%	6.52%	6.52%	10.61%	100.00%	7.71%	7.71%	12.55%
Overall Cost of Capital			6.52%	10.61%			7.71%	12.55%

Source of Information: Based upon the information shown on Exhibit No. ___(JAR-4), pages 2 and 3.

Exhibit (PMA-11)_

Utilities, Inc.

Correct Derivation of the Cost Rate of Common Equity Applicable to
a 46.37% Common Equity Ratio and the Correction of OPC Witness
Rothschild's Example of the Application of the Leverage Formula to a Water Utility

Type of Capital	Ratios	Cost Rate	After Income Tax Weighted Cost Rate
Debt	50.88%	6.08%	3.09%
Common Equity	49.12%	9.40%	4.62%
Overall Cost of Capital	100.00%		7.71%
Debt	53.63%	6.08%	3.26%
Common Equity	46.37%	9.60%	4.45%
Overall Cost of Capital	100.00%		7.71%
Debt	53.63%	7.36%	3.95%
Common Equity	46.37%	9.60%	4.45%
Overall Cost of Capital	100.00%		8.40%
Debt	35.00%	7.36%	2.58%
Common Equity	65.00%	8.96%	5.82%
Overall Cost of Capital	100.00%		8.40%

Utilities, Inc.
Indicated Common Equity Cost Rate Through Use of the
Single Stage Discounted Cash Flow Model for
the Florida PSC Natural Gas Index

Based upon Projected Growth in DPS and EPS

	1	2	3	4	5	6
Florida PSC Natural Gas Index	Average Dividend Yield (1)	Dividend Growth Component (2)	Adjusted Dividend Yield (3)	Growth Rate (4)	Indicated Common Equity Cost Rate (5)	Quarterly DCF Common Equity Cost Rate (6)
AGL Resources, Inc.	4.87 %	0.10 %	4.97 %	4.17 %	9.14 %	9.26 %
Atmos Energy Corporation	5.05	0.08	5.13	3.31	8.44	8.60
Equitable Resources, Inc.	1.46	0.06	1.52	8.50	10.02	10.14
Laclede Group, Inc.	4.29	0.06	4.35	3.00	7.35	7.42
NICOR Inc.	5.58	0.07	5.65	2.34	7.99	8.27
Northwest Natural Gas Company	3.53	0.10	3.63	5.73	9.35	9.50
Piedmont Natural Gas Co., Inc.	4.05	0.09	4.14	4.54	8.67	8.70
South Jersey Industries, Inc.	3.19	0.09	3.28	5.84	9.12	9.05
Southwest Gas Corporation	3.37	0.09	3.46	5.08	8.53	8.56
WGL Holdings, Inc.	4.45	0.07	4.52	3.13	7.65	6.32
Average	3.98 %	0.08 %	4.06 %	4.56 %	8.63 %	8.58 %
Median	4.17 %	0.09 %	4.25 %	4.35 %	8.60 %	8.65 %
Conclusion						
Florida PSC Natural Gas Index						
Average					8.63 %	8.58 %
Median					8.60 %	8.65 %

Notes:

(1) Based upon the indicated dividend for March 2008 from the April 2008 Standard and Poor's Stock Guide and the average March market prices from Attachment 1, Page 3 of the FL PSC Staff's May 8, 2008 memo to the Office of Commission Clerk.

(2) This reflects a growth rate component equal to one-half the growth rate (from column 5 on page 2 of this Exhibit) x Column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for AGL Resources, Inc., 4.87% x (1/2 x 4.17%) = 0.10%.

(3) Column 1 + Column 2.

(4) From page 2 of this Exhibit.

(5) Column 3 + Column 4.

(6) Calculated using a quarterly version of the DCF, the average March 2008 market prices, and the indicated March 2008 DPS

Utilities, Inc.
Projected Growth in DPS and EPS

	1	2	3		4	5
	Value Line Projected 2005-07 to 2011-'13 Growth Rate (1)		Reuters Mean Consensus Projected Five Year Growth Rate		Average Projected Five Year Growth Rate in EPS (3)	Average Projected Five Year Growth Rates in DPS and EPS (4)
	DPS	EPS	EPS	No. of Est.		
Florida PSC Natural Gas Index						
AGL Resources, Inc.	4.00	3.50 %	5.18 %	[5]	4.34 %	4.17 %
Atmos Energy Corporation	2.00	4.50	4.73	[7]	4.62	3.31
Equitable Resources, Inc.	6.50	10.50	NA	[NA]	10.50	8.50
Laclede Group, Inc.	2.50	3.50	3.50	[1]	3.50	3.00
NICOR Inc.	0.50	4.00	4.33	[3]	4.17	2.34
Northwest Natural Gas Company	5.50	7.00	4.90	[5]	5.95	5.73
Piedmont Natural Gas Co., Inc.	4.00	5.00	5.13	[6]	5.07	4.54
South Jersey Industries, Inc.	5.50	NMF	6.17	[3]	6.17	5.84
Southwest Gas Corporation	4.00	7.50	4.80	[5]	6.15	5.08
WGL Holdings, Inc.	2.50	3.50	4.00	[3]	3.75	3.13
Average	3.70 %	5.44 %	4.75 %		5.42 %	4.56 %
Median	4.00 %	4.50 %	4.80 %		4.85 %	4.35 %

Notes:

NA= Not Applicable

(1) From pages 37 - 46 of Exhibit (PMA-28)
(2) Average of Columns 2 and 3.
(3) Average of Columns 1 and 4.

Source of Information:

Value Line Investment Survey March 14, 2008 (Standard Edition)
Reuters Company Research

NEW
REGULATORY
FINANCE

Roger A. Morin, PhD

2006
PUBLIC UTILITIES REPORTS, INC.
Vienna, Virginia

Any forward-looking cost of capital calculation already embodies tax effects since investors price securities on the basis of after-tax returns. Besides, a very large proportion of trading is conducted by tax-exempt financial institutions (pension funds, mutual funds, 401K, etc.) for whom tax issues are largely immaterial.

The existence of a negative risk premium is highly unlikely, as it is at serious odds with the basic tenets of finance, economics, and law. Using proper definitions for expected rates of return of equity and debt, the preponderance of the evidence indicates that the negative risk premium does not exist. Several risk premium studies cited in this chapter have found positive risk premiums well in excess of 5% over the last decade. Risk premiums do narrow during unusually turbulent and volatile interest rate environments, but then return to normal levels. They are most unlikely to ever become negative.

4.7 Risk Premium Determinants

Fundamentally, the primary determinant of expected returns is risk. To wit, the various paradigms of financial theory, including the Capital Asset Pricing Model and the Arbitrage Pricing Model covered in subsequent chapters, posit fundamental relationships between return and risk. There are also secondary influences on the relative magnitude of the risk premium, however, including the level of interest rates, default risk, and taxes.

Interest Rates

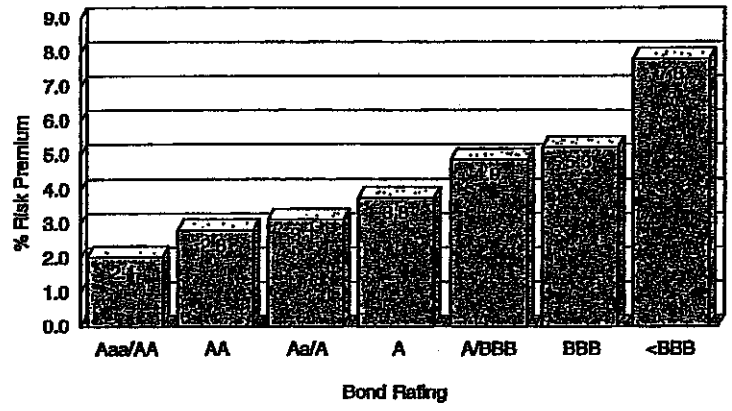
Published studies by Brigham, Shome, and Vinson (1985), Harris (1986), Harris and Marston (1992, 1993), Carleton, Chambers, and Lakonishok (1983), Morin, (2005), and McShane (2005), and others demonstrate that, beginning in 1980, risk premiums varied inversely with the level of interest rates—rising when rates fell and declining when interest rates rose. The reason for this relationship is that when interest rates rise, bondholders suffer a capital loss. This is referred to as interest rate risk. Stockholders, on the other hand, are more concerned with the firm's earning power. So, if bondholders' fear of interest rate risk exceeds shareholders' fear of loss of earning power, the risk differential will narrow and hence the risk premium will shrink. This is particularly true in high inflation environments. Interest rates rise as a result of accelerating inflation, and the interest rate risk of bonds intensifies more than the earnings risk of common stocks, which are partially hedged from the ravages of inflation. This phenomenon has been termed as a "lock-in" premium. Conversely in low interest rate environments, when bondholders' interest rate fears subside and shareholders' fears of loss of earning power dominate, the risk differential will widen and hence the risk premium will increase.

Harris (1986) showed that for every 100 basis point change in government bond yields, the equity risk premium for utilities changes 51 basis points in the opposite direction, for a net change in the cost of equity of 49 basis points. For example, a 100 basis point decline in government bond yields would lead to a 51 basis point increase in the equity risk premium and therefore an overall decrease in the cost of equity of 49 basis points, a result almost identical to the estimate reported in Morin (2005). As discussed earlier, similar results were uncovered by McShane (2005), who examined the statistical relationship between DCF-derived risk premiums and interest rates using a sample of natural gas distribution utilities.

The gist of the empirical research on this subject is that the cost of equity has changed only half as much as interest rates have changed in the past. The knowledge that risk premiums vary inversely to the level of interest rates can be used to adjust historical risk premiums to better reflect current market conditions. Thus, when interest rates are unusually high (low), the appropriate current risk premium is somewhat below (above) that long-run average. The empirical research cited above provides guidance as to the magnitude of the adjustment.

Risk premiums also tend to fluctuate with changes in investor risk aversion. Such changes can be tracked by observing the yield spreads between different bond rating categories over time. Brigham, Shome, and Vinson (1985) examined the relationship between risk premium and bond rating and found, unsurprisingly, that the risk premiums are higher for lower rated firms than for higher rated firms. Figure 4-5 shows the results graphically.

FIGURE 4-5
RISK PREMIUMS VS BOND RATINGS
ELECTRIC UTILITIES



Source: Brigham, Shome, and Vinson (1985).

Utilities Inc. Florida
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

Line No.		1 Market Capitalization on August 29, 2008 (1) (millions)	(times larger)	2 Applicable Decile of the NYSE/ AMEX/ NASDAQ	3 Applicable Size Premium		4 Spread from Applicable Size Premium for (2)
1.	Utilities Inc.	$ 358.392	8.0 x	9 - 10 (3)	4.19%	(4)	2.65%
2.	Florida Water and Wastewater Utilities	$ 5.662	380.1 x	10 (5)	5.82%	(6)	4.28%
3.	Florida Operating Subsidiaries of Utilities, Inc.	$ 8.518	330.2 x	10 (7)	5.82%	(8)	4.28%
4.	Florida PSC Natural Gas Index	$ 2,152.391		5-6 (9)	1.54%	(10)	

Decile	Number of Companies	Recent Total Market Capitalization (10) (millions)	Recent Average Market Capitalization (millions)	Size Premium (Return in Excess of CAPM) (2)
1 - Largest	167	$ 10,357,817.750	$ 62,022.861	-0.34%
2	174	2,327,351.920	$ 13,375.586	0.68%
3	192	1,111,672.200	$ 5,789.959	0.76%
4	184	709,696.610	$ 3,857.047	0.93%
5	203	541,399.790	$ 2,666.994	1.47%
6	251	411,039.680	$ 1,637.608	1.60%
7	275	379,465.160	$ 1,379.873	1.50%
8	380	291,182.590	$ 766.270	2.20%
9	641	284,538.240	$ 443.897	2.56%
10 - Smallest	1775	201,705.150	$ 113.637	5.82%

See page 2 for notes.

Utilities Inc.
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE

Notes:

(1) From page 3 of this Exhibit.

(2) Line No. 1 Column 3 – Line No. 4 Column 3. For example, the 2.66% in Column 4, Line No. 1 is derived as follows 2.65% = 4.19% - 1.54%.

(3) With an estimated market capitalization of $356.392 million based upon the Florida PSC Natural Gas Index, Utilities Inc. falls in between the 9th and 10th deciles of the NYSE/AMEX/NASDAQ which has an average market capitalization of $278.767 as shown in the table on the bottom half of page 1 of this Exhibit.

(4) Average size premium applicable to midpoint of the 9th and 10th deciles of the NYSE/AMEX/NASDAQ as shown in the table on the bottom half of page 1 of this Exhibit.

(5) With an estimated market capitalization of $5.662 million based upon the Florida PSC Natural Gas Index, the average Florida operating subsidiary of Utilities, Inc. falls in the 10th decile of the NYSE/AMEX/NASDAQ which has an average capitalization of $113.637 as shown in the table on the bottom half of page 1 of this Exhibit.

(6) Size premium applicable to the 10th decile of the NYSE/AMEX/NASDAQ as shown in the table on the bottom half of page 1 of this Exhibit.

(7) With an estimated market capitalization of $6.518 million based upon the Florida PSC Natural Gas Index, the average Florida water and waste water utility falls in the 10th decile of the NYSE/AMEX/NASDAQ which has a capitalization of $113.637 as shown in the table on the bottom half of page 1 of this Exhibit.

(8) Size premium applicable to the 10th decile of the NYSE/AMEX/NASDAQ as shown in the table on the bottom half of page 1 of this Exhibit.

(9) With an estimated market capitalization of $2,119.571 million, the Florida PSC Natural Gas Index, falls between the 5th and 6th deciles of the NYSE/AMEX/NASDAQ which has an average capitalization of $2,152.256 million as can be gleaned from the information shown in the table on the bottom half of page 1 of this Exhibit.

(10) Average size premium applicable to the midpoint of the 5th and 6th deciles of the NYSE/AMEX/NASDAQ as can be gleaned from the information shown in the table on the bottom half of page 1 of this Exhibit.

Source of Information: 2008 Ibbotson Risk Premia Over Time Report – Estimates for 1926-2007, Morningstar, Inc., Chicago, IL, 2008

Utilities Inc. Florida
Market Capitalization of Utilities Inc.
and the Florida PSC Natural Gas Index

Company	1 Common Stock Shares Outstanding at December 31, 2007 (millions)	2 Book Value per Share at December 31, 2007 (1)	3 Total Common Equity at December 31, 2007 (millions)	4 Closing Stock Market Price on August 29,2008	5 Market-to-Book Ratio on August 29,2008 (2)	6 Market Capitalization on August 29,2008 (3) (millions)
Utilities Inc.	1,000.000	0.158	$ 158.372 (4)	NA		
Based Upon the Florida PSC Natural Gas Index					225.0 % (5)	$ 356.392 (6)
Florida PSC Natural Gas Index						
AGL Resources, Inc.	76.400	21.741	$ 1,661.000	$ 33.060	152.1	$ 2,525.784
Atmos Energy Corporation	89.907	22.607	2,032.483	27.540	121.8	2,476.039
Equitable Resources, Inc.	122.155	8.984	1,097.472	49.910	555.5	6,096.756
Laclede Group, Inc.	21.646	19.788	428.325	44.930	227.1	972.555
NICOR Inc.	45.130	20.944	945.200	46.130	220.3	2,081.647
Northwest Natural Gas Company	26.407	22.522	594.751	48.730	216.4	1,286.813
Piedmont Natural Gas Co., Inc.	74.208	11.837	878.374	28.850	243.7	2,140.901
South Jersey Industries, Inc.	29.607	16.249	481.080	35.670	219.5	1,056.082
Southwest Gas Corporation	42.806	22.980	983.673	30.350	132.1	1,299.162
WGL Holdings, Inc.	49.316	19.887	980.767	32.200	161.9	1,587.975
Average	57.758	$ 18.754	$ 1,008.313	$ 37.737	225.0 %	$ 2,152.391

NA = Not Available

Notes:
(1) Column 3 / Column 1.
(2) Column 4 / Column 2.
(3) Column 5 * Column 3.
(4) Company provided
(5) The market-to-book ratio of Utilities Inc.. on August 29,2008 is assumed to be equal to the average market-to-book ratio at August 29,2008 of the proxy group of six AUS Utility Reports water companies.
(6) Utilities Inc.'s common stock, if traded, would trade at a market-to-book ratio equal to the average market-to-book ratio at August 29,2008 of the barometer group of ten LDCs, 225.0%, and Utilities Inc.'s market capitalization on August 29,2008 would therefore have been $356.392 million. ($356.392 = $158.372 * 225.0%).

Source of Information: 2007 Annual Forms 10K
yahoo.finance.com

Utilities, Inc.
Revenues, Total Capital, Common Equity,
and Estimated Market Capitalization
for the Year 2007 for Florida Water and Waste Water Utilities (1)

Utility Name	Water Revenues	Wastewater Revenues	Other Revenues	Total Revenues	Total Capital	Total Common Equity	Estimated Market Capitalization (2)
Alafaya Utilities Inc.	$ 0	$ 3,790,238	$ 0	$ 3,790,238	$ 12,357,686	$ 9,810,807	$ 22,874,316
Aloha Utilities, Inc.	3,352,825	6,756,597	0	10,109,422	43,763,848	(6,227)	(14,511)
Anglers Cove West Ltd.	32,373	32,372	0	64,745	5,868,432	(431,735)	(971,404)
Aqua Utilities Florida, Inc.	5,774,607	2,977,251	7,777,151	16,529,109	54,943,247	34,342,247	77,270,056
Aqua Utilities Florida, Inc.	330,478	374,084	15,702,700	16,407,262	61,978,395	35,834,272	80,627,112
B&C Water Resources, L.L.C.	3,478	0	0	3,478	223,913	223,913	503,804
Bayshore Utilities, Inc.	36,026	0	0	36,026	15,849	14,849	33,410
BE Utility Systems LLC dba Buccaneer Water Service	181,211	0	0	181,211	136,718	136,718	307,616
BFF Corp.	0	65,301	0	65,301	196,352	(7,804)	(17,559)
Brendenwood Water System, Inc.	30,008	0	0	30,008	8,807	5,907	13,291
C&H Utilities, Inc.	8,249	12,427	0	20,670	(50,745)	(50,745)	(114,176)
Coral Cay Water & Sewer Company	154,141	171,096	0	325,237	(1,169,655)	(1,169,655)	(2,631,724)
CHC VII, Ltd.	85,239	85,238	0	170,477	22,272,038	(1,280,473)	(2,881,064)
Central Sumter Utility Company, L.L.C.	0	0	0	0	1,000	1,000	2,250
Century Estates Utilities, Inc.	30,890	0	0	30,890	89,109	(77,575)	(174,544)
C.F.A.T. H20, Inc.	38,800	98,049	0	137,849	377,318	26,979	60,703
Colina Bay Water Company, LLC	0	0	0	0	0	0	-
Colonial Manor Utility Company	162,243	0	0	162,243	282,766	70,523	158,677
Colony Park Utility Inc.	0	32,756	0	32,756	3,985,549	(4,451)	(10,015)
Commercial Utilities, Division of Grace and Company, Inc.	0	270,948	0	270,948	(88,494)	(88,494)	(201,362)
Continental Utility, Inc.	272,953	216,657	0	489,610	1,661,395	330,494	743,612
Country Club Utilities, Inc.	132,958	95,549	0	228,507	336,572	(193,217)	(434,738)
Country-Wide Utility Co., Inc.	146,288	0	0	146,288	409,654	(900,032)	(2,025,072)
Crestridge Utility Corporation	94,073	0	0	94,073	547,346	547,346	1,231,529
Crooked Lane Park Sewerage Company	0	128,833	0	128,833	100,740	(62,103)	(139,732)
C.S. Water Company, Inc.	70,317	0	0	70,317	4,893	(18,118)	(40,766)
CWS Communities LP (Lake County)	21,655	0	0	21,655	13,326	13,326	29,984
CWS Communities LP dba Palm Valley	174,686	216,580	0	391,266	(405,892)	(405,892)	(912,807)
D&E Water Resources, L.L.C.	0	0	0	0	237,968	237,968	535,428
Damon Utilities, Inc.	47,898	36,021	0	83,919	67,526	(22,338)	(50,216)
Dixie Groves Utility Company	85,840	0	0	85,840	93,740	53,947	121,381
East Central Florida Services, Inc.	204,994	0	0	204,994	664,789	91,788	206,523
East Marion Sanitary Systems, Inc.	26,117	39,436	0	65,553	199,365	199,365	448,571
Environmental Protection Systems of Pine Island, Inc.	0	183,308	0	183,308	745,885	17,606	39,614
Fairmount Utilities, the 2nd, Inc.	0	113,961	0	113,961	(346,803)	(388,799)	(870,298)
Fernton Water Resources LLC	1,015	0	0	1,015	827,495	827,495	1,861,864
FMC Hideaway, Inc. (Combined)	37,367	47,593	0	84,960	94,177	94,177	211,898
Forest Utilities, Inc.	0	969,207	0	969,207	183,990	183,990	413,978
Fountain Lakes Sewer Corp.	0	456,044	0	456,044	712,964	(876,106)	(1,971,239)
Four Lakes Golf Club, Ltd.	213,600	141,591	0	355,191	17,391,831	(7,370,732)	(16,584,147)
Four Points Utility Corporation	65,031	91,515	0	156,546	13,186	13,186	29,669
Gold Coast Utility Corp.	169,486	296,759	0	466,245	282,180	(488,528)	(1,099,438)
Grenelefe Resort Utility, Inc.	312,899	191,074	0	503,973	662,034	662,034	1,489,577
Grove Utilities, Inc.	0	0	0	0	0	0	-
Harbor Hills Utilities, LP	397,960	0	0	397,960	1,305,024	1,286,637	2,894,934
Hidden Cove, Ltd.	11,500	11,499	0	22,999	2,420,815	943,416	2,122,686
Hidden Valley SPE LLC dba Orange Lake (Lake County)	44,722	43,336	0	88,058	(62,674)	(62,674)	(141,017)
Highlands Utilities Corporation	0	858,197	0	858,197	88,791	(1,078,249)	(2,408,060)
Highlands Ridge Utilities, LLC	202,385	180,420	0	382,805	477,445	(32,205)	(72,461)
Holiday Gardens Utilities, Inc.	74,713	0	0	74,713	450,972	450,972	1,014,687
Holiday Utility Company, Inc.	129,029	0	0	129,029	628,430	221,668	498,753
Holmes Utilities, Inc.	27,761	0	0	27,761	20,273	(169,876)	(382,221)
Hunters Ridge Utility Co. of Lee County	0	370,026	0	370,026	578,864	578,864	1,302,444
HV Utility Systems, LLC	0	78,482	0	78,482	84,315	84,315	189,709
Indiantown Company, Inc.	785,676	1,171,193	0	1,956,869	4,705,712	4,028,110	9,063,248
Inverarity Island Development Corporation	50,284	37,300	0	87,584	500,039	500,039	1,125,089
Joyland Water System	16,722	0	0	16,722	10,271	19,271	23,110
Keen Sales, Rentals, and Utilities, Inc.	40,842	0	0	40,842	50,932	4,634	18,427
Kemple Water Company	14,864	0	0	14,864	13,608	13,608	30,617
Key Haven Utility Corporation	0	360,140	0	360,140	1,532,186	(386,513)	(869,654)
Kincaid Hills Water Company	51,628	0	0	51,628	92,994	92,994	209,237
KW Resort Utilities Corp.	0	1,248,101	0	1,248,101	1,643,963	223,871	501,910
Labrador Utilities Inc.	145,697	362,405	0	508,102	943,913	943,913	2,123,804
Allen Lafortune and Otis Fansler (Tropical Pk Water Systems)	15,113	0	0	15,113	21,917	21,917	49,312
Lake Placid Utilities, Inc.	47,599	74,188	0	121,787	465,344	465,344	1,047,024
Lake Utility Services, Inc.	2,885,297	843,576	0	3,728,873	20,793,204	20,793,204	46,784,709
Lake Yale Treatment Associates, Inc.	54,600	53,584	0	108,184	233,947	(20,406)	(45,914)
Lighthouse Utilities Company, Inc.	478,178	0	0	478,178	1,250,091	310,091	697,705
Lindrick Service Corporation	938,347	1,709,086	0	2,647,433	3,098,859	(830,163)	(1,867,867)
LWV Utilities, Inc.	91,511	0	0	91,511	11,952	(114,178)	(256,901)
Marion Utilities, Inc.	1,620,934	30,927	0	1,651,861	609,661	555,889	1,250,750
Mid County Services Inc	0	1,624,065	0	1,624,065	2,911,302	2,434,063	5,476,642
Miles Grant Water & Sewer Company	270,682	335,802	0	606,484	2,168,065	2,168,065	4,878,146
Mink Associates II, LLC dba Crystal Lake Club Utilities	86,010	71,861	0	157,871	(9,254)	(273,058)	(614,381)
Town & Country Utilities Company	60,865	0	0	60,865	42,226,451	(452,512)	(1,018,150)
Mobile Manor Water Company, Inc.	49,223	0	0	49,223	6,241	2,951	6,640
Mountain Lake Corporation	114,846	0	0	114,846	(236,751)	(236,751)	(532,690)
North Fort Myers Utility, Inc.	398,468	4,303,496	0	4,701,964	(4,642,689)	(4,642,689)	(10,446,050)
North Fort Myers Utility, Inc.	398,468	4,303,496	0	4,701,964	(4,642,689)	(4,642,689)	(10,446,050)
North Peninsula Utilities Corp.	0	196,397	0	196,397	(387,459)	(430,459)	(968,533)
North Sumter Utility Company, LLC	1,997,712	3,357,032	0	5,354,744	(6,352,988)	(6,352,988)	(14,294,223)
Northgate Properties, Inc.	25,718	18,930	0	44,649	0	0	-
OBS Water Company, Inc.	1,276,968	0	0	1,276,968	(416,485)	(2,109,436)	(4,746,231)
Oak Springs, LLC	58,473	0	0	58,473	135,853	135,853	305,669

Utilities, Inc.
Revenues, Total Capital, Common Equity,
and Estimated Market Capitalization
for the Year 2007 for Florida Water and Waste Water Utilities (1)

Orange Blossom Utilities, Inc.	0	0	0	0	0	0	-
Orangeland Water Supply	5,219	0	0	5,219	0	0	-
Orchid Springs Development Corp.	86,733	105,105	0	191,838	193,160	(209,780)	(458,505)
Par Utilities, Inc.	18,159	0	0	18,159	6,427	6,427	14,461
Paradise Lake Utility, LLC	55,395	136,306	0	191,641	426,084	426,084	958,689
Park Water Company	294,945	0	0	294,945	(126,925)	(299,843)	(674,647)
Parkland Utilities, Inc.	292,140	499,884	0	792,024	(562,983)	(562,983)	(1,266,712)
Pasco Utilities, Inc.	142,125	0	0	142,125	18,185	(180,815)	(406,834)
Peoples Water Service Company of Florida, Inc.	3,172,656	0	0	3,172,656	3,100,143	3,100,143	6,975,322
Pine Harbour Water Utilities	18,757	0	0	18,757	34,003	34,003	76,507
Pine Island Cove Homeowners Association, Inc.	0	49,718	0	49,718	276,435	276,435	621,979
Pine Ridge Management Corp	22,694	59,869	83,430	165,994	292,420	292,420	657,945
Pinecrest Ranches, Inc.	50,278	0	0	50,278	(127,467)	(127,467)	(286,801)
Placid Lakes Utilities, Inc.	534,068	0	0	534,068	(330,059)	(330,059)	(742,633)
Plantation Bay Utility Company	404,126	491,948	0	896,074	(3,668,417)	(3,668,417)	(8,253,938)
Plantation Landings, Ltd.	36,593	36,592	0	73,185	(5,314,675)	(5,314,675)	(11,958,019)
Rainbow Springs Utilities, LC	531,155	526,261	0	1,057,416	674,152	654,245	1,472,051
Raintree Utilities, Inc.	44,837	0	0	44,837	(40,852)	(60,759)	(136,708)
Residential Water Systems, Inc.	251,644	0	0	251,644	(55,549)	(68,834)	(154,877)
River Ranch Water Management, LLC	129,132	156,010	0	285,142	920,332	920,332	2,070,747
Royal Utility Company	597,535	495,399	0	1,092,934	617,695	491,695	1,106,314
S & L Utilities, Inc.	0	37,266	0	37,266	8,062	(29,651)	(66,715)
S. V. Utilities, Ltd.	70,026	70,025	0	140,051	(945,221)	(1,015,721)	(2,285,372)
San Sebastian Water, LLC	6,116	0	0	6,116	0	0	-
Sanlando Utilities Corp	2,726,018	3,452,898	0	6,178,916	13,386,983	13,386,983	30,120,712
Sebring Ridge Utilities, Inc.	0	161,880	0	161,880	1,018,976	1,018,976	2,292,696
Shangri-La by the Lake Utilities, Inc.	42,509	30,623	0	73,132	(347,574)	(347,574)	(782,042)
Silver Fox Utility Company, LLC	36,534	40,025	0	76,559	(109,901)	(109,901)	(247,277)
Silver Lakes Utilities, Inc.	2,983	0	0	2,983	375,822	(27,546)	(61,979)
Southlake Utilities, Inc.	(945,518)	(698,113)	0	(1,643,631)	(6,176,385)	(6,176,385)	(13,896,866)
St. James Island Utility Company	20,861	3,289	0	24,150	(283,929)	(283,929)	(638,840)
St. Johns Landing Utility Services	0	0	0	0	0	0	-
St. Johns River Club Utility Company, LLC	20,449	19,584	0	40,033	91,920	91,920	206,820
Heather Hills Estates	44,969	69,134	0	114,103	(25,311)	(25,311)	(56,950)
Sun Communities Acquisitions, LLC	79,887	66,016	0	145,903	(482,814)	(482,814)	(1,086,332)
Sun Communities Finance, LLC	151,854	234,120	0	385,974	36,546	36,546	82,229
Sun Communities Operating, LP	50,984	36,964	0	87,948	192,083	192,083	432,187
Sunny Shores Water Co., Inc.	68,560	0	0	68,560	32,690	32,690	73,553
Sonshine Utilities of Central Florida, Inc.	1,006,610	0	30,127	1,036,737	478,417	472,569	1,063,280
Service Management Systems, Inc.	248,300	136,880	0	385,180	(168,785)	(168,785)	(379,766)
Tamiami Village Water Company, Inc.	208,744	0	0	208,744	(43,693)	(120,897)	(272,018)
McLeod Gardens Water Company	28,495	0	0	28,495	361,965	361,965	814,421
Tierra Verde Utilities, Inc.	0	690,922	0	690,922	1,447,871	1,447,871	3,257,710
Tradewinds Utilities, Inc.	126,408	213,167	0	339,573	264,207	205,068	461,403
Tymber Creek Utilities, Inc.	112,700	205,354	0	318,054	268,935	129,586	291,569
Utilities Inc. of Florida	2,030,252	1,289,976	0	3,320,228	8,490,636	8,490,636	19,103,931
Utilities Inc. of Hutchinson Island	342,132	275,095	0	617,227	2,014,079	2,014,079	4,531,678
Utilities of Longwood	0	791,151	0	791,151	1,733,472	1,733,472	3,900,312
Utilities Inc. of Pennbrooke	399,694	427,556	0	827,250	2,346,047	2,346,047	5,278,606
Utilities Inc. of Eagle Ridge	0	787,117	0	787,117	2,481,391	2,481,391	5,583,130
Useppa Island Utility, Inc.	180,251	137,413	0	317,664	(311,386)	(311,386)	(700,619)
Virginia City Utility Company a Division of Community Utilities	104,062	0	0	104,062	126,818	126,818	285,341
The Vantage Development Corporation	0	52,430	0	52,430	335,782	335,782	755,510
Venture Associates Utilities Corp.	541,352	0	0	541,352	671,166	671,166	1,510,124
W.B.B. Utilities, Inc.	42,496	0	0	42,496	28,372	28,372	63,837
W.P. Utilities, Inc.	33,737	55,020	0	88,757	(134,083)	(134,083)	(301,687)
Wedgefield Utilities, Inc.	742,865	818,907	0	1,561,772	3,657,684	3,657,684	8,229,789
Windstream Utilities Company	561,339	0	0	561,339	16,803	16,803	37,807
Water Management Services, Inc.	1,501,205	0	0	1,501,205	(869,695)	(1,405,520)	(3,162,420)
Zachary Taylor Camping and Lodge, Inc.	0	48,674	0	48,674	(29,773)	(29,773)	(66,989)
Average						$ 752,316	$ 1,692,712
Average (Excluding Negatives and Zero Values)						$ 2,516,555	$ 5,662,248
Average Utilities, Inc. Company (3)						$ 2,896,751	$ 6,517,690

Notes:

(1) For those companies who have filed a 2007 Annual Report with the Florida PSC.

(2) Based on the average market-to-book ratio of 225.0% of the Florida PSC Natural Gas Index

(3) Utilities, Inc. Companies in Florida include: Alafaya Utilities, Labrador Utilities, Lake Placid Utilities, Mid-County Services, Miles Grant Water & Sewer Co., Sanlando Utilities, South Gate Utilities, Tierra Verde Utilities, Utilities, Inc. of Eagle Ridge, Utilities, Inc. of Hutchison Island, Utilities, Inc. of Longwood, Utilities, Inc of Pennbrooke, Wedgefield Utilities, and Utilities, Inc. of Florida.

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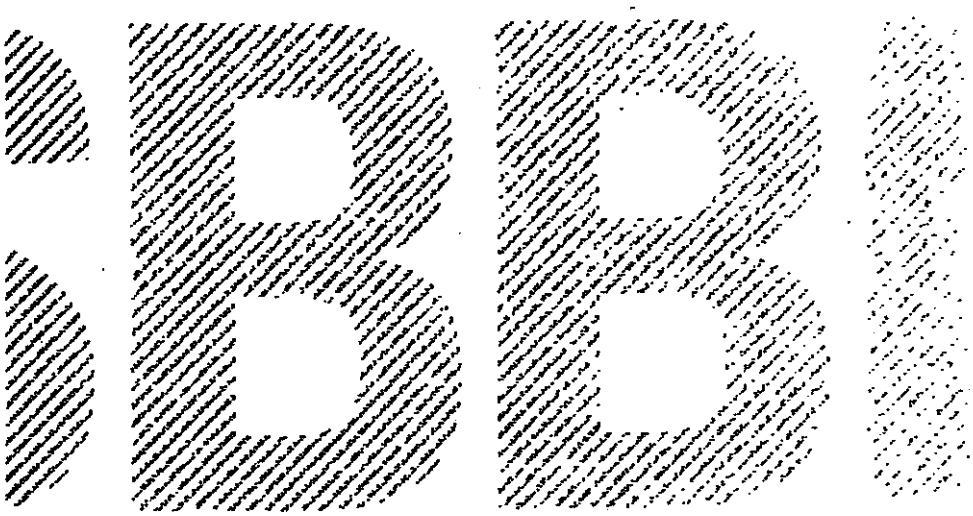

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Chapter 7
Firm Size and Return

The Firm Size Phenomenon

One of the most remarkable discoveries of modern finance is that of a relationship between firm size and return. The relationship cuts across the entire size spectrum but is most evident among smaller companies, which have higher returns on average than larger ones. Many studies have looked at the effect of firm size on return.[1] In this chapter, the returns across the entire range of firm size are examined.

Construction of the Decile Portfolios

The portfolios used in this chapter are those created by the Center for Research in Security Prices (CRSP) at the University of Chicago's Graduate School of Business. CRSP has refined the methodology of creating size-based portfolios and has applied this methodology to the entire universe of NYSE/AMEX/NASDAQ-listed securities going back to 1926.

The New York Stock Exchange universe excludes closed-end mutual funds, preferred stocks, real estate investment trusts, foreign stocks, American Depository Receipts, unit investment trusts, and Americus Trusts. All companies on the NYSE are ranked by the combined market capitalization of their eligible equity securities. The companies are then split into 10 equally populated groups, or deciles. Eligible companies traded on the American Stock Exchange (AMEX) and the Nasdaq National Market (NASDAQ) are then assigned to the appropriate deciles according to their capitalization in relation to the NYSE breakpoints. The portfolios are rebalanced, using closing prices for the last trading day of March, June, September, and December. Securities added during the quarter are assigned to the appropriate portfolio when two consecutive month-end prices are available. If the final NYSE price of a security that becomes delisted is a month-end price, then that month's return is included in the quarterly return of the security's portfolio. When a month-end NYSE price is missing, the month-end value of the security is derived from merger terms, quotations on regional exchanges, and other sources. If a month-end value still is not determined, the last available daily price is used.

Base security returns are monthly holding period returns. All distributions are added to the month-end prices, and appropriate price adjustments are made to account for stock splits and dividends. The return on a portfolio for one month is calculated as the weighted average of the returns for its individual stocks. Annual portfolio returns are calculated by compounding the monthly portfolio returns.

Size of the Deciles

Table 7-1 reveals that the top three deciles of the NYSE/AMEX/NASDAQ account for most of the total market value of its stocks. Nearly two-thirds of the market value is represented by the first decile, which currently consists of 167 stocks, while the smallest decile accounts for just over one percent of the

1 Rolf W. Banz was the first to document this phenomenon. See Banz, Rolf W. "The Relationship Between Returns and Market Value of Common Stocks," *Journal of Financial Economics*, Vol. 9, 1981, pp. 3–18.

market value. The data in the second column of Table 7-1 are averages across all 82 years. Of course, the proportion of market value represented by the various deciles varies from year to year.

Columns three and four give recent figures on the number of companies and their market capitalization, presenting a snapshot of the structure of the deciles near the end of 2007.

Table 7-1‡
Size-Decile Portfolios of the NYSE/AMEX/NASDAQ Size and Composition
1926 through September 30, 2007

Decile	Historical Average Percentage of Total Capitalization	Recent Number of Companies	Recent Decile Market Capitalization (in thousands)	Recent Percentage of Total Capitalization
1-largest	63.22%	167	$10,357,817,750	62.34%
2	13.97%	174	2,327,351,920	14.01%
3	7.56%	192	1,111,572,200	6.69%
4	4.73%	184	708,696,610	4.27%
5	3.24%	203	541,399,790	3.26%
6	2.38%	251	411,039,680	2.47%
7	1.75%	275	379,465,160	2.28%
8	1.30%	380	291,182,590	1.75%
9	1.02%	641	284,538,240	1.71%
10-Smallest	0.83%	1775	201,705,150	1.21%
Mid-Cap 3-5	15.53%	579	2,362,768,280	14.22%
Low-Cap 6-8	5.43%	906	1,081,687,170	6.51%
Micro-Cap 9-10	1.85%	2,416	486,243,740	2.93%

Historical average percentage of total capitalization shows the average, over the last 82 years, of the decile market values *as a percentage of the total NYSE/AMEX/NASDAQ* calculated each month. Number of companies in deciles, recent market capitalization of deciles, and recent percentage of total capitalization are as of September 30, 2007.

Table 7-2 gives the current breakpoints that define the composition of the NYSE/AMEX/NASDAQ size deciles. The largest company and its market capitalization are presented for each decile. Table 7-3 shows the historical breakpoints for each of the three size groupings presented throughout this chapter. Mid-cap stocks are defined here as the aggregate of deciles 3–5. Based on the most recent data (Table 7-2), companies within this mid-cap range have market capitalizations at or below $9,206,713,000 but greater than $2,411,794,000. Low-cap stocks include deciles 6–8 and currently include all companies in the NYSE/AMEX/NASDAQ with market capitalizations at or below $2,411,794,000 but greater than $723,258,000. *Micro-cap stocks include deciles 9–10* and include companies with market capitalizations at or below $723,258,000. The market capitalization of the smallest company included in the micro-capitalization group is currently $1,922,000.

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Table 7-2[1]
Size-Decile Portfolios of the NYSE/AMEX/NASDAQ, Largest Company and Its Market Capitalization by Decile
September 30, 2007

Decile	Market Capitalization of Largest Company (in thousands)	Company Name
1-Largest	$472,518,672	Exxon Mobil Corp.
2	20,234,526	General Mills Inc
3	9,206,713	Reliant Energy Inc.
4	5,012,577	Manitowoc Co. Inc.
5	3,422,743	FMC Corp.
6	2,411,794	Webster Financial Corp.
7	1,633,320	Simpson Manufacturing Co. Inc.
8	1,128,765	Metal Management Inc.
9	723,258	Citadel Broadcasting Corp.
10-Smallest	363,479	Emergency Medical Services Corp.

Presentation of the Decile Data

Summary statistics of annual returns of the 10 deciles over 1926–2007 are presented in Table 7-4. Note from this exhibit that both the average return and the total risk, or standard deviation of annual returns, tend to increase as one moves from the largest decile to the smallest. Furthermore, the serial correlations of returns are near zero for all but the smallest deciles. Serial correlations and their significance will be discussed in detail later in this chapter.

Graph 7-1 depicts the growth of one dollar invested in each of three NYSE/AMEX/NASDAQ groups broken down into mid-cap, low-cap, and micro-cap stocks. The index value of the entire NYSE/AMEX/NASDAQ is also included. All returns presented are value-weighted based on the market capitalizations of the deciles contained in each subgroup. The sheer magnitude of the size effect in some years is noteworthy. While the largest stocks actually declined 9 percent in 1977, the smallest stocks rose more than 20 percent. A more extreme case occurred in the depression-recovery year of 1933, when the difference between the first and tenth decile returns was far more substantial, with the largest stocks rising 46 percent, and the smallest stocks rising 218 percent. This divergence in the performance of small and large company stocks is a common occurrence.

Table 7-3
Size-Decile Portfolios of the NYSE/AMEX/NASDAQ
Largest and Smallest Company by Size Group

from 1926 to1965

	Capitalization of Largest Company (in thousands)			Capitalization of Smallest Company (in thousands)		
Date (Sept 30)	Mid-Cap 3-5	Low-Cap 6-8	Micro-Cap 9-10	Mid-Cap 3-5	Low-Cap 6-8	Micro-Cap 9-10
1926	$80,103	$13,795	$4,213	$13,800	$4,263	$43
1927	$84,820	$14,491	$4,415	$14,522	$4,450	$65
1928	$80,910	$18,761	$5,074	$18,788	$5,119	$135
1929	$103,054	$24,328	$5,862	$24,480	$5,873	$118
1930	$86,750	$12,918	$3,359	$13,050	$3,369	$30
1931	$42,807	$8,142	$1,927	$8,222	$1,944	$15
1932	$12,212	$2,208	$468	$2,223	$469	$19
1933	$40,298	$7,210	$1,630	$7,280	$1,675	$120
1934	$36,019	$6,638	$1,673	$6,669	$1,691	$69
1935	$37,631	$6,549	$1,350	$6,605	$1,383	$38
1936	$48,963	$11,505	$2,754	$11,526	$2,800	$98
1937	$51,750	$13,635	$3,539	$13,793	$3,563	$68
1938	$35,019	$8,372	$2,195	$8,400	$2,200	$60
1939	$35,409	$7,478	$1,819	$7,500	$1,854	$75
1940	$29,903	$7,090	$1,861	$8,007	$1,872	$51
1941	$30,362	$8,316	$2,086	$8,336	$2,087	$72
1942	$26,037	$6,868	$1,770	$6,870	$1,779	$82
1943	$42,721	$11,403	$3,647	$11,475	$3,903	$395
1944	$46,221	$13,066	$4,812	$13,068	$4,820	$309
1945	$55,125	$17,325	$6,413	$17,575	$6,428	$225
1946	$77,784	$24,192	$10,149	$24,199	$10,168	$829
1947	$57,830	$17,719	$6,373	$17,735	$6,380	$506
1948	$67,238	$19,632	$7,329	$19,651	$7,348	$583
1949	$56,082	$14,549	$5,097	$14,577	$5,108	$379
1950	$66,143	$18,675	$6,225	$18,700	$6,243	$303
1951	$82,517	$22,750	$7,598	$22,850	$7,600	$668
1952	$95,536	$25,405	$8,428	$25,452	$8,480	$480
1953	$98,218	$25,340	$8,156	$25,374	$8,168	$459
1954	$125,834	$29,707	$8,488	$29,791	$8,502	$463
1955	$170,829	$41,445	$12,366	$41,681	$12,444	$563
1956	$183,792	$46,805	$13,524	$46,886	$13,623	$1,122
1957	$194,300	$47,658	$13,844	$48,509	$13,848	$925
1958	$195,536	$46,774	$13,789	$46,871	$13,816	$550
1959	$256,283	$64,110	$19,548	$64,221	$19,701	$1,804
1960	$252,292	$61,485	$19,293	$61,529	$19,344	$831
1961	$296,261	$77,983	$23,562	$77,996	$23,613	$2,455
1962	$250,786	$58,785	$18,952	$58,866	$18,968	$1,018
1963	$306,903	$71,846	$23,927	$71,971	$24,056	$296
1964	$349,575	$79,508	$25,595	$79,937	$25,607	$223
1965	$365,675	$84,600	$28,483	$85,065	$28,543	$250

Table 7-3 (continued)
Size-Decile Portfolios of the NYSE/AMEX/NASDAQ
Largest and Smallest Company by Size Group

from 1966 to 2007

	Capitalization of Largest Company (in thousands)			Capitalization of Smallest Company (in thousands)		
Date (Sept 30)	Mid-Cap 3-5	Low-Cap 6-8	Micro-Cap 9-10	Mid-Cap 3-5	Low-Cap 6-8	Micro-Cap 9-10
1966	$403,137	$99,960	$34,884	$100,107	$34,966	$381
1967	$458,438	$118,988	$42,186	$119,635	$42,237	$381
1968	$531,306	$150,893	$60,543	$151,260	$60,719	$592
1969	$518,485	$146,792	$54,353	$147,311	$54,503	$2,119
1970	$382,884	$94,754	$29,916	$94,845	$29,932	$822
1971	$551,690	$147,426	$45,570	$147,810	$45,571	$865
1972	$557,181	$143,835	$46,728	$144,263	$46,757	$1,031
1973	$431,354	$96,699	$29,352	$96,710	$28,430	$561
1974	$356,876	$79,878	$23,355	$80,280	$23,400	$444
1975	$477,054	$102,313	$30,353	$103,283	$30,394	$540
1976	$566,298	$121,717	$34,864	$121,892	$34,907	$564
1977	$584,577	$139,196	$40,700	$139,620	$40,765	$513
1978	$580,881	$164,093	$47,927	$164,455	$48,038	$830
1979	$665,019	$177,378	$51,197	$177,769	$51,274	$848
1980	$762,195	$199,312	$50,496	$199,315	$50,544	$549
1981	$962,397	$264,590	$72,104	$264,783	$72,450	$1,446
1982	$770,517	$210,301	$55,336	$210,630	$55,423	$1,060
1983	$1,209,911	$353,889	$104,382	$356,238	$104,588	$2,025
1984	$1,075,436	$315,985	$91,004	$316,103	$91,195	$2,093
1985	$1,440,436	$370,224	$94,875	$370,729	$94,887	$760
1986	$1,857,621	$449,015	$110,617	$449,462	$110,953	$706
1987	$2,059,143	$468,948	$113,419	$470,662	$113,430	$1,277
1988	$1,957,926	$421,340	$94,449	$421,675	$94,573	$696
1989	$2,145,947	$480,975	$100,285	$483,623	$100,384	$96
1990	$2,171,217	$474,065	$93,750	$474,477	$93,790	$132
1991	$2,129,863	$457,958	$87,586	$458,853	$87,733	$278
1992	$2,428,671	$500,327	$103,352	$500,346	$103,500	$510
1993	$2,705,192	$603,588	$137,105	$607,449	$137,137	$602
1994	$2,470,244	$596,059	$148,104	$597,975	$148,216	$598
1995	$2,789,938	$647,210	$155,386	$647,253	$155,532	$89
1996	$3,142,657	$751,316	$193,001	$751,680	$193,016	$1,043
1997	$3,484,440	$813,923	$228,900	$814,355	$229,058	$585
1998	$4,216,707	$925,688	$252,553	$926,215	$253,031	$1,671
1999	$4,251,741	$875,309	$220,397	$875,582	$220,456	$1,502
2000	$4,143,902	$840,000	$192,083	$840,730	$192,439	$1,393
2001	$5,156,315	$1,108,224	$265,734	$1,108,969	$265,736	$443
2002	$4,930,326	$1,116,525	$308,980	$1,124,331	$309,245	$501
2003	$4,744,580	$1,163,369	$329,050	$1,163,423	$329,529	$332
2004	$6,241,953	$1,607,854	$505,437	$1,607,931	$506,410	$1,393
2005	$7,167,244	$1,728,888	$586,393	$1,729,364	$587,243	$1,079
2006	$7,777,183	$1,946,588	$626,955	$1,947,240	$627,017	$2,247
2007	$9,206,713	$2,411,794	$723,258	$2,413,583	$725,267	$1,922

Table 7-4‡
Size-Decile Portfolios of the NYSE/AMEX/NASDAQ, Summary Statistics of Annual Returns 1926–2007

Decile	Geometric Mean	Arithmetic Mean	Standard Deviation	Serial Correlation
1-Largest	9.6	11.3	18.91	0.08
2	10.9	13.2	21.62	0.04
3	11.3	13.7	23.31	–0.03
4	11.1	14.1	25.68	–0.01
5	11.7	14.8	26.49	–0.02
6	11.7	15.1	27.10	0.03
7	11.8	15.5	29.47	0.01
8	11.8	16.6	34.18	0.05
9	11.9	17.3	36.45	0.04
10-Smallest	13.6	21.0	44.58	0.16
Mid-Cap, 3–5	11.3	14.0	24.42	–0.02
Low-Cap, 6–8	11.7	15.5	29.03	0.03
Micro-Cap, 9–10	12.5	18.5	38.84	0.08
NYSE/AMEX/NASDAQ Total Value-Weighted Index	10.1	12.0	19.94	0.03

Aspects of the Firm Size Effect

The firm size phenomenon is remarkable in several ways. First, the greater risk of small stocks does not, in the context of the capital asset pricing model (CAPM), fully account for their higher returns over the long term. In the CAPM only systematic, or beta risk, is rewarded; small company stocks have had returns in excess of those implied by their betas.

Second, the calendar annual return differences between small and large companies are serially correlated. This suggests that past annual returns may be of some value in predicting future annual returns. Such serial correlation, or autocorrelation, is practically unknown in the market for large stocks and in most other equity markets but is evident in the size premia.

Third, the firm size effect is seasonal. For example, small company stocks outperformed large company stocks in the month of January in a large majority of the years. Such predictability is surprising and suspicious in light of modern capital market theory. These three aspects of the firm size effect—long-term returns in excess of systematic risk, serial correlation, and seasonality—will be analyzed thoroughly in the following sections.

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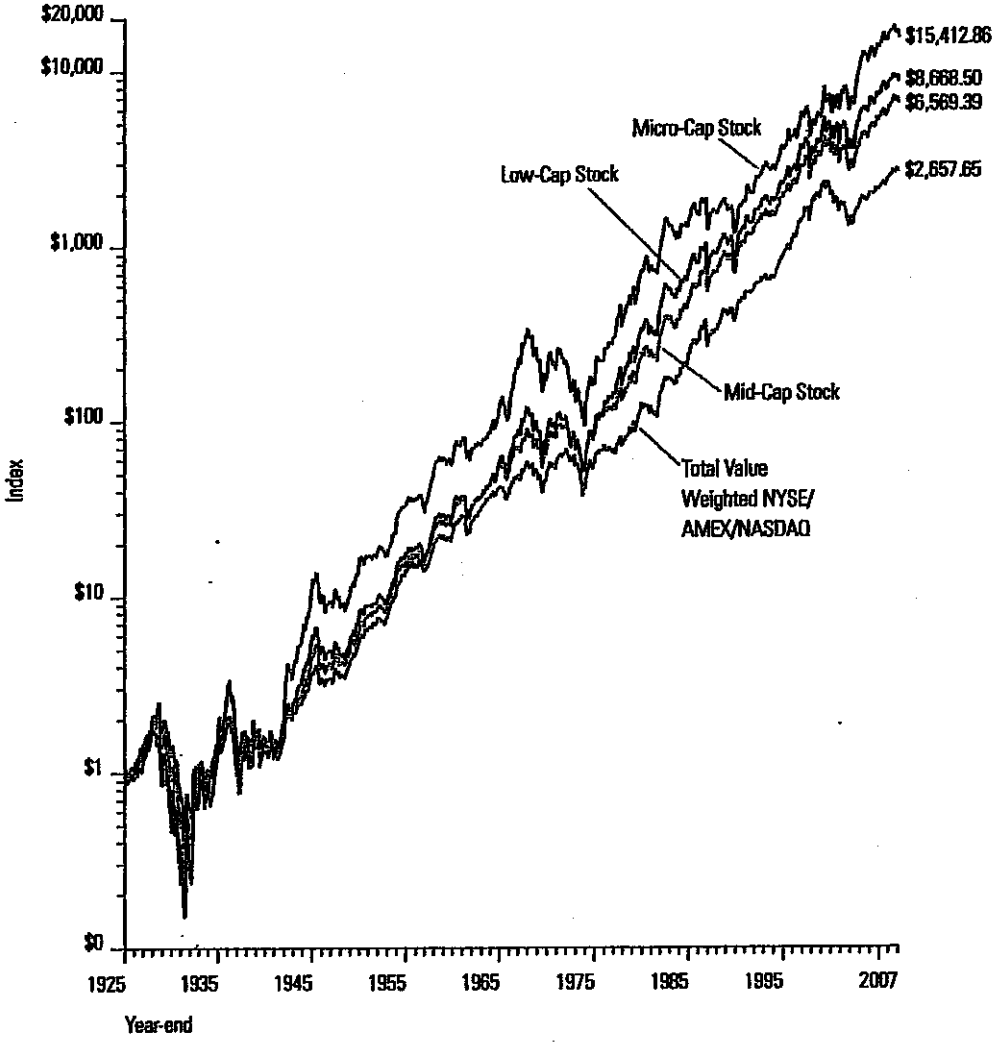
Graph 7-1[1]

Size-Decile Portfolios of the NYSE/AMEX/NASDAQ: Wealth Indices of Investments in Mid-, Low-, Micro- and Total Capitalization Stocks

Year-end 1925 = $1.00

1925–2007



Long-Term Returns in Excess of Systematic Risk

The capital asset pricing model (CAPM) does not fully account for the higher returns of small company stocks. Table 7-5 shows the returns in excess of systematic risk over the past 82 years for each decile of the NYSE/AMEX/NASDAQ. Recall that the CAPM is expressed as follows:

$$k_s = r_f + (\beta_s \times ERP)$$

Table 7-5 uses the CAPM to estimate the return in excess of the riskless rate and compares this estimate to historical performance. According to the CAPM, the expected return on a security should consist of the riskless rate plus an additional return to compensate for the systematic risk of the security. The return in excess of the riskless rate is estimated in the context of the CAPM by multiplying the equity risk premium by β (beta). The equity risk premium is the return that compensates investors for taking on risk equal to the risk of the market as a whole (systematic risk).[2] Beta measures the extent to which a security or portfolio is exposed to systematic risk.[3] The beta of each decile indicates the degree to which the decile's return moves with that of the overall market.

A beta greater than one indicates that the security or portfolio has greater systematic risk than the market; according to the CAPM equation, investors are compensated for taking on this additional risk. Yet, Table 7-5 illustrates that the smaller deciles have had returns that are not fully explained by their higher betas. This return in excess of that predicted by CAPM increases as one moves from the largest companies in decile 1 to the smallest in decile 10. The excess return is especially pronounced for micro-cap stocks (deciles 9–10). This size-related phenomenon has prompted a revision to the CAPM, which includes a size premium. Chapter 4 presents this modified CAPM theory and its application in more detail.

This phenomenon can also be viewed graphically, as depicted in the Graph 7-2. The security market line is based on the pure CAPM without adjustment for the size premium. Based on the risk (or beta) of a security, the expected return lies on the security market line. However, the actual historic returns for the smaller deciles of the NYSE/AMEX/NASDAQ lie above the line, indicating that these deciles have had returns in excess of that which is appropriate for their systematic risk.

2 The equity risk premium is estimated by the 82-year arithmetic mean return on large company stocks, 12.26 percent, less the 82-year arithmetic mean income-return component of 20-year government bonds as the historical riskless rate, in this case 5.21 percent. (It is appropriate, however, to match the maturity, or duration, of the riskless asset with the investment horizon.) See Chapter 5 for more detail on equity risk premium estimation.

3 Historical betas were calculated using a simple regression of the monthly portfolio (decile) total returns in excess of the 30-day U.S. Treasury bill total returns versus the S&P 500 total returns in excess of the 30-day U.S. Treasury bill, January 1926–December 2007. See Chapter 6 for more detail on beta estimation.

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Table 7-5*
Long-Term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ
1926–2007

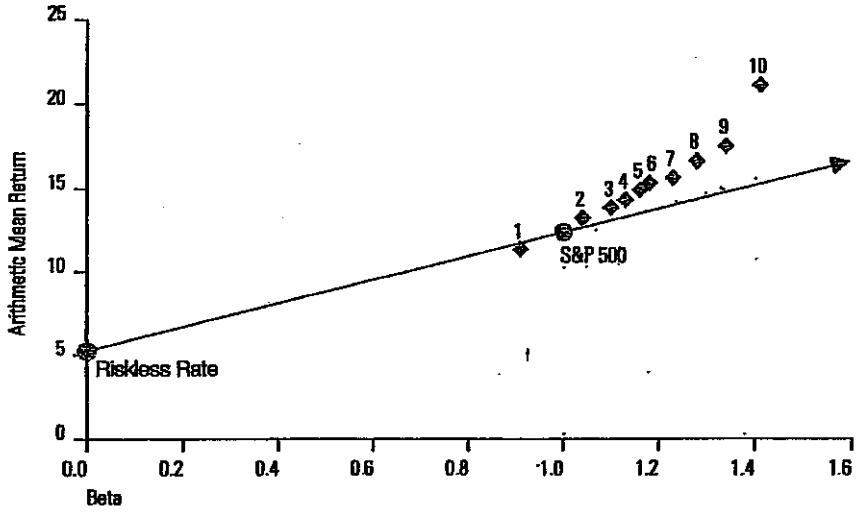
Decile	Beta*	Arithmetic Mean Return	Realized Return in Excess of Riskless Rate**	Estimated Return in Excess of Riskless Rate†	Size Premium (Return in Excess of CAPM)
1-Largest	0.91	11.31%	6.10%	6.45%	–0.34%
2	1.03	13.18%	7.95%	7.27%	0.68%
3	1.10	13.72%	8.51%	7.75%	0.76%
4	1.12	14.07%	8.86%	7.93%	0.93%
5	1.16	14.85%	9.64%	8.17%	1.47%
6	1.18	15.14%	9.93%	8.33%	1.60%
7	1.24	15.46%	10.26%	8.76%	1.50%
8	1.30	16.58%	11.38%	9.18%	2.20%
9	1.35	17.28%	12.07%	9.51%	2.56%
10-Smallest	1.41	20.98%	15.77%	9.95%	5.82%
Mid-Cap, 3–5	1.12	14.01%	8.81%	7.88%	0.92%
Low-Cap, 6–8	1.22	15.49%	10.29%	8.64%	1.65%
Micro-Cap, 9–10	1.36	18.46%	13.25%	9.59%	3.65%

*Betas are estimated from monthly portfolio total returns in excess of the 30-day U.S. Treasury bill total return versus the S&P 500 total returns in excess of the 30-day U.S. Treasury bill, January 1926–December 2007.

**Historical riskless rate is measured by the 82-year arithmetic mean income return component of 20-year government bonds (5.21 percent)

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (12.26 percent) minus the arithmetic mean income return component of 20-year government bonds (5.21 percent) from 1926–2007.

Graph 7-2*
Security Market Line versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ
1926–2007



Further Analysis of the 10th Decile

The size premia presented thus far do a great deal to explain the return due solely to size in publicly traded companies. However, by splitting the 10th decile into two size groupings we can get a closer look at the smallest companies. This magnification of the smallest companies will demonstrate whether the company size to size premia relationship continues to hold true.

As previously discussed, the method for determining the size groupings for size premia analysis was to take the stocks traded on the NYSE and break them up into 10 deciles, after which stocks traded on the AMEX and NASDAQ were allocated into the same size groupings. This same methodology was used to split the 10th decile into two parts: 10a and 10b, with 10b being the smaller of the two. This is equivalent to breaking the stocks down into 20 size groupings, with portfolios 19 and 20 representing 10a and 10b.

Table 7-7 shows that the pattern continues; as companies get smaller their size premium increases. There is a noticeable increase in size premium from 10a to 10b, which can also be demonstrated visually in Graph 7-3. This can be useful in valuing companies that are extremely small. Table 7-6 presents the size, composition, and breakpoints of deciles 10a and 10b. First, the recent number of companies and total decile market capitalization are presented. Then the largest company and its market capitalization are presented.

Breaking the smallest decile down lowers the significance of the results compared to results for the 10th decile taken as a whole, however. The same holds true for comparing the 10th decile with the Micro-Cap aggregation of the 9th and 10th deciles. The more stocks included in a sample the more significance can be placed on the results. While this is not as much of a factor with the recent years of data, these size premia are constructed with data back to 1926. By breaking the 10th decile down into smaller components we have cut the number of stocks included in each grouping. The change over time of the number of stocks included in the 10th decile for the NYSE/AMEX/NASDAQ is presented in Table 7-8. With fewer stocks included in the analysis early on, there is a strong possibility that just a few stocks can dominate the returns for those early years.

While the number of companies included in the 10th decile for the early years of our analysis is low, it is not too low to still draw meaningful results even when broken down into subdivisions 10a and 10b. All things considered, size premia developed for deciles 10a and 10b are significant and can be used in cost of capital analysis. These size premia should greatly enhance the development of cost of capital analysis for very small companies.

Table 7-8‡
Size-Decile Portfolios 10a and 10b of the NYSE/AMEX/NASDAQ, Largest Company and Its Market Capitalization
September 30, 2007

Decile	Recent Number of Companies	Recent Decile Market Capitalization (in thousands)	Market Capitalization of Largest Company (in thousands)	Company Name
10a	386	108,458,780	363,479	Emergency Medical Services Corp.
10b	1,405	143,681,297	211,590	Miller Industries Inc., Tenn.

Note: These numbers may not aggregate to equal decile 10 figures.

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Table 7-7[1]
Long-Term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ, with 10th Decile Split
1926–2007

	Beta*	Arithmetic Mean Return	Realized Return in Excess of Riskless Rate**	Estimated Return in Excess of Riskless Rate†	Size Premium (Return in Excess of CAPM)
1-Largest	0.91	11.31%	6.10%	6.45%	-0.34%
2	1.03	13.16%	7.95%	7.27%	0.68%
3	1.10	13.72%	8.51%	7.75%	0.76%
4	1.12	14.07%	8.86%	7.93%	0.93%
5	1.16	14.85%	9.64%	8.17%	1.47%
6	1.18	15.14%	9.93%	8.33%	1.60%
7	1.24	15.46%	10.26%	8.76%	1.50%
8	1.30	16.58%	11.38%	9.18%	2.20%
9	1.35	17.28%	12.07%	9.51%	2.56%
10a	1.42	19.22%	14.01%	10.02%	3.99%
10b-Smallest	1.39	24.71%	19.50%	9.77%	9.73%
Mid-Cap, 3–5	1.12	14.01%	8.81%	7.88%	0.92%
Low-Cap, 6–8	1.22	15.49%	10.29%	8.84%	1.65%
Micro-Cap, 9–10	1.36	18.46%	13.25%	9.69%	3.65%

*Betas are estimated from monthly portfolio total returns in excess of the 30-day U.S. Treasury bill total return versus the S&P 500 total returns in excess of the 30-day U.S. Treasury bill, January 1926–December 2007.

**Historical riskless rate is measured by the 82-year arithmetic mean income return component of 20-year government bonds (5.21 percent).

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (12.26 percent) minus the arithmetic mean income return component of 20-year government bonds (5.21 percent) from 1926–2007.

Graph 7-3[1]
Security Market Line versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ, with 10th Decile Split
1926-2007

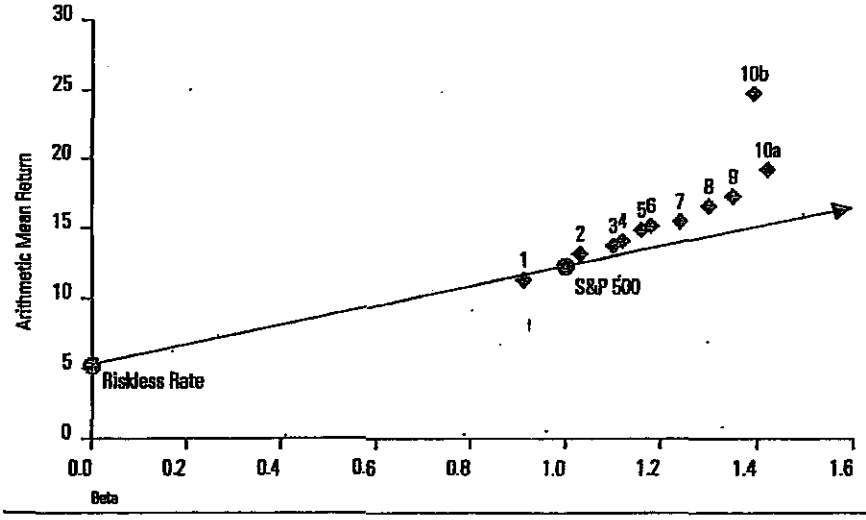

Table 7-8[‡]
Historical Number of Companies for NYSE/AMEX/NASDAQ Decile 10

Sept.	Number of Companies
1926	52*
1930	72
1940	78
1950	100
1960	109
1970	865
1980	685
1990	1,814
2000	1,927
2005	1,746
2006	1,744
2007	1,775

*The fewest number of companies was 49 in March, 1926

Alternative Methods of Calculating the Size Premia

The size premia estimation method presented above makes several assumptions with respect to the market benchmark and the measurement of beta. The impact of these assumptions can best be examined by looking at some alternatives. In this section we will examine the impact on the size premia of using a different market benchmark for estimating the equity risk premia and beta. We will also examine the effect on the size premia study of using sum beta or an annual beta.[4]

Changing the Market Benchmark

In the original size premia study, the S&P 500 is used as the market benchmark in the calculation of the realized historical equity risk premium and of each size group's beta. The NYSE total value-weighted index is a common alternative market benchmark used to calculate beta. Table 7-9 uses this market benchmark in the calculation of beta. In order to isolate the size effect, we require an equity risk premium based on a large company stock benchmark. The NYSE deciles 1–2 large company index offers a mutually exclusive set of portfolios for the analysis of the smaller company groups: mid-cap deciles 3–5, low-cap deciles 6–8, and micro-cap deciles 9–10. The size premia analyses using these benchmarks are summarized in Table 7-9 and depicted graphically in Graph 7-4.

For the entire period analyzed, 1926–2007, the betas obtained using the NYSE total value-weighted index are higher than those obtained using the S&P 500. Since smaller companies had higher betas using the NYSE benchmark, one would expect the size premia to shrink. However, as was illustrated in Chapter 5, the equity risk premium calculated using the NYSE deciles 1–2 benchmark results in a value of 6.35, as opposed to 7.05 when using the S&P 500. The effect of the higher betas and lower equity risk premium cancel each other out, and the resulting size premia in Table 7-9 are slightly higher than those resulting from the original study.

4 Sum beta is the method of beta estimation described in Chapter 6 that was developed to better account for the lagged reaction of small stocks to market movements. The sum beta methodology was developed for the same reason that the size premia were developed; small company betas were too small to account for all of their excess returns.

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Costs of Capital for Projects of Differing Riskiness. As noted in Chapter 11, care must be taken to assign different *risk-adjusted discount rates* to capital budgeting projects of differing degrees of riskiness.

Capital Structure Weights. In this chapter we have simply taken as given the target capital structure and used this target to obtain the weights used to calculate k. As we shall see in Chapter 17, establishing the target capital structure is a major task in itself.

Dynamic Considerations. Capital budgeting and cost of capital estimates are a part of the *planning process*—they deal with ex ante, or estimated, data rather than ex post, or historical data. Hence, we can be wrong about the location of the IOS and the MCC. For example, we can underestimate the MCC and hence accept projects that, with 20-20 hindsight, we should have rejected. In a dynamic, changing world this *is a real problem. Interest rates and money costs* could be low at the time plans are being laid and contracts to build plants are being let, but six or eight months later these capital costs could have risen substantially. Thus, a project that formerly looked good could turn out to be a bad one because we improperly forecasted the MCC schedule.

Although this listing of problem areas may appear formidable, the state of the art in cost of capital estimation is really not in bad shape. The procedures outlined in this chapter can be used to obtain cost of capital estimates that are sufficiently accurate for practical purposes, and the problems listed here merely indicate the desirability of certain refinements. The refinements are not unimportant, but the problems we have identified do not invalidate the usefulness of the procedures outlined in the chapter.

Small Business

COST OF EQUITY CAPITAL FOR SMALL FIRMS

The three equity cost estimating techniques that were discussed in this chapter have serious limitations when applied to small firms, thus increasing the need for the small-business manager to use judgment. Consider first the constant growth model, $k_s = D_1/P_0 + g$. Imagine a small, rapidly growing firm, such as Bio-Technology General (BTG), which does not now and will not in the foreseeable future pay dividends. For firms like this, the constant growth model is simply not applicable. In fact, it is difficult to imagine any dividend model that would be of practical benefit for such a firm because of the difficulty of estimating growth rates.

The method which calls for adding a risk premium of about 3 percent to the firm's cost of debt can be used for some small firms, but problems arise if the firm does not have a fixed rate issue *outstanding*. BTG, for example, has no such debt issue outstanding, so we could not use the bond-yield-plus-risk-premium approach for BTG.

The third approach, the CAPM, is also often unusable because if the firm's stock is not publicly

traded, then we cannot calculate the firm's beta. For the privately owned *firm*, we might use the so-called "pure play" CAPM technique. This involves finding a firm in the same line of business that does have *public* equity, estimating its beta, and then using this beta as a proxy for that of the small business in question.

To illustrate the pure play approach, again consider BTG. The firm is not publicly traded, so we cannot estimate its beta. However, data are available on more established firms, such as Genentech and Genetic Industries, so we could use their betas as representative of the biological and genetic engineering industry. Of course, these firms' betas would have to be subjectively modified to reflect *their* larger sizes and more established positions, as well as to take account of the differences in the nature of their products and *their capital structures* as compared to those of BTG. Still, as long as there are public companies in similar lines of business *available for comparison*, the estimates of their betas can be used to help estimate the cost of capital of a firm whose equity is not publicly traded. Note that a "liquidity premium" as discussed in Chapter 3 would also have to be added to reflect the illiquidity of the small, *nonpublic firm's* stock.

Flotation Costs for Small Issues

When external equity capital is raised, flotation costs increase the cost of equity capital beyond what it would be for internal funds. These external flotation costs are especially *significant for smaller firms*, and they can substantially affect capital budgeting decisions involving external equity funds. To illustrate this point, consider a firm that is expected to pay constant dividends forever, and hence whose growth rate is zero. In this case, if F is the percentage flotation cost, then the cost of equity capital is $k_e = D_1/[P_0(1 - F)]$. The higher the flotation cost, the higher the cost of external equity.

How big is F? According to the latest Securities and Exchange Commission data, the average flotation cost of large common stock offerings (more than $50 million) is only about 4 percent. For a firm that is expected to provide a 15 percent dividend yield (that is, $D_1/P_0 = 15\%$), the cost of equity is 15%/(1 − 0.04), or 15.6 percent. However, the *SEC's data on small stock offerings* (less than $1 million) show that flotation costs for such issues average about 21 percent. Thus, the cost of equity *capital in the preceding* example would be 15%/(1 − 0.21), or about 19 percent. When we compare this to the 15.6 percent for large offerings, it is clear that a small firm would have to earn considerably more on the same project than a large firm. Small firms are therefore at a substantial *disadvantage* because of the effects of flotation costs.

The Small-Firm Effect

A *number* of researchers have observed that portfolios of small-firm stocks have earned consistently higher average returns than those of large-firm stocks; this is called the "small-firm effect." On the surface, it would seem to be advantageous to the small firm to provide *average returns* in the stock market that are higher than those of large firms. In reality, it is bad news for the small firm; what the *small-firm effect* means is that the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of large firms. Therefore, the cost of equity capital is higher for small firms. This compounds the high flotation cost problem noted above.

It may be argued that stocks of small firms are riskier than those of large ones and that this *accounts for the differences* in returns. It is true that academic research usually finds that betas are higher on average for small firms than for large ones. However, the larger returns for small firms remain larger even after adjusting for the effects of their higher *risks as reflected* in their beta coefficients.

The small-firm effect is an anomaly in the sense that *it is not consistent* with the CAPM theory. Still, higher returns reflect a higher cost of capital, so we must conclude that smaller firms do have higher capital costs than otherwise similar larger firms. The manager of a small firm should take this factor into account when estimating his or *her firm's cost of* equity capital. In general, the cost of equity capital appears to be about four percentage points higher for small firms (those with market values of less than $20 million) than for large, New York Stock Exchange firms with similar risk characteristics.

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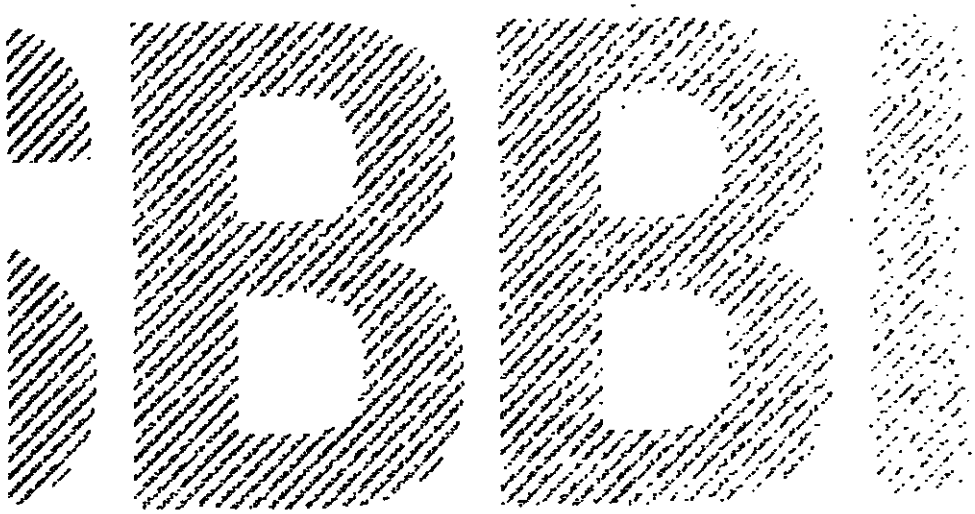

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Table 6-7
Ordinary Least Squares Betas for the NYSE Size Portfolios
1926–2007

	January 2003–December 2007	1926–2007
Decile 1	0.89	0.90
Decile 2	0.97	1.02
Decile 3	1.17	1.08
Decile 4	1.26	1.11
Decile 5	1.23	1.13
Decile 6	1.33	1.16
Decile 7	1.37	1.21
Decile 8	1.53	1.27
Decile 9	1.61	1.32
Decile 10	1.42	1.40

By looking at the same analysis over a number of 60-month periods, the relationship between the betas of large and small companies becomes clearer. Graph 6-9 shows rolling 60-month betas for selected NYSE deciles. The beta of each decile is calculated over the 60-month period January 1, 1926 through December 31, 1930, then the calculation is carried forward for each consecutive 60-month period through December 31, 2007. While the portfolio containing the largest companies has a very stable beta, the portfolio containing the smallest companies has periods where the beta is high and periods where it is low. Referring back to Table 6-7, the most recent 60-month period is one in which small company betas are low. There does not appear to be the consistency in the beta measure of smaller companies as there is with larger companies.

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9 Capital Budgeting and Risk

Long before the development of modern theories linking risk and expected return, smart financial managers adjusted for risk in capital budgeting. They realized intuitively that, other things being equal, risky projects are less desirable than safe ones. Therefore financial managers demanded a higher rate of return from risky projects, or they based their decisions on conservative estimates of the cash flows.

Various rules of thumb are often used to make these risk adjustments. For example, many companies estimate the rate of return required by investors in their securities and use the company cost of capital to discount the cash flows on all new projects. Since investors require a higher rate of return from a very risky company, such a firm will have a higher company cost of capital and will set a higher discount rate for its new investment opportunities. For example, in Table 8-1 we estimated that investors expected a rate of return of .163 or about 16.5 percent from Microsoft common stock. Therefore, according to the company cost of capital rule, Microsoft should have been using a 16.5 percent discount rate to compute project net present values.[1]

This is a step in the right direction. Even though we can't measure risk or the expected return on risky securities with absolute precision, it is still reasonable to assert that Microsoft faced more risk than the average firm and, therefore, should have demanded a higher rate of return from its capital investments.

But the company cost of capital rule can also get a firm into trouble if the new projects are more or less risky than its existing business. Each project should be evaluated at its *own* opportunity cost of capital. This is a clear implication of the value-additivity principle introduced in Chapter 7. For a firm composed of assets A and B, the firm value is

$$\text{Firm value} = PV(AB) = PV(A) + PV(B) = \text{sum of separate asset values}$$

Here PV(A) and PV(B) are valued just as if they were mini-firms in which stockholders could invest directly. Investors would value A by discounting its forecasted cash flows at a rate reflecting the risk of A. They would value B by discounting at a rate reflecting the risk of B. The two discount rates will, in general, be different.

[1]Microsoft did not use any significant amount of debt financing. Thus its cost of capital is the rate of return investors expect on its common stock. The complications caused by debt are discussed later in this chapter.

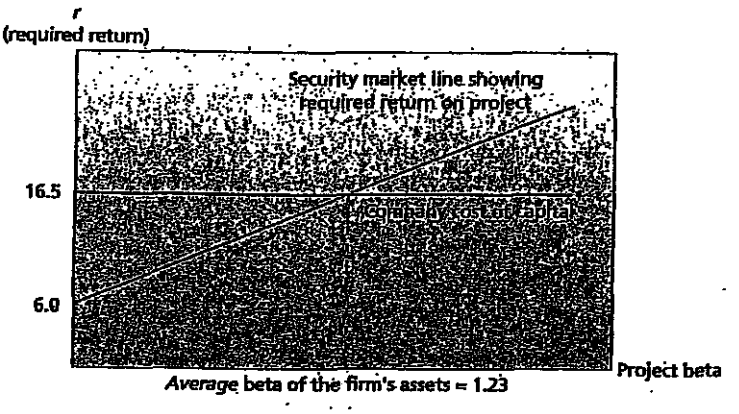

Figure 9-1 A comparison between the company cost of capital rule and the required return under the capital asset pricing model. Microsoft's company cost of capital is about 16.5 percent. This is the correct discount rate only if the project beta is 1.23. In general, the correct discount rate increases as project beta increases. Microsoft should accept projects with rates of return above the security market line relating required return to beta.

If the firm considers investing in a third project C, it should also value C as if C were a mini-firm. That is, the firm should discount the cash flows of C at the expected rate of return that investors would demand to make a separate investment in C. *The true cost of capital depends on the use to which the capital is put.*

This means that Microsoft should accept any project that more than compensates for the *project's beta*. In other words, Microsoft should accept any project lying above the upward-sloping line that links expected return to risk in Figure 9-1. If the project has a high risk, Microsoft needs a higher prospective return than if the project has a low risk. Now contrast this with the company cost of capital rule, which is to accept any project *regardless of its risk* as long as it offers a higher return than the *company's* cost of capital. In terms of Figure 9-1, the rule tells Microsoft to accept any project above the horizontal cost-of-capital line, i.e., any project offering a return of more than 16.5 percent.

It is clearly silly to suggest that Microsoft should demand the same rate of return from a very safe project as from a very risky one. If Microsoft used the company cost of capital rule, it would reject many good low-risk projects and accept many poor high-risk projects. It is also silly to suggest that just because Duke Power has a low company cost of capital, it is justified in accepting projects that Microsoft would reject. If you followed such a rule to its seemingly logical conclusion, you would think it possible to enlarge the company's investment opportunities by investing a large sum in Treasury bills. That would make the common stock safe and create a low company cost of capital.[2]

The notion that each company has some individual discount rate or cost of capital is widespread, but far from universal. Many firms require different returns from different categories of investment. For example, discount rates might be set as follows:

[2]If the present value of an asset depended on the identity of the company that bought it, present values would not add up. Remember, a good project is a good project is a good project.

Category	Discount Rate
Speculative ventures	30%
New products	20%
Expansion of existing business	15% (company cost of capital)
Cost improvement, known technology	10%

The capital asset pricing model is widely used by large corporations to estimate the discount rate. It states

$$\text{Expected project return} = r = r_f + (\text{project beta})(r_m - r_f)$$

To calculate this, you have to figure out the project beta. Before thinking about the betas of individual projects, we will look at some problems you would encounter in *using* beta to estimate a company's cost of capital. It turns out that beta is difficult to measure accurately for an individual firm: Much greater accuracy can be achieved by looking at an average of similar companies. But then we have to define *similar*. Among other things, we will find that a firm's borrowing policy affects its stock beta. It would be misleading, e.g., to average the betas of Chrysler, which has been a heavy borrower, and General Motors, which has generally borrowed less.

The company cost of capital is the correct discount rate for projects that have the same risk as the company's existing business but *not* for those projects that are safer or riskier than the company's average. The problem is to judge the relative risks of the projects available to the firm. To handle that problem, we will need to dig a little deeper and look at what features make some investments riskier than others. After you know *why* AT&T stock has less market risk than, say, Ford Motor, you will be in a better position to judge the relative risks of capital investment opportunities.

There is still another complication: Project betas can shift over time. Some projects are safer in youth than in old age; others are riskier. In this case, what do we mean by *the* project beta? There may be a separate beta for each year of the project's life. To put it another way, can we jump from the capital asset pricing model, which looks out one period into the future, to the discounted-cash-flow formula that we developed in Chapters 2 and 6 for valuing long-lived assets? Most of the time it is safe to do so, but you should be able to recognize and deal with the exceptions.

We will use the capital asset pricing model, or CAPM, throughout this chapter. But don't infer that the CAPM is the last word on risk and return. The principles and procedures covered in this chapter work just as well with other models such as arbitrage pricing theory (APT). For example, we could have started with an APT estimate of the expected rate of return on Microsoft stock; the discussion of company and project costs of capital would have followed exactly.

9-1 MEASURING BETAS

Suppose that you were considering an across-the-board expansion by your firm. Such an investment would have about the same degree of risk as the existing business. Therefore you should discount the projected flows at the company cost of capital. To estimate that, you could begin by estimating the beta of the company's stock.

An obvious way to measure the beta of the stock is to look at how its price has responded in the past to market movements. For example, in Figure 9-2*a* and *b* we have plotted monthly rates of return from AT&T and Hewlett-Packard against mar-

Thus we could view the project as offering an expected payoff of .5(1500) + .5(0) = 750, or $750,000, at $t = 1$ on a $125,000 investment at $t = 0$. Of course, the certainty equivalent of the payoff is less than $750,000, but the difference would have to be very large to justify rejecting the project. For example, if the certainty equivalent is half the forecasted cash flow and the risk-free rate is 7 percent, the project is worth $225,500:

$$NPV = C_0 + \frac{CEQ_1}{1 + r_f}$$

$$= -125 + \frac{.5(750)}{1.07} = 225.5, \text{ or } \$225{,}500$$

This is not bad for a $125,000 investment—and quite a change from the negative NPV that management got by discounting all future cash flows at 25 percent.

You sometimes hear people say that because distant cash flows are "riskier," they should be discounted at a higher rate than earlier cash flows. That is quite wrong: Using the same risk-adjusted discount rate for each year's cash flow implies a larger deduction for risk from the later cash flows. The reason is that the discount rate compensates for the risk borne *per period*. The more distant the cash flows, the greater the number of periods and the larger the *total* risk adjustment.

It makes sense to use a single risk-adjusted discount rate as long as the project has the same market risk at each point in its life. But look out for exceptions like the electric mop project, where market risk changes as time passes.

9-6 SUMMARY

In Chapter 8 we set out some basic principles for valuing risky assets. In this chapter we have shown you how to apply these principles to practical situations.

The problem is easiest when you believe that the project has the same market risk as the company's existing assets. In this case, the required return equals the required return on a portfolio of the company's securities. This is called the *company cost of capital*.

Capital asset pricing theory states that the required return on any asset depends on its risk. In this chapter we have defined risk as beta and used the capital asset pricing model to calculate expected returns.

The most common way to estimate the beta of a stock is to figure out how the stock price has responded to market changes in the past. Of course, this will give you only an estimate of the stock's true beta. You may get a more reliable figure if you calculate an industry beta for a group of similar companies.

Suppose that you now have an estimate of the stock's beta. Can you plug that into the capital asset pricing model to find the company's cost of capital? No, the stock beta may reflect both business and financial risk. Whenever a company borrows money, it increases the beta (and the expected return) of its stock. Remember, the company cost of capital is the expected return on a portfolio of all the firm's securities, not just the common stock. You can calculate it by estimating the expected return on each of the securities and then taking a weighted average of these separate returns. Or you can calculate the beta of the portfolio of securities and then plug this *asset beta* into the capital asset pricing model.

The company cost of capital is the correct discount rate for projects that have the same risk as the company's existing business. Many firms, however, use the company cost of capital to discount the forecasted cash flows on all new projects. This is a dangerous procedure. In principle, each project should be evaluated at its own opportunity cost of capital; the true cost of capital depends on the use to which the capital is put. If we wish to estimate the cost of capital for a particular project, it is *project risk* that counts. Of course the company cost of capital is fine as a discount rate for average-risk projects. It is also a useful starting point for estimating discount rates for safer or riskier projects.

We cannot give you a neat formula that will allow you to estimate project betas, but we can give you some clues. First, avoid adding fudge factors to discount rates to offset worries about bad project outcomes. Adjust cash-flow forecasts to give due weight to bad outcomes as well as good; *then* ask whether the chance of bad outcomes adds to the project's market risk. Second, you can often identify the characteristics of a high- or low-beta project even when the project beta cannot be calculated directly. For example, you can try to figure out how much the cash flows are affected by the overall performance of the economy: Cyclical investments are generally high-beta investments. You can also look at the project's operating leverage: Fixed production charges work like fixed debt charges; i.e., they increase beta.

There is one more fence to jump. Most projects produce cash flows for several years. Firms generally use the same risk-adjusted rate r to discount each of these cash flows. When they do this, they are implicitly assuming that cumulative risk increases at a constant rate as you look further into the future. That assumption is usually reasonable. It is precisely true when the project's future beta will be constant, i.e., when risk *per period* is constant.

But exceptions sometimes prove the rule. Be on the alert for projects where risk clearly does *not* increase steadily. In these cases, you should break the project into segments within which the same discount rate can be reasonably used. Or you should use the certainty-equivalent version of the DCF model, which allows separate risk adjustments to each period's cash flow.

APPENDIX: USING THE CAPITAL ASSET PRICING MODEL TO CALCULATE CERTAINTY EQUIVALENTS

When calculating present value, you can take account of risk in either of two ways. You can discount the expected cash flow C_1 by the risk-adjusted discount rate r:

$$PV = \frac{C_1}{1 + r}$$

Alternatively, you can discount the certainty-equivalent cash flow CEQ_1 by the risk-free rate of interest r_f:

$$PV = \frac{CEQ_1}{1 + r_f}$$

In this appendix we show how you can derive CEQ_1 from the capital asset pricing model.

We know from our present value formula that $1 + r$ equals the expected dollar payoff on the asset divided by its present value:

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expectations. The sheer volume of earnings forecasts available from the investment community relative to the scarcity of dividend forecasts attests to their importance. The fact that these investment information providers focus on growth in earnings rather than growth in dividends indicates that the investment community regards earnings growth as a superior indicator of future long-term growth. Surveys of analytical techniques actually used by analysts reveal the dominance of earnings and conclude that earnings are considered far more important than dividends. Finally, Value Line's principal investment rating assigned to individual stocks, Timeliness Rank, is based primarily on earnings, accounting for 65% of the ranking.

Historical Growth Rates Versus Analysts' Forecasts

Obviously, historical growth rates as well as analysts' forecasts provide relevant information to the investor with regard to growth expectations. Each proxy for expected growth brings information to the judgment process from a different light. Neither proxy is without blemish; each has advantages and shortcomings. Historical growth rates are available and easily verifiable, but may no longer be applicable if structural shifts have occurred. Analysts' growth forecasts may be more relevant since they encompass both history and current changes, but are nevertheless imperfect proxies.

9.5 Growth Estimates: Sustainable Growth Method

The third method of estimating the growth component in the DCF model, alternately referred to as the "sustainable growth" or "retention ratio" method, can be used by investment analysts to predict future growth in earnings and dividends. In this method, the fraction of earnings expected to be retained by the company, b, is multiplied by the expected return on book equity, r, to produce the growth forecast. That is,

$$g = b \times r$$

The conceptual premise of the method, enunciated in Chapter 8, Section 8.4, is that future growth in dividends for existing equity can only occur if a portion of the overall return to investors is reinvested into the firm instead of being distributed as dividends.

For example, if a company earns 12% on equity, and pays all the earnings out in dividends, the retention factor, b, is zero and earnings per share will not grow for the simple reason that there are no increments to the asset base (rate base). Conversely, if the company retains all its earnings and pays no dividends, it would grow at an annual rate of 12%. Or again, if the company earns 12% on equity and pays out 60% of the earnings in dividends, the

retention factor is 40%, and earnings growth will be 40% × 12% = 4.8% per year.

In implementing the method, both 'b' and 'r' should be the rate that the market expects to prevail in the future. If no explicit forecast of 'b' is available, it is reasonable to assume that the utility's future retention ratio will, on average, remain unchanged from its present level. Or, it can be estimated by taking a weighted average of past retention ratios as a proxy for the future on the grounds that utilities' target retention ratios are usually, although not always, stable.[14]

Both historical and forecast values of 'r' can be used to estimate g, although forecast values are superior. The use of historical realized book returns on equity rather than the expected return on equity is questionable since reliance on achieved results involves circular reasoning. Realized returns are the results of the regulatory process itself, and are also subject to tests of fairness and reasonableness. As a gauge of the expected return on book equity, either direct published analysts' forecasts of the long-run expected return on equity, or authorized rates of return in recent regulatory cases can be used as a guide. As a floor estimate, it seems reasonable for investors to expect allowed equity returns by state regulatory commissions to be in excess of the current cost of debt to the utility in question.

Another way of obtaining the expected 'r' is to examine its fundamental determinants. Since earnings per share, E, can be stated as dividends per share, D, divided by the payout ratio (1 − b), the earnings per share capitalized by investors can be inferred by dividing the current dividend by an expected payout ratio. Provided that a utility company follows a fairly stable dividend policy, the possibility of error is less when estimating the payout than when estimating the expected return on equity or the expected growth rate. Using this approach, and denoting book value per share by B, the expected return on equity is:

$$r = E/B = (D/(1 - b)) / B \qquad (9\text{-}9)$$

Estimates of the expected payout ratio can be inferred from historical 10-year average payout ratio data for utilities, assuming a stable dividend policy has been pursued. Since individual averages frequently tend to regress toward the grand mean, the historical payout ratio needs to be adjusted for this tendency, using statistical techniques for predicting future values based on this tendency of individual values to regress toward the grand mean over time.

An application of the sustainable growth method is shown in example 9-1.

[14] Statistically superior predictions of future averages are made by weighting individual past averages with the grand mean, with the variance within the individual averages and the variance across individual averages serving as weights.

EXAMPLE 9-1

Southeastern Electric's sustainable growth rate is required for upcoming rate case testimony. As a gauge of the expected return on equity, authorized rates of return in recent decisions for eastern U.S. electric utilities as reported by Value Line for 2005 and 2006 averaged 11%, with a standard deviation of 1%. In other words, the majority of utilities were authorized to earn 11%, with the allowed return on equity ranging from 10% to 12%. As a gauge of the expected retention ratio, the average 2006 payout ratio of 34 eastern electric utilities as compiled by Value Line was 60%, which indicates an average retention ratio of 40%, with a standard deviation of 5%. This was consistent with the long-run target retention ratio indicated by the management of Southeastern Electric. It is therefore reasonable to postulate that investors expect a retention ratio ranging from 35% to 45% for the company with a likely value of 40%. In Table 9-4 below, expected retention ratios of 35% to 45% and assumed returns on equity from 10% to 12% are multiplied to produce sustainable growth rates ranging from 3.8% to 5.4% with a likely value of 4.6%.

TABLE 9-4
SUSTAINABLE GROWTH METHOD ILLUSTRATION

Expected Retention Ratio (b)	Expected Return on Book Equity (r)		
	10%	11%	12%
35%	3.5%	3.9%	4.2%
40%	4.0%	4.4%	4.8%
45%	4.5%	5.0%	5.4%

It should be pointed out that published forecasts of the expected return on equity by analysts such as Value Line are sometimes based on end-of-period book equity rather than on average book equity. The following formula[15]

[15] The return on year-end common equity, r, is defined as $r = E/B_t$, where E is earnings per share, and B_t is the year-end book value per share. The return on average common equity, r_a, is defined as: $r_a = E/B_a$ where B_a = average book value per share. The latter is by definition: $B_a = (B_t + B_{t-1})/2$ where B_t is the year-end book equity per share and B_{t-1} is the beginning-of-year book equity per share. Dividing r by r_a and substituting:

$$\frac{r}{r_a} = \frac{E/B_t}{E/B_a} = \frac{B_a}{B_t} + \frac{B_t + B_{t-1}}{2B_t}$$

Solving for r_a, a formula for translating the return on year-end equity into the return on average equity is obtained, using reported beginning-of-the year and end-of-year common equity figures:

$$r_a = r\,\frac{2B_t}{B_t + B_{t-1}}$$

adjusts the reported end-of-year values so that they are based on average common equity, which is the common regulatory practice:

$$r_a = r_t \frac{2B_t}{B_t + B_{t-1}} \tag{9-10}$$

The sustainable growth method can also be extended to include external financing. From Chapter 8, the expanded growth estimate is given by:

$$g = br + sv$$

where b and r are defined as previously, s is the expected percent growth in number of shares to finance investment, and v is the profitability of the equity investment. The variable s measures the long-run expected stock financing that the utility will undertake. If the utility's investments are growing at a stable rate and if the earnings retention rate is also stable, then s will grow at a stable rate. The variable s can be estimated by taking a weighted average of past percentage increases in the number of shares. This measurement is difficult, however, owing to the sporadic and episodic nature of stock financing, and smoothing techniques must be employed. The variable v is the profitability of the equity investment and can be measured as the difference of market price and book value per share divided by the latter, as discussed in Chapter 8.

There are three problems in the practical application of the sustainable growth method. The first is that it may be even more difficult to estimate what b, r, s, and v investors have in mind than it is to estimate what g they envisage. It would appear far more economical and expeditious to use available growth forecasts and obtain g directly instead of relying on four individual forecasts of the determinants of such growth. It seems only logical that the measurement and forecasting errors inherent in using four different variables to predict growth far exceed the forecasting error inherent in a direct forecast of growth itself.

Second, there is a potential element of circularity in estimating g by a forecast of b and ROE for the utility being regulated, since ROE is determined in large part by regulation. To estimate what ROE resides in the minds of investors is equivalent to estimating the market's assessment of the outcome of regulatory hearings. Expected ROE is exactly what regulatory commissions set in determining an allowed rate of return. In other words, the method requires an estimate of return on equity before it can even be implemented. Common sense would dictate the inconsistency of a return on equity recom-

mendation that is different than the expected ROE that the method assumes the utility will earn forever. For example, using an expected return on equity of 11% to determine the growth rate and using the growth rate to recommend a return on equity of 9% is inconsistent. It is not reasonable to assume that this regulated utility company is expected to earn 11% forever, but recommend a 9% return on equity. The only way this utility can earn 11% is that rates be set by the regulator so that the utility will in fact earn 11%. One is assuming, in effect, that the company will earn a return rate exceeding the recommended cost of equity forever, but then one is recommending that a different rate be granted by the regulator. In essence, using an ROE in the sustainable growth formula that differs from the final estimated cost of equity is asking the regulator to adopt two different returns.

The circularity problem is somewhat dampened by the self-correcting nature of the DCF model. If a high equity return is granted, the stock price will increase in response to the unanticipated favorable return allowance, lowering the dividend yield component of market return in compensation for the high g induced by the high allowed return. At the next regulatory hearing, more conservative forecasts of r would prevail. The impact on the dual components of the DCF formula, yield and growth, are at least partially offsetting.

Third, the empirical finance literature discussed earlier demonstrates that the sustainable growth method of determining growth is not as significantly correlated to measures of value, such as stock price and price/earnings ratios, as other historical growth measures or analysts' growth forecasts. Other proxies for growth, such as historical growth rates and analysts' growth forecasts, outperform retention growth estimates. See for example Timme and Eiseman (*1989*).

In summary, there are three proxies for the expected growth component of the DCF model: historical growth rates, analysts' forecasts, and the sustainable growth method. Criteria in choosing among the three proxies should include ease of use, ease of understanding, theoretical and mathematical correctness, and empirical validation. The latter two are crucial. The method should be logically valid and consistent, and should possess an adequate track record in predicting and explaining security value. The retention growth method is the weakest of the three proxies on both conceptual and empirical grounds. The research in this area has shown that the first two growth proxies do a better job of explaining variations in market valuation (M/B and P/E ratios) and are more highly correlated to measures of value than is the retention growth proxy.

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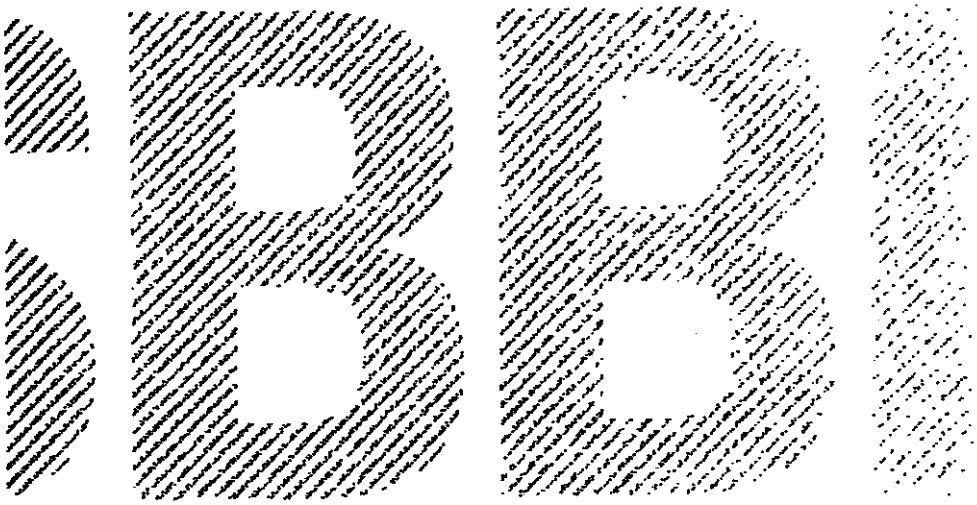
1926–2007



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For example, if bond yields rise unexpectedly, investors can receive a higher coupon payment from a newly issued bond than from the purchase of an outstanding bond with the former lower-coupon payment. The outstanding lower-coupon bond will thus fail to attract buyers, and its price will decrease, causing its yield to increase correspondingly, as its coupon payment remains the same. The newly priced outstanding bond will subsequently attract purchasers who will benefit from the shift in price and yield; however, those investors who already held the bond will suffer a capital loss due to the fall in price.

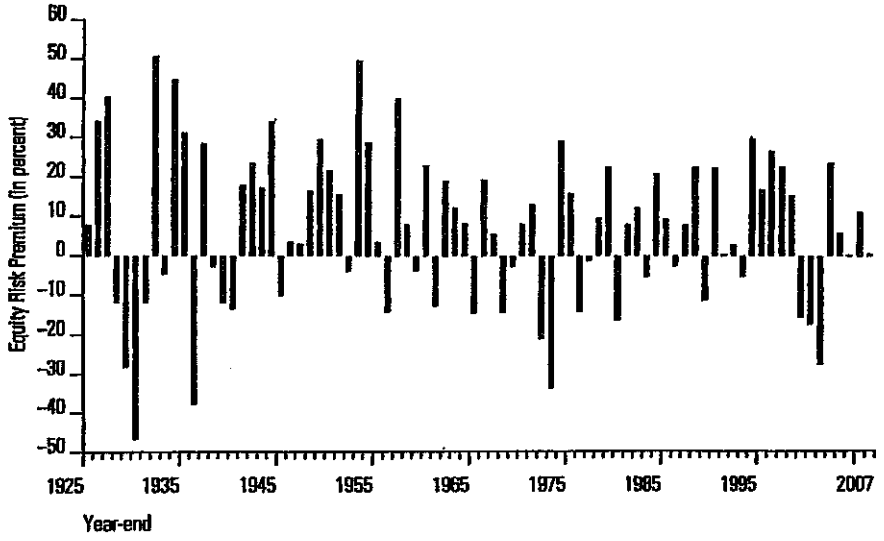
Anticipated changes in yields are assessed by the market and figured into the price of a bond. Future changes in yields that are not anticipated will cause the price of the bond to adjust accordingly. Price changes in bonds due to unanticipated changes in yields introduce price risk into the total return. Therefore, the total return on the bond series does not represent the riskless rate of return.The income return better represents the unbiased estimate of the purely riskless rate of return, since an investor can hold a bond to maturity and be entitled to the income return with no capital loss.

Arithmetic versus Geometric Means

The equity risk premium data presented in this book are arithmetic average risk premia as opposed to geometric average risk premia. The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance, since it represents the compound average return.

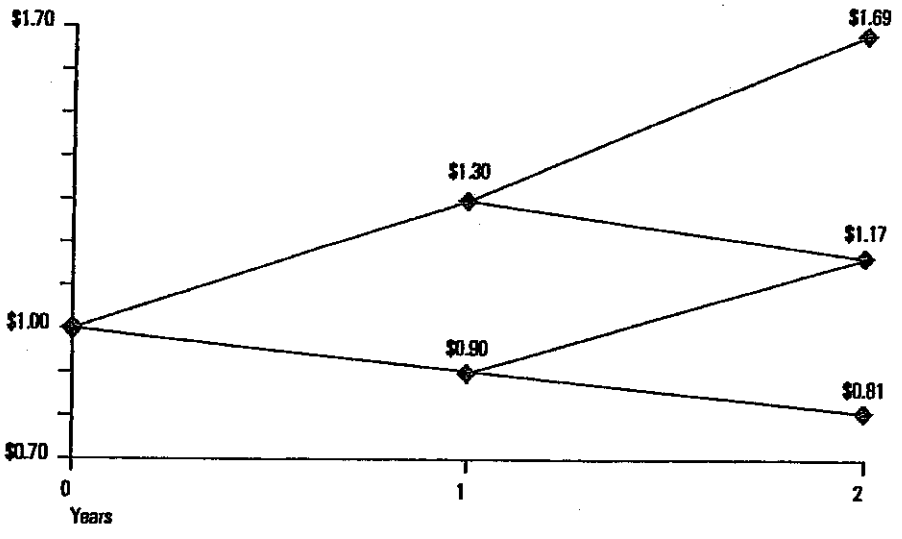
The argument for using the arithmetic average is quite straightforward. In looking at projected cash flows, the equity risk premium that should be employed is the equity risk premium that is expected to actually be incurred over the future time periods. Graph 5-3 shows the realized equity risk premium for each year based on the returns of the S&P 500 and the income return on long-term government bonds. (The actual, observed difference between the return on the stock market and the riskless rate is known as the realized equity risk premium.) There is considerable volatility in the year-by-year statistics. At times the realized equity risk premium is even negative.

Graph 5-3
Realized Equity Risk Premium Per Year
1926–2007



To illustrate how the arithmetic mean is more appropriate than the geometric mean in discounting cash flows, suppose the expected return on a stock is 10 percent per year with a standard deviation of 20 percent. Also assume that only two outcomes are possible each year: +30 percent and –10 percent (i.e., the mean plus or minus one standard deviation). The probability of occurrence for each outcome is equal. The growth of wealth over a two-year period is illustrated in Graph 5-4.

Graph 5-4



The most common outcome of $1.17 is given by the geometric mean of 8.2 percent. Compounding the possible outcomes as follows derives the geometric mean:

$$[(1+0.30)\times(1-0.10)]^{2}-1=0.082$$

However, the expected value is predicted by compounding the arithmetic, not the geometric, mean. To illustrate this, we need to look at the probability-weighted average of all possible outcomes:

(0.25 × $1.69) =	$0.4225
+ (0.50 × $1.17) =	$0.5850
+ (0.25 × $0.81) =	$0.2025
Total	$1.2100

Therefore, $1.21 is the probability-weighted expected value. The rate that must be compounded to achieve the terminal value of $1.21 after 2 years is 10 percent, the arithmetic mean:

$$\$1\times(1+0.10)^{2}=\$1.21$$

The geometric mean, when compounded, results in the median of the distribution:

$$\$1\times(1+0.082)^{2}=\$1.17$$

The arithmetic mean equates the expected future value with the present value; it is therefore the appropriate discount rate.

Appropriate Historical Time Period

The equity risk premium can be estimated using any historical time period. For the U.S., market data exists at least as far back as the late 1800s. Therefore, it is possible to estimate the equity risk premium using data that covers roughly the past 100 years.

Our equity risk premium covers the time period from 1926 to the present. The original data source for the time series comprising the equity risk premium is the Center for Research in Security Prices. CRSP chose to begin their analysis of market returns with 1926 for two main reasons. CRSP determined that the time period around 1926 was approximately when quality financial data became available. They also made a conscious effort to include the period of extreme market volatility from the late twenties and early thirties; 1926 was chosen because it includes one full business cycle of data before the market crash of 1929. These are the most basic reasons why our equity risk premium calculation window starts in 1926.

Implicit in using history to forecast the future is the assumption that investors' expectations for future outcomes conform to past results. This method assumes that the price of taking on risk changes only slowly, if at all, over time. This "future equals the past" assumption is most applicable to a random time-series variable. A time-series variable is random if its value in one period is independent of its value in other periods.

Does the Equity Risk Premium Revert to Its Mean over Time?

Some have argued that the estimate of the equity risk premium is upwardly biased since the stock market is currently priced high. In other words, since there have been several years with extraordinarily high market returns and realized equity risk premia, the expectation is that returns and realized equity risk premia will be lower in the future, bringing the average back to a normalized level. This argument relies on several studies that have tried to determine whether reversion to the mean exists in stock market prices and the equity risk premium.[3] Several academics contradict each other on this topic; moreover, the evidence supporting this argument is neither conclusive nor compelling enough to make such a strong assumption.

Our own empirical evidence suggests that the yearly difference between the stock market total return and the U.S. Treasury bond income return in any particular year is random. Graph 5-3, presented earlier, illustrates the randomness of the realized equity risk premium.

3 Fama, Eugene F., and Kenneth R. French. "Permanent and Temporary Components of Stock Prices," *Journal of Political Economy*, April 1988, pp. 246–273. Poterba, James M., and Lawrence H. Summers. "Mean Reversion in Stock Prices," *Journal of Financial Economics*, October 1988, pp. 27–59. Lo, Andrew W., and A. Craig MacKinlay. "Stock Market Prices Do Not Follow Random Walks: Evidence from a Simple Specification Test," *The Review of Financial Studies*, Spring 1988, pp. 41–66. Finnerty, John D., and Dean Leistikow. "The Behavior of Equity and Debt Risk Premiums: Are They Mean Reverting and Downward-Trending?" *The Journal of Portfolio Management*, Summer 1993, pp. 73–84. Ibbotson, Roger G., and Scott L. Lummer. "The Behavior of Equity and Debt Risk Premiums: Comment," *The Journal of Portfolio Management*, Summer 1994, pp. 98–100. Finnerty, John D., and Dean Leistikow. "The Behavior of Equity and Debt Risk Premiums: Reply to Comment," *The Journal of Portfolio Management*, Summer 1994, pp. 101–102.

A statistical measure of the randomness of a return series is its serial correlation. Serial correlation (or autocorrelation) is defined as the degree to which the return of a given series is related from period to period. A serial correlation near positive one indicates that returns are predictable from one period to the next period and are positively related. That is, the returns of one period are a good predictor of the returns in the next period. Conversely, a serial correlation near negative one indicates that the returns in one period are inversely related to those of the next period. A serial correlation near zero indicates that the returns are random or unpredictable from one period to the next. Table 5-3 contains the serial correlation of the market total returns, the realized long-horizon equity risk premium, and inflation.

Table 5-3
Interpretation of Annual Serial Correlations
1926–2007

Series	Serial Correlation	Interpretation
Large Company Stock Total Returns	0.03	Random
Equity Risk Premium	0.03	Random
Inflation Rates	0.65	Trend

The significance of this evidence is that the realized equity risk premium next year will not be dependent on the realized equity risk premium from this year. That is, there is no discernable pattern in the realized equity risk premium—it is virtually impossible to forecast next year's realized risk premium based on the premium of the previous year. For example, if this year's difference between the riskless rate and the return on the stock market is higher than last year's, that does not imply that next year's will be higher than this year's. It is as likely to be higher as it is lower. The best estimate of the expected value of a variable that has behaved randomly in the past is the average (or arithmetic mean) of its past values.

Table 5-4 also indicates that the equity risk premium varies considerably by decade. The complete decades ranged from a high of 17.9 percent in the 1950s to a low of 0.3 percent in the 1970s, however, thus far the 2000s have shown a –2.4 percent equity risk premium. This look at historical equity risk premium reveals no observable pattern.

Table 5-4
Long-Horizon Equity Risk Premium by Decade
1926–2007

1920s*	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s**	1997-2007
17.6%	2.3%	8.0%	17.9%	4.2%	0.3%	7.9%	12.1%	–2.4%	4.2%

*Based on the period 1926–1929.

**Based on the period 2000–2007.

Finnerty and Leistikow perform more econometrically sophisticated tests of mean reversion in the equity risk premium. Their tests demonstrate that—as we suspected from our simpler tests—the equity risk premium that was realized over 1926 to the present was almost perfectly free of mean reversion and had no statistically identifiable time trends.[4] Lo and MacKinlay conclude, "the rejection of the random walk for weekly returns does not support a mean-reverting model of asset prices."

Choosing an Appropriate Historical Period

The estimate of the equity risk premium depends on the length of the data series studied. A proper estimate of the equity risk premium requires a data series long enough to give a reliable average without being unduly influenced by very good and very poor short-term returns. When calculated using a long data series, the historical equity risk premium is relatively stable.[5] Furthermore, because an average of the realized equity risk premium is quite volatile when calculated using a short history, using a long series makes it less likely that the analyst can justify any number he or she wants. The magnitude of how shorter periods can affect the result will be explored later in this chapter.

Some analysts estimate the expected equity risk premium using a shorter, more recent time period on the basis that recent events are more likely to be repeated in the near future; furthermore, they believe that the 1920s, 1930s, and 1940s contain too many unusual events. This view is suspect because all periods contain "unusual" events. Some of the most unusual events of the last hundred years took place quite recently, including the inflation of the late 1970s and early 1980s, the October 1987 stock market crash, the collapse of the high-yield bond market, the major contraction and consolidation of the thrift industry, the collapse of the Soviet Union, the development of the European Economic Community, and the attacks of September 11, 2001.

It is even difficult for economists to predict the economic environment of the future. For example, if one were analyzing the stock market in 1987 before the crash, it would be statistically improbable to predict the impending short-term volatility without considering the stock market crash and market volatility of the 1929–1931 period.

Without an appreciation of the 1920s and 1930s, no one would believe that such events could happen. The 82-year period starting with 1926 is representative of what can happen: it includes high and low returns, volatile and quiet markets, war and peace, inflation and deflation, and prosperity and depression. Restricting attention to a shorter historical period underestimates the amount of change that could occur in a long future period. Finally, because historical event-types (not specific events) tend to

4 Though the study performed by Finnerty and Leistikow demonstrates that the traditional equity risk premium exhibits no mean reversion or drift, they conclude that, "the processes generating these risk premiums are generally mean-reverting." This conclusion is completely unrelated to their statistical findings and has received some criticism. In addition to examining the traditional equity risk premia, Finnerty and Leistikow include analyses on "real" risk premia as well as separate risk premia for income and capital gains. In their comments on the study, Ibbotson and Lummer show that these "real" risk premia adjust for inflation twice, "creating variables with no economic content." In addition, separating income and capital gains does not shed light on the behavior of the risk premia as a whole.

5 This assertion is further corroborated by data presented in *Global Investing: The Professional's Guide to the World of Capital Markets* (by Roger G. Ibbotson and Gary P. Brinson and published by McGraw-Hill, New York). Ibbotson and Brinson constructed a stock market total return series back to 1790. Even with some uncertainty about the accuracy of the data before the mid-nineteenth century, the results are remarkable. The real (adjusted for inflation) returns that investors received during the three 50-year periods and one 51-year period between 1790 and 1990 did not differ greatly from one another (that is, in a statistically significant amount). Nor did the real returns differ greatly from the overall 201-year average. This finding implies that because real stock-market returns have been reasonably consistent over time, investors can use these past returns as reasonable bases for forming their expectations of future returns.

repeat themselves, long-run capital market return studies can reveal a great deal about the future. Investors probably expect "unusual" events to occur from time to time, and their return expectations reflect this.

A Look at the Historical Results

It is interesting to take a look at the realized returns and realized equity risk premium in the context of the above discussion. Table 5-5 shows the average stock market return and the average (arithmetic mean) realized long-horizon equity risk premium over various historical time periods. Similarly, Graph 5-5 shows the average (arithmetic mean) realized equity risk premium calculated through 2007 for different starting dates. The table and the graph both show that using a longer historical period provides a more stable estimate of the equity risk premium. The reason is that any unique period will not be weighted heavily in an average covering a longer historical period. It better represents the probability of these unique events occurring over a long period of time.

Table 5-5
Stock Market Return and Equity Risk Premium Over Time
1926–2007

Period Length	Period Dates	Large Company Stock Arithmetic Mean Total Return	Long-Horizon Equity Risk Premium
82 Years	1926–2007	12.3%	7.1%
70 Years	1938–2007	12.8%	7.3%
60 Years	1948–2007	13.1%	7.1%
50 Years	1958–2007	12.2%	5.5%
40 Years	1968–2007	11.8%	4.4%
30 Years	1978–2007	14.0%	6.3%
20 Years	1988–2007	13.0%	6.6%
15 Years	1993–2007	11.8%	6.0%
10 Years	1998–2007	7.2%	1.9%
5 Years	2003–2007	13.2%	8.3%

Looking carefully at Graph 5-5 will clarify this point. The graph shows the realized equity risk premium for a series of time periods through 2007, starting with 1926. In other words, the first value on the graph represents the average realized equity risk premium over the period 1926–2007. The next value on the graph represents the average realized equity risk premium over the period 1927–2007, and so on, with the last value representing the average over the most recent five years, 2003–2007. Concentrating on the left side of Graph 5-5, one notices that the realized equity risk premium, when measured over long periods of time, is relatively stable. In viewing the graph from left to right, moving from longer to shorter historical periods, one sees that the value of the realized equity risk premium begins to decline significantly. Why does this occur? The reason is that the severe bear market of 1973–1974 is receiving proportionately more weight in the shorter, more recent average. If you continue to follow the line to the right, however, you will also notice that when 1973 and 1974 fall out of the recent average, the realized equity risk premium jumps up by nearly 1.2 percent.

STOCKS
BONDS
BILLS
AND
INFLATION

SBBI

1999
YEARBOOK

MARKET
RESULTS
FOR
1926-1998

IBBOTSON
ASSOCIATES

Calculating the Expected Equity Risk Premium

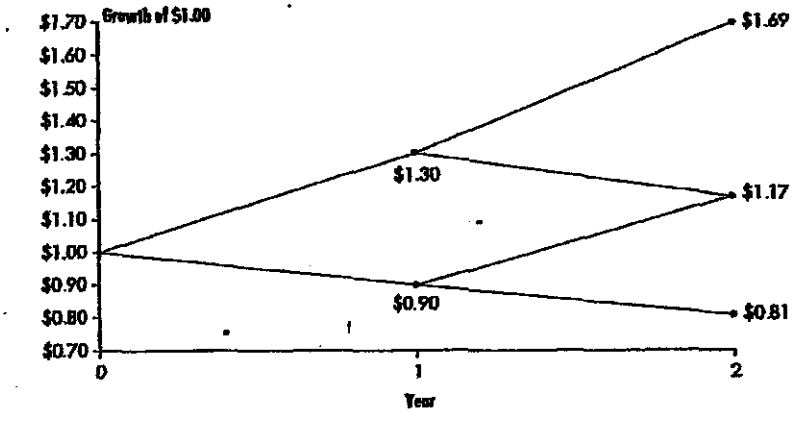
Arithmetic Versus Geometric Differences

For use as the expected equity risk premium in the CAPM, the *arithmetic* or *simple difference* of the *arithmetic means of stock market returns and riskless rates* is the relevant number. This is because the CAPM is an additive model where the cost of capital is the sum of its parts. Therefore, the CAPM expected equity risk premium must be derived by arithmetic, *not geometric*, subtraction.

Arithmetic Versus Geometric Means

The expected equity risk premium should always be calculated using the arithmetic mean. The arithmetic mean is the rate of return which, when compounded over multiple periods, gives the mean of the probability distribution of ending wealth values. (A simple example given below shows that this is true.) This makes the arithmetic mean return appropriate for computing the cost of capital. The discount rate that equates expected (mean) future values with the present value of an investment is that investment's cost of capital. The logic of using the discount rate as the cost of capital is reinforced by noting that investors will discount their expected (mean) ending wealth values from an investment back to the present using the arithmetic mean, for the reason given above. They will, therefore, require such an expected (mean) return prospectively (that is, in the present looking toward the future) to commit their capital to the investment.

For example, assume a stock has an expected return of +10 percent in each year and a standard deviation of 20 percent. Assume further that only two outcomes are possible each year— +30 percent and -10 percent (that is, the mean plus or minus one standard deviation), and that these outcomes are equally likely. (The arithmetic mean of these returns is 10 percent, and the geometric mean is 8.2 percent.) Then the growth of wealth over a two-year period occurs as shown below:



Note that the median (middle outcome) and mode (most common outcome) are given by the geometric mean, 8.2 percent, which compounds up to 17 percent over a 2-year period (hence a terminal wealth of $1.17). However, the *expected value*, or probability-weighted average of all possible outcomes, is equal to:

	(.25	x	1.69)	=	0.4225
+	(.50	x	1.17)	=	0.5850
+	(.25	x	0.81)	=	0.2025
TOTAL					1.2100

Now, the rate that must be compounded up to achieve a terminal wealth of $1.21 after 2 years is 10 percent; that is, the expected value of the terminal wealth is given by compounding up the *arithmetic*, not the geometric mean. Since the arithmetic mean equates the expected future value with the present value, it is the discount rate.

Stated another way, the arithmetic mean is correct because an investment with uncertain returns will have a higher expected ending wealth value than an investment that earns, with certainty, its compound or geometric rate of return every year. In the above example, compounding at the rate of 8.2 percent for two years yields a terminal wealth of $1.17, based on $1.00 invested. But holding the uncertain investment, with a possibility of high returns (two +30 percent years in a row) as well as low returns (two -10 percent years in a row), yields a higher expected terminal wealth, $1.21. In other words, more money is gained by higher-than-expected returns than is lost by lower-than-expected returns. Therefore, in the investment markets, where returns are described by a probability distribution, the arithmetic mean is the measure that accounts for uncertainty, and is the appropriate one for estimating discount rates and the cost of capital.

Arbitrage Pricing Theory

APT is a model of the expected return on a security. It was originated by Stephen A. Ross, and elaborated by Richard Roll. APT treats the expected return on a security (*i.e.*, its cost of capital) as the sum of the payoffs for an indeterminate number of risk factors, where the amount of each risk factor inherent in a given security is estimated. Like the CAPM, APT is a model that is consistent with equilibrium and does not attempt to outguess the market. APT may be viewed as an extended CAPM with multiple "betas" and multiple risk premia.

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RISK IN FINANCIAL ANALYSIS

The riskiness of an asset is defined in terms of the likely variability of future returns from the asset. For example, if one buys a $1 million short-term government bond expected to yield 5 percent, then the return on the investment, 5 percent, can be estimated quite precisely, and the investment is defined to be relatively risk free. However, if the $1 million is invested in the stock of a company just being organized to prospect for uranium in Central Africa, then the probable return cannot be estimated precisely. The rate of return on the $1 million investment could range from minus 100 percent to some extremely large figure; because of this high variability, the project is defined to be relatively risky. Similarly, sales forecasts for different products of a single firm might exhibit differing degrees of riskiness. For example, the Union Carbide Company might be quite sure that sales of its Eveready batteries will range between 50 and 60 million for the coming year, but be highly uncertain about how many units of a new laser measuring device will be sold during the year.

Risk, then, is associated with project variability—the more variable the expected future returns, the riskier the investment. However, we can define risk more precisely, and it is useful to do so. This more precise definition requires a step-by-step development, which constitutes the remainder of this section.

Probability Distributions

Any investment decision—or, for that matter, almost *any* kind of business decision—implies a forecast of future events, with the forecast being either explicit or implicit. Ordinarily, the forecast of annual cash flow is a single figure, or point estimate, frequently called the "most likely" or "best" estimate. For example, one might forecast that the cash flows from a particular project will be $500 a year for three years.

How good is this point estimate; that is, how confident is the forecaster of his predicted return? Is he very certain, very uncertain, or somewhere in between? This degree of uncertainty can be defined and measured in terms of the forecaster's "probability distribution"—the probability estimates associated with each possible outcome. In its simplest form, a probability distribution could consist of just a few potential outcomes. For example, in forecasting cash flows, we could make an optimistic estimate, a pessimistic estimate, and a most likely estimate; or, alternatively, we could make high, low, and "best guess" estimates. We might expect our high, or optimistic,

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Appendix 4-A
Arithmetic versus Geometric Means in Estimating the Cost of Capital

The use of the arithmetic mean appears counter-intuitive at first glance, because we commonly use the geometric mean return to measure the average annual achieved return over some time period. For example, the long-term performance of a portfolio is frequently assessed using the geometric mean return.

But performance appraisal is one thing, and cost of capital estimation is another matter entirely. In estimating the cost of capital, the goal is to obtain the rate of return that investors expect, that is, a target rate of return. On average, investors expect to achieve their target return. This target expected return is in effect an arithmetic average. The achieved or retrospective return is the geometric average. In statistical parlance, the arithmetic average is the unbiased measure of the expected value of repeated observations of a random variable, not the geometric mean. This appendix formally illustrates that only arithmetic averages can be used as estimates of cost of capital, and that the geometric mean is not an appropriate measure of cost of capital.

The geometric mean answers the question of what constant return you would have had to achieve in each year to have your investment growth match the return achieved by the stock market. The arithmetic mean answers the question of what growth rate is the best estimate of the future amount of money that will be produced by continually reinvesting in the stock market. It is the rate of return which, compounded over multiple periods, gives the mean of the probability distribution of ending wealth.

While the geometric mean is the best estimate of performance over a long period of time, this does not contradict the statement that the arithmetic mean compounded over the number of years that an investment is held provides the best estimate of the ending wealth value of the investment. The reason is that an investment with uncertain returns will have a higher ending wealth value than an investment which simply earns (with certainty) its compound or geometric rate of return every year. In other words, more money, or terminal wealth, is gained by the occurrence of higher than expected returns than is lost by lower than expected returns.

In capital markets, where returns are a probability distribution, the answer that takes account of uncertainty, the arithmetic mean, is the correct one for estimating discount rates and the cost of capital.

While the geometric mean is appropriate when measuring performance over a long time period, it is incorrect when estimating a risk premium to compute the cost of capital.

TABLE 4A-1
GEOMETRIC VS. ARITHMETIC RETURNS

	Stock A	Stock B
1996	50.0%	11.61%
1997	−54.7%	11.61%
1998	98.5%	11.61%
1999	42.2%	11.61%
2000	−32.3%	11.61%
2001	−39.2%	11.61%
2002	153.2%	11.61%
2003	−10.0%	11.61%
2004	38.9%	11.61%
2005	20.0%	11.61%
Standard Deviation	64.9%	0.0%
Arithmetic Mean	26.7%	11.6%
Geometric Mean	11.6%	11.6%

Theory

The geometric mean measures the magnitude of the returns, as the investor starts with one portfolio and ends with another. It does not measure the variability of the journey, as does the arithmetic mean. The geometric mean is backward looking. There is no difference in the geometric mean of two stocks or portfolios, one of which is highly volatile and the other of which is absolutely stable. The arithmetic mean, on the other hand, is forward-looking in that it does impound the volatility of the stocks.

To illustrate, Table 4A-1 shows the historical returns of two stocks, the first one is highly volatile with a standard deviation of returns of 65% while the second one has a zero standard deviation. It makes no sense intuitively that the geometric mean is the correct measure of return, one that implies that both stocks are equally risky since they have the same geometric mean. No rational investor would consider the first stock equally as risky as the second stock. Every financial model to calculate the cost of capital recognizes that investors are risk-averse and avoid risk unless they are adequately compensated for undertaking it. It is more consistent to use the mean that fully impounds risk (arithmetic mean) than the one from which risk has been removed (geometric mean). In short, the arithmetic mean recognizes the uncertainty in the stock market while the geometric mean removes the uncertainty by smoothing over annual differences.

Empirical Evidence

If both the geometric and arithmetic mean returns over the 1926–2004 data are regressed against the standard deviation of returns for the firms in the

deciles, the arithmetic mean outperforms the geometric mean in this statistical regression. Moreover, the constant of arithmetic mean regression matches the average Treasury bond rate and therefore makes economic sense while the constant for the geometric mean matches nothing in particular. This is simply because the geometric mean is stripped of volatility information and, as a result, does a poor job of forecasting returns based on volatility.

The following illustration is frequently invoked in defense of the geometric mean. Suppose that a stock's performance over a two-year period is representative of the probability distribution, doubling in one year ($r_1 = 100\%$) and halving in the next ($r_2 = -50\%$). The stock's price ends up exactly where it started, and the geometric average annual return over the two-year period, r_g, is zero:

$$\begin{aligned} 1 + r_g &= [(1 + r_1)(1 + r_2)]^{1/2} \\ &= [(1 + 1)(1 - .50)]^{1/2} = 1 \\ r_g &= 0 \end{aligned}$$

confirming that a zero year-by-year return would have replicated the total return earned on the stock. The expected annual future rate of return on the stock is not zero, however. It is the arithmetic average of 100% and −50%, (100−50)/2 = 25%. There are two equally likely outcomes per dollar invested: either a gain of $1 when r = 100% or a loss of $0.50 when r = −50%. The expected profit is ($1−$.50)/2 = $.25 for a 25% expected rate of return. The profit in the good year more than offsets the loss in the bad year, despite the fact that the geometric return is zero. The arithmetic average return thus provides the best guide to expected future returns.

What Academics Have to Say

Bodie, Kane, and Marcus (2005) cite:

> Which is the superior measure of investment performance, the arithmetic average or the geometric average? The geometric average has considerable appeal because it represents the constant rate of return we would have needed to earn in each year to match actual performance over some past investment period. It is an excellent measure of *past* performance. However, if our focus is on future performance, then the arithmetic average is the statistic of interest because it is an unbiased estimate of the portfolio's expected future return (assuming, of course, that the expected return does not change over time). In contrast, because the geometric return over a sample period is always less than the arithmetic mean,

> it constitutes a downward-biased estimator of the stock's expected return in any future year.
>
> Again, the arithmetic average is the better guide to future performance.

Another way of stating the Bodie, Kane, Marcus argument in favor of the arithmetic mean is that it is the best estimate of the future value of the return *distribution* because it represents the expected value of the distribution. It is most useful for determining the central tendency of a distribution at a particular time, that is, for cross-sectional analysis. The geometric mean, on the other hand, is best suited for measuring an investment's compound rate of return over time, that is, for time-series analysis. This is the same argument made by Ibbotson Associates (2005) where it is shown, using probability theory, that future terminal wealth is given by compounding the arithmetic mean, and not the geometric mean. In other words, if we accept the past as prologue, the best estimate of a future year's return based on a random distribution of the prior years' returns is the arithmetic average. Statistically, it is our best guess for the holding-period return in a given year.

Brigham and Ehrhardt (2005) in their widely used corporate finance text point out that the arithmetic average is more consistent with CAPM theory, as one of its key underpinning assumptions is that investors are supposed to focus, in their portfolio decisions, upon returns in the next period *and the standard* deviation of this return. To the extent that this next period is one year, the preference for the arithmetic mean, which derives from a set of single one year period returns, follows. It is also noteworthy that one of the crucial assumptions inherent in the CAPM is that investors are single-period expected utility of terminal wealth maximizers who choose among alternative portfolios on the basis of each portfolio's expected return and standard deviation.

Brealey, Myers, and Allen (2006) in their leading graduate textbook in corporate finance opt strongly for the arithmetic mean. The authors illustrate the distinction between arithmetic and geometric averages and conclude that arithmetic averages are appropriate when *estimating the cost of capital:*

> The proper uses of arithmetic and compound rates of return from past investments are often misunderstood. Therefore, we call a brief time-out for a clarifying example.
>
> Suppose that the price of Big Oil's common stock is $100. There is an equal chance that at the end of the year the stock will be worth $90, $110, or $130. Therefore, the return could be −10 percent, +10 percent or +30 percent (we assume that Big Oil does not pay a dividend). The expected return is 1/3(−10+10+30) = +10 percent.

If we run the process in reverse and discount the expected cash flow by the expected rate of return, we obtain the value of Big Oil's stock:

$$PV = \frac{110}{1.10} = \$100$$

The expected return of 10 percent is therefore the correct rate at which to discount the expected cash flow from Big Oil's stock. It is also the opportunity cost of capital for investments which have the same degree of risk as Big Oil.

Now suppose that we observe the returns on Big Oil stock over a large number of years. If the odds are unchanged, the return will be −10 percent in a third of the years, +10 percent in a further third, and +30 percent in the remaining years. The arithmetic average of these yearly returns is

$$\frac{-10 + 10 + 30}{3} = +10\%$$

Thus the arithmetic average of the returns correctly measures the opportunity cost of capital for investments of similar risk to Big Oil stock.

The average compound annual return on Big Oil stock would be

$$(.9 \times 1.1 \times 1.3)^{1/3} - 1 = .088, \text{ or } 8.8\%$$

less than the opportunity cost of capital. Investors would not be willing to invest in a project that offered an 8.8 percent expected return if they could get an expected return of 10 percent in the capital markets. The net present value of such a project would be

$$NPV = -100 + \frac{108.8}{1.1} = -1.1$$

Moral: If the cost of capital is estimated from historical returns or risk premiums, use arithmetic averages, not compound annual rates of return (geometric averages).

(Richard A. Brealey, Stewart C. Myers, and Paul Allen, Principles of Corporate Finance, 8th Edition, Irwin McGraw-Hill, 2006, page 156–7.)

The widely cited Ibbotson Associates publication also contains a detailed and rigorous discussion of the impropriety of using geometric averages in estimating the cost of capital.[12]

[12] Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation, 2005 Yearbook, Valuation Edition*, page 75.

> The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance, since it represents the compound average return.
>
> The argument for using the arithmetic average is quite straightforward. In looking at projected cash flows, the equity risk premium that should be employed is the equity risk premium that is expected to actually be incurred over the future time periods.
>
> The best estimate of the expected value of a variable that has behaved randomly in the past is the average (or arithmetic mean) of its past values.

In their widely publicized research on the market risk premium, Dimson, Marsh and Staunton (2002) state

> The arithmetic mean of a sequence of different returns is always larger than the geometric mean. To see this, consider equally likely returns of +25 and −20 percent. Their arithmetic mean is 2½ percent, since (25 − 20)/2 = 2½. Their geometric mean is zero, since (1 + 25/100) × (1 − 20/100) − 1 = 0. But which mean is the right one for discounting risky expected future cash flows? For forward-looking decisions, the arithmetic mean is the *appropriate measure*.
>
> To verify that the arithmetic mean is the correct choice, we can use the 2½ percent required return to value the investment we just described. A $1 stake would offer equal probabilities of receiving back $1.25 or $0.80. To value this, we discount the cash flows at the arithmetic mean rate of 2½ percent. The present values are respectively $1.25/1.015 = $1.22 and $0.80/1.025 = $0.78, each with equal probability, so the value is $1.22 × ½ + $0.80 × ½ = $1.00. If there were a sequence of equally likely returns of +25 and −20 percent, the geometric mean return will eventually converge on zero. The 2½ percent forward-looking arithmetic mean is required to compensate for the year-to-year volatility of returns.

Lastly, on the practical side, Brunner, Bades, Harris, and Higgins (1998) found that 71% of the texts and tradebooks in their extensive survey of practice supported use of an arithmetic mean for estimation of the cost of equity.

Mean Reversion Argument

Some academics have argued that if stock returns were expected to revert to a trend, this would suggest the use of a geometric mean since the geometric mean is, by definition, an estimate of a smoothed long-run trend increment. These same academics have argued that the historical estimate of the market risk premium ("MRP") is upward-biased by the buoyant performance of the stock market prior to 2002, and because of the extraordinary and unusually high realized MRPs in those years, investors expect a return to lower MRPs in the future, bringing the average MPR to a more "normal" level.

The presence or absence of mean reversion is an empirical issue. The empirical findings are weak and highly contradictory; the empirical evidence is inconclusive and unconvincing, certainly not enough to support the "mean reversion" hypothesis. The weight of the empirical evidence on this issue is that the more sophisticated tests of mean reversion in the MRP demonstrate that the realized MRP over the last 75 years or so was almost perfectly free of mean reversion, and had no statistically identifiable time trend. It is also noteworthy that most of these studies were performed prior to the stock market's debacle in 2000–2002, years of extraordinary and unusually low realized MRPs. The stock market's dismal performance of 2000–2002 has certainly taken the wind out of the mean reversion school's sails.

An examination of historical MRPs reveals that the MRP is random with no observable pattern. To the extent that the estimated historical equity risk premium follows what is known in statistics as a random walk, one should expect the equity risk premium to remain at its historical mean. Therefore, the best estimate of the future risk premium is the historical mean.

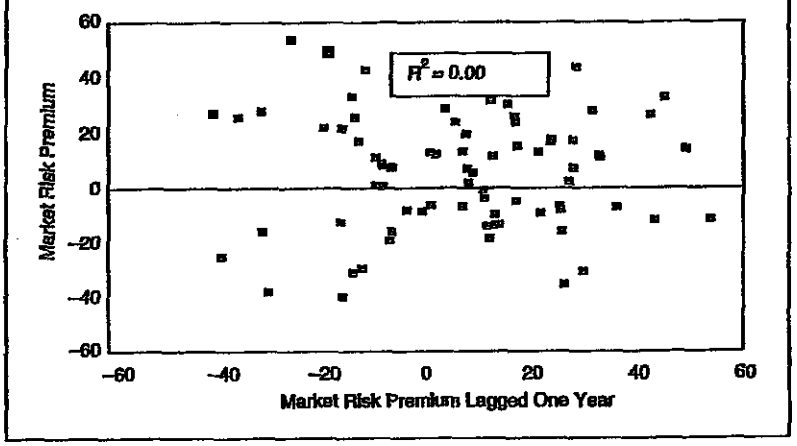
Ibbotson Associates (2005) find no evidence that the market price of risk or the amount of risk in common stocks has changed over time:

> Our own empirical evidence suggests that the yearly difference between the stock market total return and the U.S. Treasury bond income return in any particular year is random . . . there is no discernable pattern in the realized equity risk premium. (Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation, 2005 Yearbook, Valuation Edition*, pages 74–75)

In statistical parlance, there is no significant serial correlation in successive annual market risk premiums, that is, no trend. Ibbotson Associates go on to state that it is reasonable to assume that these quantities will remain stable in the future (*Id.*):

> The best estimate of the expected value of a variable that has behaved randomly in the past is the average (or arithmetic mean)

FIGURE 4A-1
MARKET RISK PREMIUM 1926–2004
Year-to-Year Correlation



of its past values. (Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation, 2004 Yearbook, Valuation Edition*, page 75)

Nowhere is it suggested by Ibbotson Associates that the market risk premium has declined over time.

Because there is little evidence that the MRP has changed over time, it is reasonable to assume that these quantities will remain stable in the future. Figure 4A-1 shows the relationship, or the lack of relationship, between year-to-year MRPs reported in the Ibbotson Associates Valuation Yearbook, 2005 edition, for the 1926–2004 period. The relationship is virtually absent, as indicated by the low R^2 of zero between successive MRPs. In other words, there is no history in successive MRPs as indicated by the zero serial correlation coefficient.

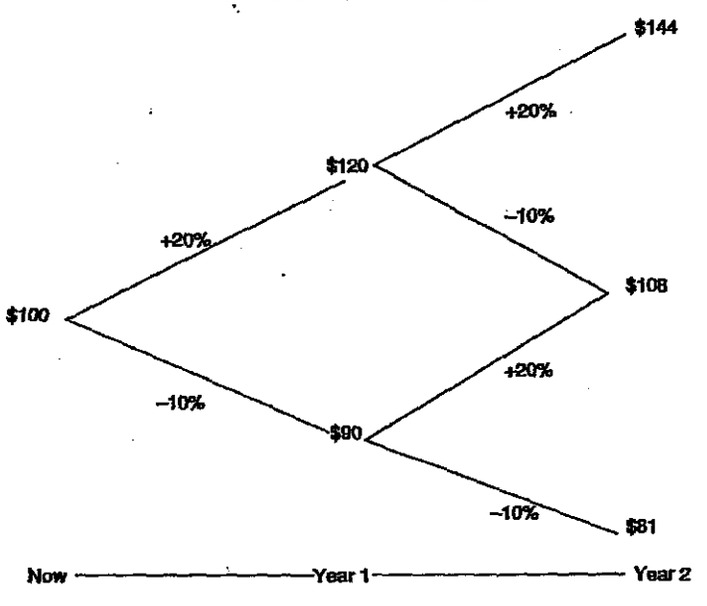
In short, the determination of the cost of capital with the CAPM requires an unbiased estimate of the expected annual return. The expected arithmetic return provides the appropriate measure for this purpose.

Formal Demonstration

This section shows why arithmetic rather than geometric means should be used for forecasting, discounting, and estimating the cost of capital.[13] By

[13] This section is adapted from a similar treatments and demonstration in Brealey, Myers, and Allen (2006) and Ibbotson Associates (2005).

FIGURE 4A-2
POSSIBLE STOCK PRICES



definition, the cost of equity capital is the annual discount rate that equates the discounted value of expected future cash flows (from dividends and the sale of the stock at the end of the investor's investment horizon) to the current market price of a share in the firm. The discount rate that equates the discounted value of future expected dividends and the end of period expected stock price to the current stock price is a prospective arithmetic, rather than a prospective geometric, mean rate of return. Since future dividends and stock prices cannot be predicted with certainty, the "expected" annual rate of return that investors require is an average "target" percentage rate around which the actual, year-by-year returns will vary. This target rate is, in effect, an arithmetic average.

A numerical illustration will clarify this important point. Consider a non-dividend paying stock trading for $100 which has, in every year, an equal chance of appreciating by 20% or declining by 10%. Thus, after one year, there is an equal chance that the stock's price will be $120 and an equal chance the price will be $90. Figure 4A-2 presents all possible eventualities after two periods have elapsed (the rates of return are presented at the end of the lines in the diagram).

The possible stock prices are shown in the following table.

TABLE 4A-2 STOCK PRICES AFTER TWO PERIODS	
Price	Chance
$144	1 chance in 4
$108	2 chances in 4
$ 81	1 chance in 4

The expected future stock price after two periods is then:

$$1/4\ (\$144) + 2/4\ (\$108) + 1/4\ (\$81) = \$110.25$$

The cost of equity capital is calculated as the discount rate that equates the present value of the future expected cash flows to the current stock price. In the present simple example, the only cash flow is the gain from selling the stock after two periods have elapsed. Thus, using the expected stock price of $110.25 calculated above, the expected rate of return is that r, which solves the following equation:

$$\textit{Current Stock Price} = \frac{\text{Expected Stock Price}}{(1 + r)^2}$$

The factor $(1 + r)^2$ discounts the expected stock price to the present. Substituting the numerical values, we have:

$$\$100 = \frac{\$110.25}{(1+r)^2}$$

$$r = 5\%$$

Thus, the cost of equity capital is 5%. This 5% cost of equity capital is equal to the prospective arithmetic mean rate of return, which is the probability-weighted average single period rate of return on equity. Since in every period there is an equal chance that the stock's return will be 20% or −10%, the probability-weighted average is:

$$1/2\ (20\%) + 1/2\ (-10\%) = 5\%$$

However, the 5% cost of equity capital is not equal to the prospective geometric mean rate of return, which is a probability-weighted average of the possible compounded rates of return over the two periods. Now consider the prospective geometric mean rate of return. Table 4A-3 shows the possible compounded rates of return over two periods, and the probability of each.

Thus, the prospective geometric mean rate of return is:

$$1/4\ (20\%) + 2/4\ (3.92\%) + 1/4\ (-10\%) = 4.46\%$$

TABLE 4A-3
STOCK PRICES AND RETURNS AFTER TWO PERIODS

Price	Chance	Compounded Return
$144	1 chance in 4	20.00%
$108	2 chances in 4	3.92%
$ 81	1 chance in 4	−10.00%

This return is not equal to the 5% cost of equity capital.

The example can easily be extended to include the case of a dividend-paying company and will reach the same conclusion: the implied discount rate calculated in the DCF model is an expected arithmetic rather than an expected geometric mean rate of return.

The foregoing analysis shows that it is erroneous to use a prospective multi-year geometric mean rate of return as a "target" rate of return for each year of the period. If, for example, investors currently require an expected future rate of return on an investment of 13% each year, then 13% is the appropriate annual rate of return on equity for ratemaking purposes. Consequently, in using a risk premium approach for the purposes of rate of return regulation, the single-year annual required rate of return should be estimated using arithmetic mean risk premiums.

It should be pointed out that the use of the arithmetic mean does not imply an investment holding period of one year. Rather, it is premised on the uncertainty with respect to each year's return during the holding period, however many years that may be. When computing the arithmetic average of historic annual returns in order to calculate the average return (expected value of the return), every achieved return outcome is one possible future outcome for each year the security will be held. Each historic return has an equal probability of occurring during each year of the holding period. The resulting expected value of the risk premium is the arithmetic average of all of the past premiums considered, regardless of the length of the expected holding period.

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TABLE 7-1

Average rate of return on Treasury bills, government bonds, corporate bonds, and common stocks, 1926–1994 (figures in percent per year)

Portfolio	Average Annual Rate of Return: Nominal	Average Annual Rate of Return: Real	Average Risk Premium (Extra Return versus Treasury Bills)
Treasury bills	3.7	.6	0
Government bonds	5.2	2.1	1.4
Corporate bonds	5.7	2.7	2.0
Common stocks (S&P 500)	12.2	8.9	8.4
Small-firm common stocks	17.4	13.9	13.7

Source: Ibbotson Associates, Inc., *1995 Yearbook.*

You may ask why we look back over such a long period to measure average rates of return. The reason is that annual rates of return for common stocks fluctuate so much that averages taken over short periods are meaningless. Our only hope of gaining insights from historical rates of return is to look at a very long period.[3]

Arithmetic Averages and Compound Annual Returns

Notice that the average returns shown in Table 7-1 are arithmetic averages. In other words, Ibbotson Associates simply added the 69 annual returns and divided by 69. The arithmetic average is higher than the compound annual return over the period. The 69-year compound annual return for the S&P index was 10.2 percent.[4]

The proper uses of arithmetic and compound rates of return from past investments are often misunderstood. Therefore, we call a brief time-out for a clarifying example.

Example: Suppose that the price of Big Oil's common stock is $100. There is an equal chance that at the end of the year the stock will be worth $90, $110, or $130. Therefore, the return could be −10 percent, +10 percent, or +30 percent (we assume that Big Oil does not pay a dividend). The *expected* return is ⅓(−10 + 10 + 30) = +10 percent.

If we run the process in reverse and discount the expected cash flow by the expected rate of return, we obtain the value of Big Oil's stock:

[3]Even with 69 years of data we cannot be sure that this period is truly representative and that the average is not distorted by a few unusually high or low returns. The reliability of an estimate of the average is usually measured by its *standard error.* For example, the standard error of our estimate of the average risk premium on common stocks is 2.5 percent. There is a 95 percent chance that the *true* average is within plus or minus 2 standard errors of the 8.4 percent estimate. In other words, if you said that the true average was between 3.5 and 13.4 percent, you would have a 95 percent chance of being right. (*Technical note:* The standard error of the mean is equal to the standard deviation divided by the square root of the number of observations. In our case the standard deviation is 20.6 percent, and therefore the standard error is $20.6/\sqrt{69} = 2.5$.)

[4]This was calculated from $(1 + r)^{69} = 811$, which implies $r = .102$. (*Technical note:* For lognormally distributed returns the annual compound return is equal to the arithmetic average return minus half the variance. For example, the annual standard deviation of returns on the U.S. market was about .20, or 20 percent. Variance was therefore $.20^2$, or .04. The compound annual return is .04/2 = .02, or 2 percentage points less than the arithmetic average.)

$$PV = \frac{110}{1.10} = \$100$$

The expected return of 10 percent is therefore the correct rate at which to discount the expected cash flow from Big Oil's stock. It is also the opportunity cost of capital for investments which have the same degree of risk as Big Oil.

Now suppose that we observe the returns on Big Oil stock over a large number of years. If the odds are unchanged, the return will be −10 percent in a third of the years, +10 percent in a further third, and +30 percent in the remaining years. The arithmetic average of these yearly returns is

$$\frac{-10 + 10 + 30}{3} = +10\%$$

Thus the arithmetic average of the returns correctly measures the opportunity cost of capital for investments of similar risk to Big Oil stock.

The compound annual return on Big Oil stock is

$$(.9 \times 1.1 \times 1.3)^{\frac{1}{3}} - 1 = .088, \text{ or } 8.8\%,$$

less than the opportunity cost of capital. Investors would not be willing to invest in a project that offered an 8.8 percent expected return if they could get an expected return of 10 percent in the capital markets. The net present value of such a project would be

$$NPV = 100 + \frac{108.8}{1.1} = -1.1$$

Moral: If the cost of capital is estimated from historical returns or risk premiums, use arithmetic averages, not compound annual rates of return.

Using Historical Evidence to Evaluate Today's Cost of Capital

Suppose there is an investment project which you *know*—don't ask how—has the same risk as Standard and Poor's Composite Index. We will say that it has the same degree of risk as the *market portfolio*, although this is speaking somewhat loosely, because the index does not include all risky securities. What rate should you use to discount this project's forecasted cash flows?

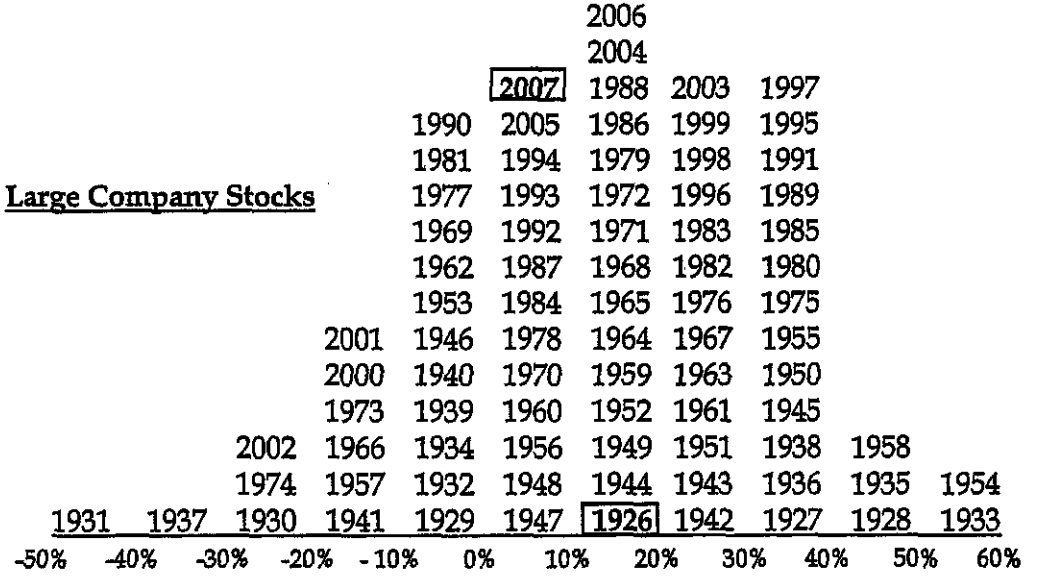
Clearly you should use the currently expected rate of return on the market portfolio; that is the return investors would forgo by investing in the proposed project. Let us call this market return r_m. One way to estimate r_m is to assume that the future will be like the past and that today's investors expect to receive the same "normal" rates of return revealed by the averages shown in Table 7-1. In this case, you would set r_m at 12.2 percent, the average of past market returns.

Unfortunately, this is *not* the way to do it: r_m is not likely to be stable over time. Remember that it is the sum of the risk-free interest rate r_f and a premium for risk. We know that r_f varies. For example, as we finish this chapter in early 1995, Treasury bills yield about 6 percent, more than 2 percentage points above the 3.7 percent average return of Treasury bills.

What if you were called upon to estimate r_m in 1995? Would you have said 12.2 percent? That would have squeezed the risk premium by 2.2 percentage points. A more sensible procedure takes the current interest rate on Treasury bills plus 8.4 percent, the average *risk premium* shown in Table 7-1. With a rate of 6 percent for Treasury bills, that gives

$$\begin{aligned} r_m\,(1995) &= r_f\,(1995) + \text{normal risk premium} \\ &= .06 + .084 = .144, \text{ or } 14.4\% \end{aligned}$$

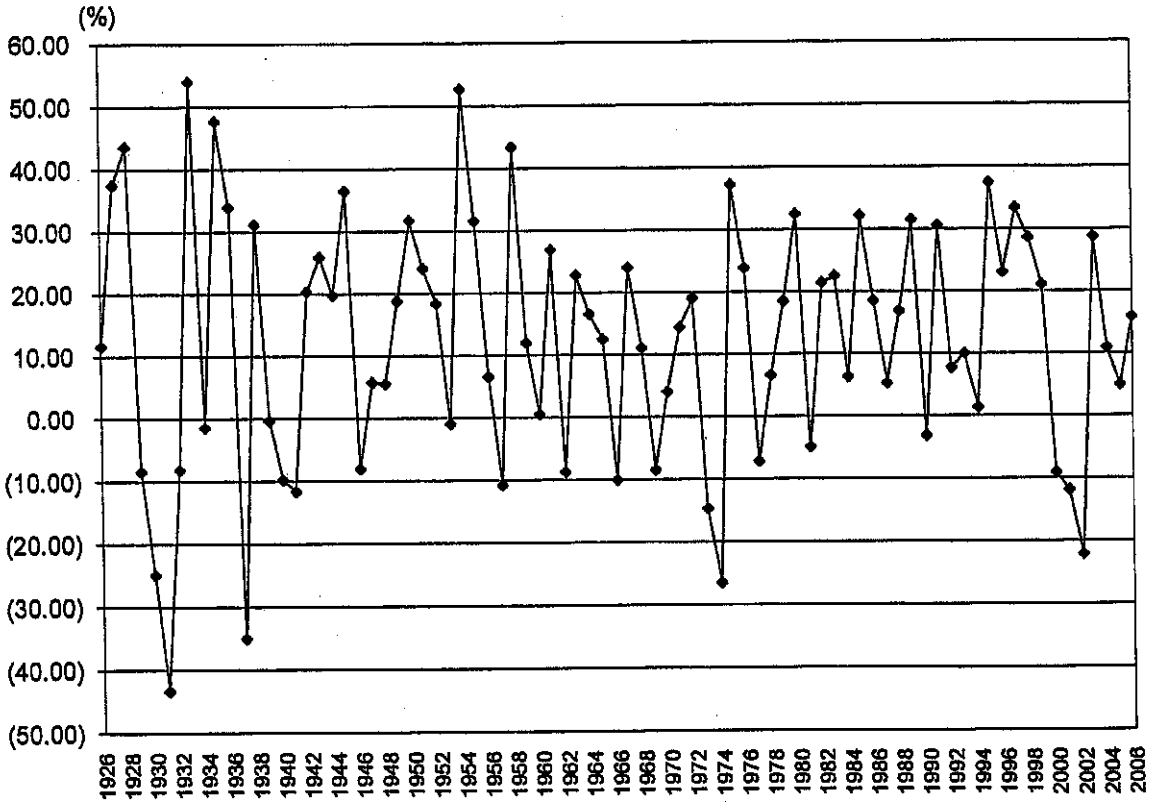
Utilities, Inc.
Total Returns on Large Company Stocks
1926 to 2007



Arithmetic Mean: $r_A = \sum_{t=1}^{n} r_t / n$

Source : Stocks, Bonds, Bills, and Inflation – Market Results for 1926-2007 - 2008 Yearbook Valuation Edition, pp. 30-31, Morningstar, Inc., Chicago, IL

Utilities, Inc.
Large Company Stock Returns
From 1926 to 2007

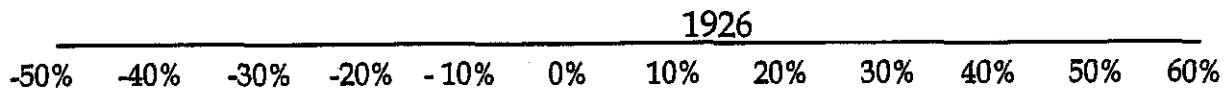


Source of Information:
Stocks Bonds Bills and Inflation - Market Results for 1926-2007 - 2008 Yearbook Valuation Edition, Morningstar, Inc., 2008 Chicago, IL.

Utilities, Inc.
Total Returns on Large Company Stocks
1926 to 2007

Large Company Stocks

2007



Geometric Mean: $r_G = \left[V_n / V_0 \right]^{1/n} - 1$

Source : Stocks, Bonds, Bills, and Inflation - Market Results for 1926-2007 - 2008 Yearbook Valuation Edition, pp. 30-31, Morningstar, Inc., Chicago, IL

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Coefficients of Determination (R-Squared)
For the Proxy Group of Six AUS Utility Companies and the
Florida PSC Natural Gas Index

Company		Adjusted Beta	R-Factor	R-Squared
Proxy Group of Six AUS Utility Reports Water Companies				
American States Water Co.		1.05	0.4906	0.2407
Aqua America, Inc.		0.95	0.5348	0.2860
California Water Service Group		1.15	0.4988	0.2488
SJW Corp.		1.15	0.4497	0.2022
Southwest Water Company		1.05	0.4066	0.1653
York Water Company		0.50	0.1167	0.0136
	Average	0.98	0.4162	0.1928
Florida PSC Natural Gas Index				
AGL Resources, Inc.		0.85	0.5822	0.3390
Atmos Energy Corporation		0.85	0.6304	0.3974
Equitable Resources, Inc.		0.95	0.5283	0.2791
Laclede Group, Inc.		0.90	0.5425	0.2943
NICOR Inc.		0.95	0.5857	0.3430
Northwest Natural Gas Company		0.80	0.469	0.2200
Piedmont Natural Gas Co., Inc.		0.85	0.5309	0.2819
South Jersey Industries, Inc.		0.85	0.5135	0.2637
Southwest Gas Corporation		0.90	0.5676	0.3222
WGL Holdings, Inc.		0.90	0.6052	0.3663
	Average	0.88	0.5555	0.3107

Source of Information:
Value Line Inc., Proprietary Data Base, June 16, 2008

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Market Results for
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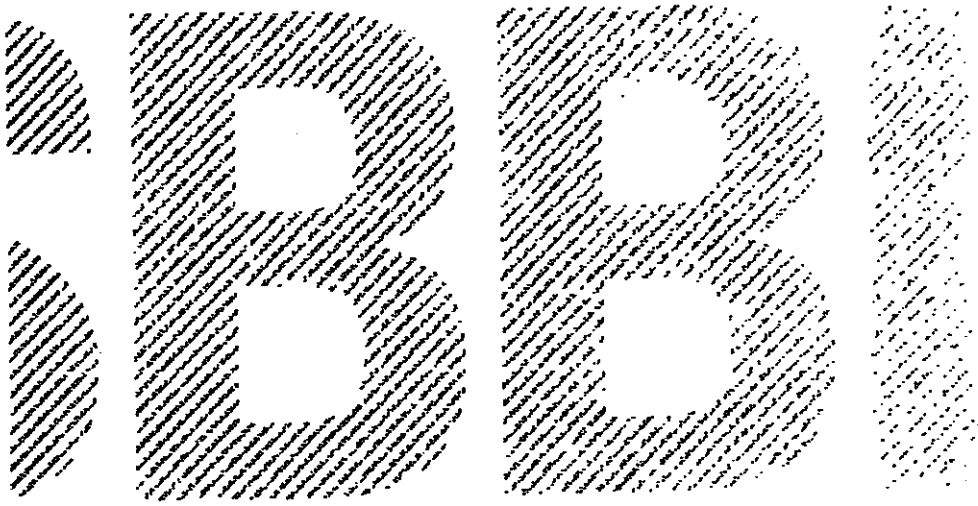

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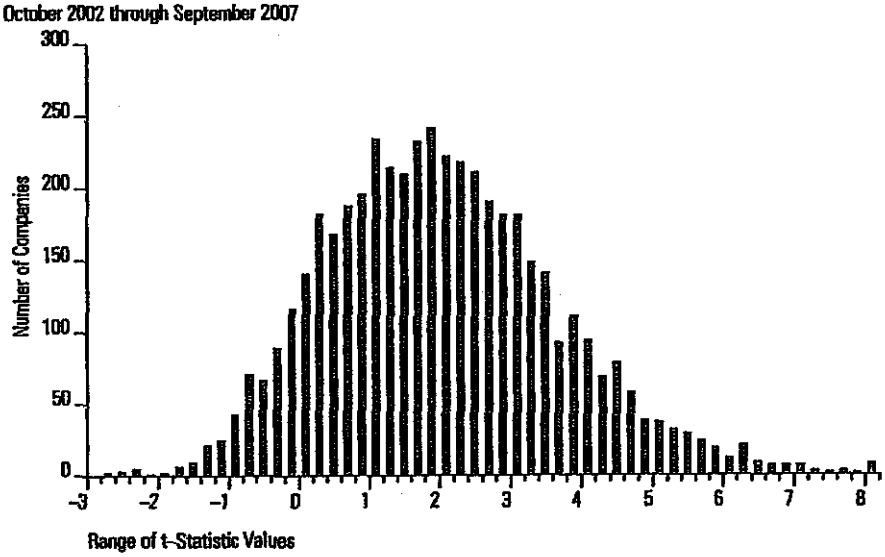
than 1.67; thus, the beta of Company B is not statistically different from zero at that confidence level. If the regression provides a beta of 0.90 but is not statistically different from zero, then other measures of beta may need to be consulted (such as the company's peer betas or industry average betas).

To better illustrate the typical range of a beta's t-statistic, Graph 6-3 depicts the distribution of all t-statistics calculated with respect to the betas of the approximately 5,000 companies included in the *Ibbotson® Beta Book*. Since these beta calculations use 60 months of data, the critical value for the t-statistic is again 1.67 at the 90 percent confidence level. Recall that the absolute value is what is compared to the critical value; t-statistics above 1.67 or below –1.67 would therefore be considered statistically significant.

Graph 6-3
t-Statistic Distribution
October 2002 through September 2007

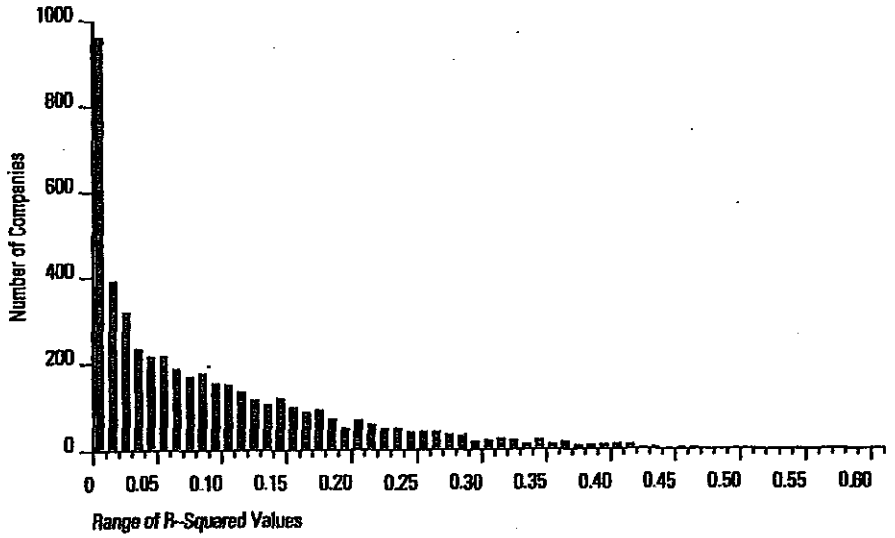


R-Squared

Another valuable regression statistic is the coefficient of determination, or R-squared. The R-squared is a statistic that measures the "goodness of fit" of the regression line and describes the percentage of variation in the dependent variable that is explained by the independent variable. The R-squared measure may vary from zero to one. An R-squared of 1.00 means that the independent variable explains 100 percent of the variation of the dependent variable. An R-squared of 0 indicates that the independent variable does not explain any of the variation of the dependent variable.

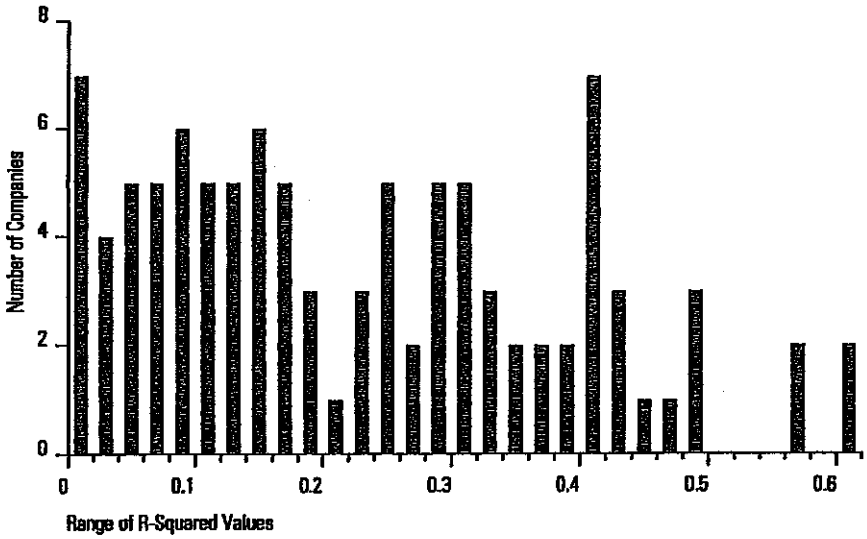
In terms of measuring beta via regression, a high R-squared means that the movements of the returns of the security are explained largely by the movements of the returns of the market. The R-squared for security betas are usually quite low. Graphs 6-4 and 6-5 show a distribution of R-squared statistics from the *Ibbotson® Beta Book*. The first graph shows the distribution of R-squared for the approximately 5,000 companies included in the publication. The second graph shows the distribution of R-squared for the largest 100 companies, in terms of equity capitalization, that are included in the book.

Graph 6-4
R-Squared Distribution for Entire Population
October 2002 through September 2007



Note that most betas have an R-squared less than 0.3. What can we infer from this data? There may be other company- or industry-specific factors that drive security prices. While the CAPM includes only one factor in determining expected returns, it does not disallow the existence of others.

Graph 6-5
R-Squared Distribution for Largest 100 Companies
October 2002 through September 2007



Standard Error

A third common regression statistic is the standard error of the regression coefficient. The standard error measures the extent to which each individual observation in a sample differs from the value predicted by the regression. In other words, the standard error attempts to measure sampling error. The standard error can be interpreted in a fashion similar to the standard deviation of a return. For example, suppose a beta regression results in a standard error of 0.2. There is therefore a 68 percent likelihood that the true measure of this company's beta lies within 0.2 of the estimated beta coefficient. Likewise, there is a 96 percent likelihood that the true beta measure lies within two standard errors of the estimate, or plus or minus 0.4.

Stability of beta is a key issue under the CAPM. While we expect betas to change over time as companies increase or decrease their systematic risk, we do not expect a huge fluctuation in beta from one period to the next. One would expect the beta of a company with a low standard error to be more stable over time than the beta of a company with a high standard error. An example of two companies is presented in Graph 6-6. The current beta of 1.10 for Valspar Corp. has a low standard error of 0.19. On the other hand, Technical Ventures Inc. has a current beta of 1.80 with a high standard error of 1.86. The chart shows the beta of each company on a rolling 60-month basis, meaning that the beta is calculated over the 60-month period October 31, 1997 through September 30, 2002, then the calculation is carried

Investments: Analysis and Management

Fifth Edition

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Beta Measurements The beta coefficient is an *index of systematic risk*. Beta coefficients may be used for ranking the systematic risk of different assets. If the beta is larger than 1, $b > 1.0$, then the asset is more volatile than the market and is called an **aggressive asset**. If the beta is less than 1, $b < 1.0$, the asset is a **defensive asset**; its price fluctuations are less volatile than the market's. Figure 10-1 illustrates the characteristic lines for three different assets that have low, medium, and high levels of beta (or undiversifiable risk).

Figure 10-2 shows that IBM is a stock with an average amount of systematic risk. IBM's beta of 1.02 indicates that its return tends to increase 2 percent more than the return on the market average when the market is rising. When the market falls, IBM's return tends to fall 2 percent more than the market's. The characteristic line for IBM has an above average correlation coefficient of $\rho = .7495$, indicating that the returns on this security follow its particular characteristic line slightly more closely than those of the average stock.

Partitioning Risk Total risk can be measured by the variance of returns, denoted Var(r). This measure of *total risk is partitioned into its systematic and unsystematic components in Equation (10-8).*[7]

$$\begin{aligned}\text{Var}(r_i) &= \text{total risk of } i\text{th asset} \\ &= \text{Var}(a_i + b_i r_{m,t} + e_{i,t}) \\ &\quad \text{by substituting } (a_i + b_i r_{m,t} + e_{i,t}) \text{ for } r_{i,t} \\ &= 0 + \text{Var}(b_i r_{m,t}) + \text{Var}(e_{i,t}) \\ &\quad \text{since Var}(a_i) = 0 \end{aligned} \tag{10-8}$$

$$\begin{aligned}\text{Var}(r_i) &= b_i^2\,\text{Var}(r_m) + \text{Var}(e) \qquad \text{since Var}(b_i r_m) = b_i^2\,\text{Var}(r_m) \\ &= \text{systematic} + \text{unsystematic risk}\end{aligned} \tag{10-8a}$$

$$.01389 = .00780 + .00609 \qquad \text{for IBM}$$

The unsystematic risk measure Var(e) is called in regression language the *residual variance* or, synonymously, the *standard error squared.*

Undiversifiable Proportion The percentage of total risk that is systematic can be measured by the coefficient of determination ρ^2 (that is, the characteristic line's squared correlation coefficient).

[7] In this context, **partition** is a technical statistical term that means to divide the total variance into *mutually exclusive* and *exhaustive* pieces. This partition is only possible if the returns from the market are statistically independent from the residual error terms that occur simultaneously, $\text{Cov}(r_{m,t}, e_{i,t}) = 0$. The mathematics of regression analysis will orthogonalize the residuals and thus ensure that the needed statistical independence exists.

$$\frac{\text{Systematic risk}}{\text{Total risk}} = \frac{b_i^2 \operatorname{Var}(r_m)}{\operatorname{Var}(r_m)} = \rho^2 \tag{10-9}$$

$$\frac{.007802}{.01389} = \frac{(1.021)^2\,(.00749)}{.00749} = .5617 \times 100 = 56.17\% \quad \text{for IBM}$$

Diversifiable Proportion The percentage of unsystematic risk equals $(1.0 - \rho^2)$.

$$\frac{\text{Unsystematic risk}}{\text{Total risk}} = \frac{\operatorname{Var}(e)}{\operatorname{Var}(r_i)} = (1.0 - \rho^2)$$

$$\frac{.00609}{.01389} = (1.0 - .5617) = .438 \times 100 \tag{10-10}$$

$$= 43.8\% \text{ unsystematic} \quad \text{for IBM}$$

Studies of the characteristic lines of hundreds of stocks listed on the NYSE indicate that the average correlation coefficient is approximately $\rho = .5$.[8] This means that about $\rho^2 = 25$ percent of the total variability of return in most NYSE securities is explained by movements in the market.

	NYSE average	IBM
Systematic risk: ρ^2	.25	.5617
Unsystematic risk: $(1.0 - \rho^2)$	.75	.4383
Total risk: 100%	1.00	1.0000

As explained above, systematic changes are common to all stocks and are therefore undiversifiable.

A primary use of the characteristic line (or *market model*, or the *single-index model*, as it is also called) is to assess the risk characteristics of one asset.[9] The statistics in Table 10-2, for instance, indicate that IBM's common stock is slightly more risky than the average common stock in terms of total risk and

[8]The average ρ was found to be about .5, as reported in Marshall Blume, "On the Assessment of Risk," *Journal of Finance*, March 1971, p. 4. For similar estimates, see J. C. Francis, "Statistical Analysis of Risk Surrogates for NYSE Stocks," *Journal of Financial and Quantitative Analysis*, Dec. 1979.

[9]Professor Jensen reformulated the characteristic line in a risk-premium form. See M. C. Jensen, "The Performance of Mutual Funds in the Period 1945 through 1964," *Journal of Finance*, May 1968, pp. 389–416. See also M. C. Jensen, "Risk, the Pricing of Capital Assets, and the Evaluation of Investment Portfolios," *Journal of Business*, vol. XLII, 1969. Jensen interprets the alpha intercept term of the characteristic line, as he formulates it, as an investment performance measure. It has been suggested that Jensen's performance measure is biased. See Keith V. Smith and Dennis A. Tito, "Risk-Return Measures of Ex-Post Portfolio Performance," *Journal of Financial and Quantitative Analysis*, Dec. 1969, vol. IV, no. 4, p. 466.

systematic risk.[10] New risk measurements must be made periodically, however, because the risk and return of an asset may change with the passage of time.[11]

10-3 CAPITAL ASSET PRICING MODEL (CAPM)

An old axiom states "there is no such thing as a free lunch." This means that you cannot expect to get *something for nothing*—a rule that certainly applies to investment returns. Investors who want to earn high average rates of return must take high risks and endure the associated loss of sleep, the possibility of ulcers, and the chance of bankruptcy. The question to which we now turn is: Should investors worry about total risk, undiversifiable risk, diversifiable risk, or all three?

In Chapter 1 it was suggested that *investors should seek investments that have the maximum expected return in their risk class.* Their happiness from investing is presumed to be derived as indicated in the expected utility $E(U)$ function below.

$$E(U) = f[E(r), \sigma]$$

The investment preferences of wealth-seeking risk-averse investors represented by the function above cause them to maximize their expected utility (or, equivalently, happiness) by (1) maximizing their expected return in any given risk class, $\partial E(U)/\partial E(r) > 0$, or, conversely, (2) minimizing their total risk at any given rate of expected return, $\partial E(U)/\partial \sigma < 0$. However, in selecting individual assets, investors will not be particularly concerned with the asset's total risk σ. Figure 9-1 showed that the unsystematic portion of total risk can be easily diversified by holding a portfolio of different securities. But, systematic risk affects all stocks in the market because it is undiversifiable. Portfolio theory therefore suggests that only the undiversifiable (or systematic) risk is worth avoiding.[12]

[10]Statements about the relative degree of total risk are made in the context of a long-run horizon—that is, over at least one *complete business cycle.* Obviously, an accurate short-run forecast which says that some particular company will go bankrupt next quarter makes it more risky than IBM, although IBM may have had more historical variability of return.

[11]Empirical studies documenting the intertemporal instability of betas have been published. Marshall Blume, "Betas and Their Regression Tendencies," *Journal of Finance,* June 1975, pp. 785–795. See also J. C. Francis, "Statistical Analysis of Risk Coefficients for NYSE Stocks," *Journal of Financial and Quantitative Analysis,* Dec. 1979, vol. XIV, no. 5, pp. 981–997. An appendix at the end of this chapter reviews some evidence about shifting betas, standard deviations, and correlations.

[12]Both the systematic and unsystematic portions of total risk must be considered by undiversified investors. Entrepreneurs who have their entire net worth invested in one business, for example, can be bankrupted by a piece of bad luck that could be easily averaged away to zero in a diversified portfolio. Poorly diversified investors should not treat diversifiable risk lightly. Only well-diversified investors can afford to ignore diversifiable risk.

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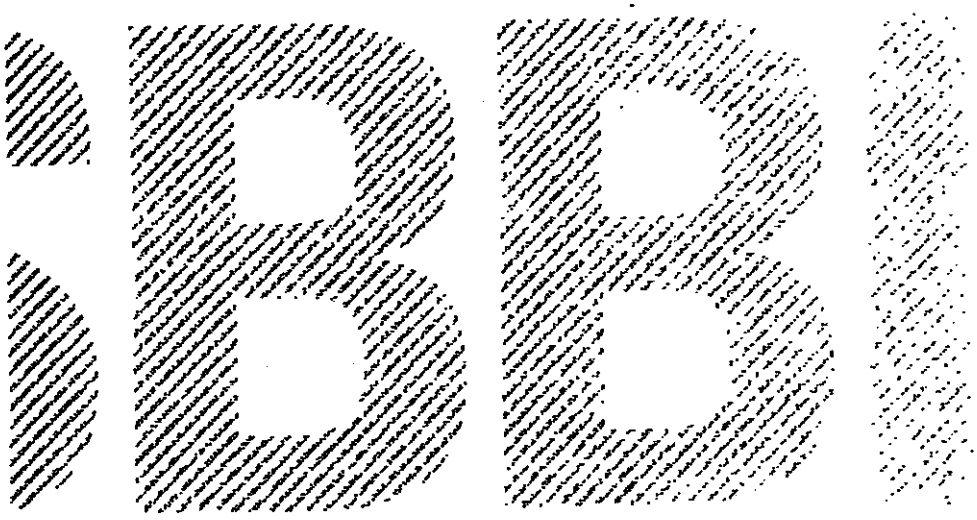

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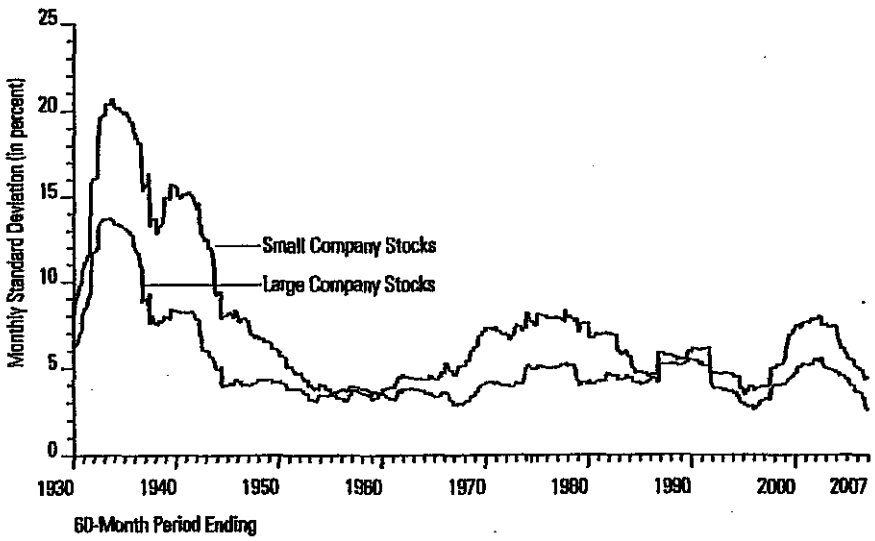
Graph 5-11
Rolling 60-Month Standard Deviation for Large and Small Stocks
January 1926–December 2007



There are two arguments against this rationale. First, it could easily be argued that we have moved through a series of market regimes during the 82-year history of the equity risk premium calculation window used in this book. Given that markets and investor attitudes have changed over time and the equity risk premium has remained relatively constant, there is no reason to believe that a new market regime will have any greater or lesser impact than any other time period.

A second argument relates to the demand for investments. If investors are more comfortable with the market and with stock investing, they will probably place more money into the market. This influx of funds will increase the demand for stocks, which will ultimately increase, not decrease, the equity risk premium.

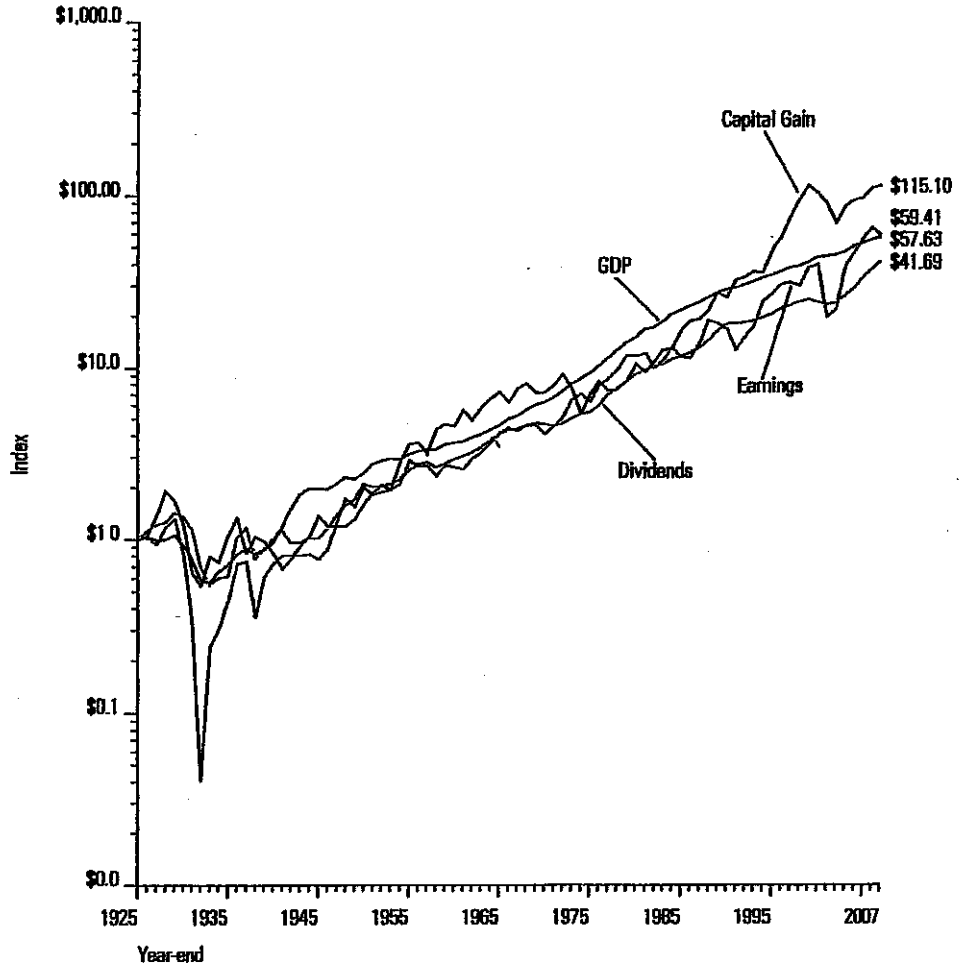
Supply Model

Long-term expected equity returns can be forecasted by the use of supply side models. The supply of stock market returns is generated by the productivity of the corporations in the real economy. Investors should not expect a much higher or lower return than that produced by the companies in the real economy. Thus, over the long run, equity returns should be close to the long-run supply estimate.

Graph 5-12 shows the growth of the stock market, GDP per capita, dividends, and earnings from the end of 1925 to the end of 2007. The graph illustrates that earnings and dividends have historically grown in tandem with the overall economy (GDP per capita). However, although GDP per capita kept pace with earnings and dividends, the overall stock market price grew faster than GDP per capita. This is primarily because the price-to-earnings ratio increased 1.94 times during the same period.

Graph 5-12
Capital Gains, GDP Per Capita, Earnings, and Dividends
Year-End 1925 = $1.00

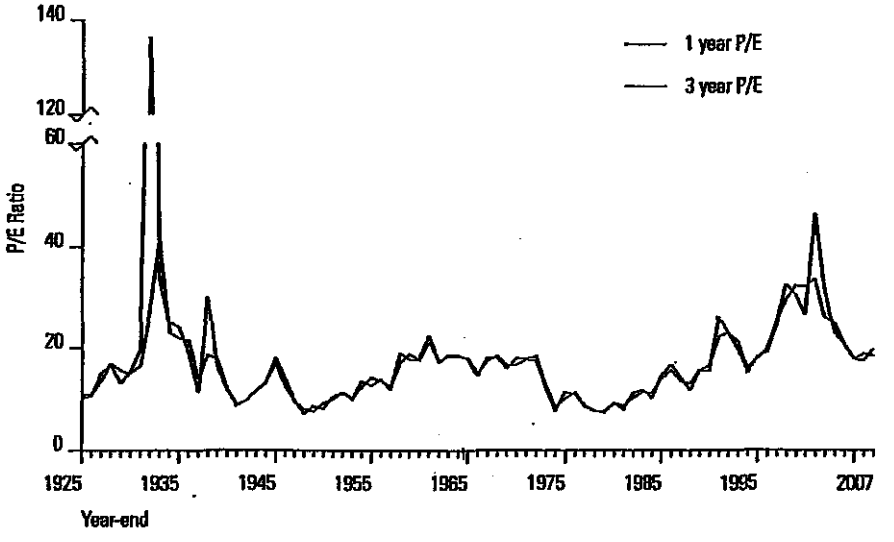
from 1925 to 2007



Roger G. Ibbotson and Peng Chen forecast the equity risk premium through a supply side model using historical data.[10] They utilized an earnings model as the basis for their supply side estimate. As seen from Graph 5-12, the growth in corporate earnings is in line with the growth of overall economic productivity. The earnings model breaks historical returns into four pieces, with only three historically being supplied by companies: inflation, income return, and growth in real earnings per share. The growth in the P/E ratio, the fourth piece, is a reflection of investors' changing prediction of future earnings growth. The past supply of corporate growth is forecasted to continue; however, a change in investors' predictions is not. P/E rose dramatically from 1980 through 2001 because people believed that corporate earnings were going to grow faster in the future. This growth of P/E drove a small portion of the rise in equity returns over the same period.

Graph 5-13 illustrates the price to earnings ratio calculated using one-year and three-year average earnings from 1926 to 2007. The P/E ratio, using one-year average earnings, was 10.22 at the beginning of 1926 and ended the year 2007 at 19.80—an average increase of 0.81 percent per year. The highest P/E was 136.52 recorded in 1932, while the lowest was 7.07 recorded in 1948. Ibbotson Associates revised the calculation of the P/E ratio from a one-year to a three-year average earnings for use in equity forecasting. This is because reported earnings are affected not only by the long-term productivity, but also by "one-time" items that do not necessarily have the same consistent impact year after year. The three-year average is more reflective of the long-term trend than the year-by-year numbers. The P/E ratio calculated using the three-year average of earnings had an increase of 0.67 percent per year.

Graph 5-13
Large Company Stocks
P/E Ratio



10 Ibbotson, Roger G., and Peng Chen, "Long-Run Stock Returns: Participating in the Real Economy." *Financial Analysts Journal*, January/February, vol. 59, no.1, 2003, pp. 88-98.

The historical P/E growth factor using three-year earnings of 0.67 percent per year is subtracted from the forecast because it is not believed that P/E will continue to increase in the future. The market serves as the cue. The current P/E ratio is the market's best guess for the future of corporate earnings and there is no reason to believe, at this time, that the market will change its mind.

Thus, the supply of equity returns only includes inflation, the growth in real earnings per share, and income return:

$$SR = [(1 + CPI) \times (1 + g_{REPS}) - 1] + Inc + Rinv$$

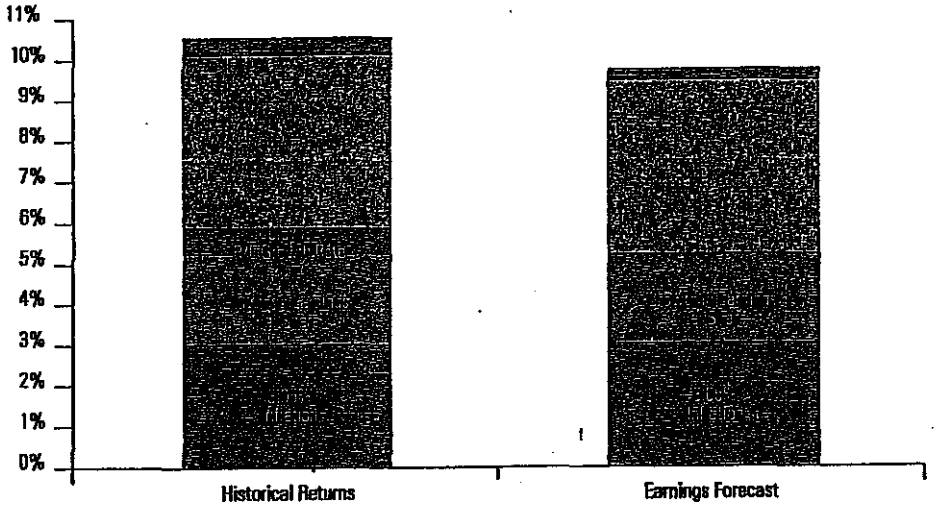
$$9.66\%^{*} = [(1 + 3.05\%) \times (1 + 2.14\%) - 1] + 4.20\% + 0.23\% \quad {}^{*}\text{difference due to rounding}$$

where:

SR = the supply of the equity return;
CPI = Consumer Price Index (inflation);
g_{REPS} = the growth in real earning per share;
Inc = the income return;
Rinv = the reinvestment return.

The forward-looking earnings model calculates the long-term supply of U.S. equity returns to be 9.66 percent.

Graph 5-14
Historical and Forecast Equity Returns Based on Earnings Model
1926–2007



Results add up geometrically, not arithmetically.
The darkest shade in the graph represents reinvested returns and an interaction factor between the return components.

Graph 5-14 illustrates the decomposition of historical equity returns from 1926-2007. It also illustrates the historical components that are supplied by companies: inflation, income return, and growth in real earnings per share. Once again the main difference between the historical and forecast equity returns is the exclusion of growth in P/E ratio in the forecasted earnings model.

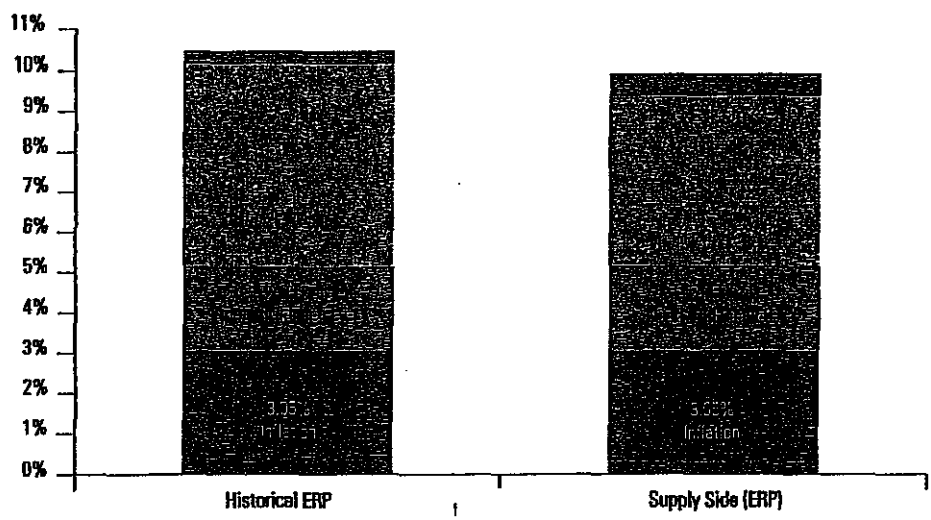
The equity risk premium, based on the supply side earnings model, is calculated to be 4.24 percent on a geometric basis.

$$SERP = \frac{(1+SR)}{(1+CPI)\times(1+RRf)} - 1$$

$$4.24\%^{*} = \frac{(1+9.66\%)}{(1+3.05\%)\times(1+2.06\%)} - 1 \qquad ^{*}\text{difference due to rounding}$$

where:
SERP = the supply side equity risk premium;
SR = the supply of the equity return;
CPI = Consumer Price Index (inflation);
RRf = the real risk-free rate.

Graph 5-15
Historical and Forecast Equity Risk Premium
1926–2007



Results add up geometrically, not arithmetically.
The darkest shade in the graph represents reinvested returns and an interaction factor between the return components.

Graph 5-15 compares the historical equity risk premium, which includes the P/E ratio, to the supply side equity risk premium calculated from 1926 to 2007 on a geometric basis. Contrary to several recent studies on equity risk premium that declare the forward-looking equity risk premium to be close to zero, or even negative, Ibbotson and Chen have found the long-term supply of equity risk premium to be only slightly lower than the straight historical estimate.

The supply side equity risk premium calculated earlier is a geometric calculation. An arithmetic calculation, as mentioned earlier in the chapter, is most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the buildup approach, the arithmetic calculation is the relevant number. There are several ways to convert the geometric average into an arithmetic average. One method is to assume the returns are independently lognormally distributed over time, where the arithmetic and geometric averages roughly follow the following relationship:

$$R_A = R_G + \frac{\sigma^2}{2}$$

$$6.23\% = 4.24\% + \frac{19.97\%^2}{2}$$

where:

R_A = the arithmetic average;
R_G = the geometric average;
σ = the standard deviation of equity returns.

As stated in IRS Ruling 59-60, although valuation is a forward-looking process, it must be based on facts available as of the required date of appraisal. Therefore, Ibbotson provides data critical to the valuation process as far back as 1926, such as the historical equity risk premium and size premium presented in Appendix A of this book. Similarly, Table 5-6 presents the supply side equity risk premium, on an arithmetic basis, beginning in 1926 and ending in each of the last 22 years.

Utilities Inc.
Brief Summary of Common Equity Cost Rate

No.	Principal Methods	Proxy Group of Six AUS Utility Reports Water Companies	Florida PSC Natural Gas Index
1.	Discounted Cash Flow Model (DCF) (1)	11.47 %	9.82 %
2.	Risk Premium Model (RPM) (2)	12.16 (3)	11.72 (3)
3.	Capital Asset Pricing Model (CAPM) (4)	12.20 (5)	10.95 (5)
4.	Comparable Earnings Model (CEM) (6)	13.56	15.75

Notes: (1) From page 2 of this Exhibit
(2) From page 11 of this Exhibit.
(3) Ms. Ahern did not utilize the average of the historical and projected market risk premia in calculating the Risk Premium Derived Common Equity Cost Rate. If she had utilized the average of the historical and projected market risk premia, the conclusions of her Risk Premium results would be 13.67% and 12.95% for the proxy group of six AUS Utility Reports water companies and the Florida PSC Natural Gas Index respectively.

(4) From page 19 of this Exhibit.
(5) Ms. Ahern did not utilize the average of the historical and projected market risk premia in calculating the CAPM/ECAPM Derived Common Equity Cost Rate. If she had utilized the average of the historical and projected market risk premia the conclusions of her CAPM results would be 15.02% and 13.54% for the proxy group of six AUS Utility Reports water companies and the Florida PSC Natural Gas Index respectively.

(6) From pages 24 and 29 of this Exhibit.

Utilities Inc.
Indicated Common Equity Cost Rate Through Use of the
Single Stage Discounted Cash Flow Model for
the Proxy Group of Six AUS Utility Reports Water Companies
and the Florida PSC Natural Gas Index

Based upon Historical and Projected Growth in DPS, EPS, and BR+SV

	1	2	3	4	5
	Average Dividend Yield (1)	Dividend Growth Component (2)	Adjusted Dividend Yield (3)	Growth Rate (4)	Indicated Common Equity Cost Rate (5)
Proxy Group of Six AUS Utility Reports Water Companies					
American States Water Co.	2.70 %	0.07 %	2.77 %	5.18 %	7.95 %
Aqua America, Inc.	3.01	0.13	3.14	8.57	11.71
California Water Service Group	3.15	0.08	3.23	4.84	8.07
SJW Corp.	2.34	0.12	2.46	10.63	13.09
Southwest Water Company	2.17	0.09	2.26	8.75	11.01
York Water Company	3.33	0.12	3.45	7.30	10.75
Average	2.78 %	0.10 %	2.89 %	7.55 %	10.43 %
Median	2.86 %	0.11 %	2.96 %	7.94 %	10.88 %

Based upon Projected Growth in EPS

	1	2	3	4	5
	Average Dividend Yield (1)	Dividend Growth Component (2)	Adjusted Dividend Yield (3)	Growth Rate (4)	Indicated Common Equity Cost Rate (5)
Proxy Group of Six AUS Utility Reports Water Companies					
American States Water Co.	2.70 %	0.09 %	2.79 %	7.00 %	9.79 %
Aqua America, Inc.	3.01	0.13	3.14	8.65	11.79
California Water Service Group	3.15	0.13	3.28	8.10	11.38
SJW Corp.	2.34	0.16	2.50	14.00	16.50
Southwest Water Company	2.17	0.11	2.28	10.00	12.28
York Water Company	3.33	0.16	3.49	9.75	13.24
Average	2.78 %	0.13 %	2.91 %	9.58 %	12.50 %
Median	2.86 %	0.13 %	2.97 %	9.20 %	12.04 %
Florida PSC Natural Gas Index					
AGL Resources	4.95 %	0.12 %	5.07 %	5.00 %	10.07 %
Almos Energy	4.76	0.11	4.87	4.75	9.62
Equitable Resources	1.58	0.11	1.69	14.25	15.94
Laclede Group	3.50	0.08	3.58	4.50	8.08
Nicor Inc.	4.28	0.10	4.38	4.50	8.88
Northwest Nat. Gas	3.18	0.09	3.27	5.65	8.92
Piedmont Natural Gas	3.75	0.11	3.86	5.90	9.76
South Jersey Inds.	2.95	0.10	3.05	6.85	9.90
Southwest Gas	2.99	0.09	3.08	6.15	9.23
WGL Holdings Inc.	4.25	0.07	4.32	3.50	7.82
Average	3.62 %	0.10 %	3.72 %	6.11 %	9.82 %
Median	3.63 %	0.10 %	3.72 %	5.33 %	9.43 %

Conclusion

Proxy Group of Six AUS Utility Reports Water Companies	
Average	11.47 %
Median	11.46 %
Florida PSC Natural Gas Index	
Average	9.82 %
Median	9.43 %

Notes:
(1) From page 3 of this Exhibit.
(2) This reflects a growth rate component equal to one-half the conclusion of growth rate (from page 1 of Schedule PMA-8 of this Exhibit) x Column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for American States Water Co., 2.70% x (1/2 x 5.18%) = 0.07%.
(3) Column 1 + Column 2.
(4) From page 4 of this Exhibit.
(5) Column 3 + Column 4.

Utilities Inc.
Derivation of Dividend Yield for Use in the
Discounted Cash Flow Model

	Dividend Yield		
	Spot (08/29/2008) (1)	Average of Last 3 Months (2)	Average Dividend Yield (3)
Proxy Group of Six AUS Utility Reports Water Companies			
American States Water Co.	2.53 %	2.86 %	2.70 %
Aqua America, Inc.	2.95	3.07	3.01
California Water Service Group	2.98	3.32	3.15
SJW Corp.	2.34	2.34	2.34
Southwest Water Company	2.03	2.32	2.17
York Water Company	3.40	3.26	3.33
Average	2.71 %	2.88 %	2.78 %
Median	2.74 %	2.97 %	2.86 %
Florida PSC Natural Gas Index			
AGL Resources	5.08 %	4.81 %	4.95 %
Atmos Energy	4.72	4.79	4.76
Equitable Resources	1.76	1.40	1.58
Laclede Group	3.34	3.67	3.50
Nicor Inc.	4.03	4.53	4.28
Northwest Nat. Gas	3.08	3.28	3.18
Piedmont Natural Gas	3.60	3.90	3.75
South Jersey Inds.	3.03	2.87	2.95
Southwest Gas	2.97	3.01	2.99
WGL Holdings Inc.	4.41	4.09	4.25
Average	3.60 %	3.64 %	3.62 %
Median	3.47 %	3.78 %	3.63 %

Notes:
(1) The spot dividend yield is the current annualized dividend per share divided by the spot market price on 08/29/08.
(2) The average 3-month dividend yield was computed by relating the indicated annualized dividend rate and market price on the last trading day of each of the three months ended July 31, 2008.
(3) Equal weight has been given to the 3-month average and spot dividend yield. This provides recognition of current conditions, but does not place undue emphasis thereon.

Source of Information: S&P Stock Guides June-August 2008
yahoo.finance.com

Utilities Inc.
Historical and Projected Growth

	1	2	3	4	5	6		7	8	9	10	11	12	13
	Value Line Historical Five Year Growth Rate (1)		Five Year Historical BR + SV (2)	Value Line Projected 2008-07 to 2011-13 Growth Rate (1)		Reuters Mean Consensus Projected Five Year Growth Rate		Average Projected Five Year Growth Rate in EPS (3)	Projected Five Year BR + SV (4)	Range of Growth Rates			Median of all Growth Rates	Average of Midpoint and Median of all Growth Rates (9)
	DPS	EPS		DPS	EPS	EPS	No. of Est.			Low	High	Midpoint		
Proxy Group of Six AUS Utility Reports														
Water Companies														
American States Water Co.	1.50 %	1.50 %	4.61 %	5.00 %	10.00 %	4.00 %	[1]	7.00 %	5.41 %	1.50 %	10.00 %	5.75 %	4.61 %	5.18 %
Aqua America, Inc.	7.50	7.00	8.98	7.50	9.00	3.80	[3]	6.85	12.32	6.98	12.32	9.64	7.50	8.57
California Water Service Group	0.50	4.50	5.17	1.00	8.50	7.70	[3]	8.10	7.74	0.50	8.50	4.50 (6)	5.17	4.84
SJW Corp.	5.50	9.50	7.09	NA	10.00	15.00	[1]	14.00	NA	5.50	15.00	11.75	9.50	10.63
Southwest Water Company	9.00	(19.50)	9.41	6.00	12.00	5.00	[3]	10.00	8.98	6.00 (8)	12.00	9.00 (6)	9.00 (5)	9.76
York Water Company	5.95 (5)	6.45 (5)	4.75	NA	11.50	5.00	[1]	9.75	NA	4.75	11.50	8.14	6.45	7.30
Average	5.99 % (8)	6.11 % (8)	6.34 %	4.88 %	10.17 %	9.00 %		9.58 %	8.86 %	4.21 %	12.06 %	8.13 %	6.96 %	7.58 %
Median	5.95 %	6.45 %	5.96 %	5.00 %	10.00 %	5.00 %		9.75 %	8.41 %	5.50 %	12.00 %	9.00 %	7.50 %	8.57 %
Florida PSC Natural Gas Index														
AGL Resources					3.50 %	5.50 %	[2]	5.00 %						5.00 %
Atmos Energy					4.50	5.00	[5]	4.75						4.75
Equitable Resources					15.50	13.00	[3]	14.25						14.25
Laclede Group					4.50	NA	[NA]	4.50						4.50
Nicor Inc.					4.50	4.50	[4]	4.50						4.50
Northwest Nat. Gas					7.00	4.30	[3]	5.65						5.65
Piedmont Natural Gas					5.00	5.80	[4]	5.90						5.90
South Jersey Inds.					6.00	7.70	[3]	6.85						6.85
Southwest Gas					7.00	5.30	[3]	6.15						6.15
WGL Holdings Inc.					3.50	NA	[NA]	3.50						3.50
Average					6.22 %	6.81 %		7.13 %						7.13 %
Median					5.25 %	5.65 %		5.33 %						5.33 %

NA= Not Applicable

Notes:
(1) As shown on pages 31 through 46 of this Exhibit. Historical growth rates are five-year compound growth rates.
(2) From page 2 of this Schedule.
(3) Average of Columns 5 and 6.
(4) From page 3 of this Schedule.
(5) Calculated using the same methodology as Value Line Investment Survey, i.e., three-year base periods ending 2007.
(6) Average of Columns 1, 2, 3, 4, 5, 6, and 8.
(7) From Column 7.
(8) Excludes negatives.
(9) Average of Column 11 and Column 12.

Source of Information: Value Line Investment Survey
Reuters Company Research August 28, 2008

Utilities Inc.
Calculation of Historical BR + SV

	1	2	3	4	5
	BR (1)	S Factor (2)	V Factor (3)	SV (4)	BR + SV (5)
Proxy Group of Six AUS Utility Reports Water Companies					
American States Water Co.	3.30 %	2.63 %	49.92 %	1.31 %	4.61 %
Aqua America, Inc.	4.51	3.49	70.00	2.44	6.95
California Water Service Group	1.66	6.50	54.05	3.51	5.17
SJW Corp.	7.04	0.10	54.99	0.05	7.09
Southwest Water Company	3.14	12.14	51.68	6.27	9.41
York Water Company	2.49	3.42	66.96	2.29	4.78
Average	3.69 %	4.71 %	57.93 %	2.65 %	6.34 %
Median	3.22 %	3.46 %	54.52 %	2.37 %	6.06 %

Notes:
(1) From column 6, page 6 of this Exhibit.
(2) From column 12, page 7 of this Exhibit.
(3) From column 7, page 8 of this Exhibit.
(4) Column 2 * column 3.
(5) Column 1 + column 4.

Utilities Inc.
Historical Internal Growth Rate (1), i.e., BR, for
the Proxy Group of Six AUS Utility Reports Water Companies
for the Years 2003 -2007

	1	2	3	4	5	6
	2007	2006	2005	2004	2003	Five-Year Average 2003-2007 Internal Growth Rate, i.e., BR
Proxy Group of Six AUS Utility Reports Water Companies						
American States Water Co.						
Common Equity Return Rate	9.57 %	8.43 %	10.38 %	7.99 %	5.59 %	
Retention Ratio	41.30	32.40	43.59	25.17	(12.98)	
Internal Growth Rate (1)	3.95	2.73	4.52	2.01	(0.73)	3.30 % (2)
Aqua America, Inc.						
Common Equity Return Rate	10.01 %	10.61 %	11.69 %	11.39 %	12.30 %	
Retention Ratio	32.89	36.93	43.90	42.75	43.61	
Internal Growth Rate (1)	3.29	3.92	5.13	4.87	5.36	4.51
California Water Service Group						
Common Equity Return Rate	8.16 %	7.56 %	9.31 %	9.72 %	8.68 %	
Retention Ratio	22.56	14.21	25.81	22.97	8.79	
Internal Growth Rate (1)	1.84	1.07	2.40	2.23	0.76	1.66
SJW Corp.						
Common Equity Return Rate	8.31 %	18.19 %	11.48 %	11.27 %	11.68 %	
Retention Ratio	42.61	72.66	55.23	52.90	52.56	
Internal Growth Rate (1)	3.54	13.22	6.34	5.96	6.14	7.04
Southwest Water Company						
Common Equity Return Rate	(3.11) %	5.99 %	5.36 %	4.40 %	10.20 %	
Retention Ratio	211.99	46.26	42.00	21.88	64.23	
Internal Growth Rate (1)	(6.59)	2.77	2.26	0.96	6.55	3.14 (2)
York Water Company						
Common Equity Return Rate	9.67 %	10.52 %	11.85 %	12.17 %	11.66 %	
Retention Ratio	17.86	20.87	24.70	25.86	21.04	
Internal Growth Rate (1)	1.71	2.20	2.93	3.15	2.45	2.49
Average						3.69 %
Median						3.22 %

Notes: (1) The internal growth rate is calculated by multiplying the common equity return rate by the retention ratio (100% minus the dividend payout ratio). All data are on a consolidated basis.

(2) Excludes negatives.

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Database
EDGAR Online's I-Metrix Database
Company Annual Forms 10-K

Utilities Inc.
Calculation of Five Year Average Growth in Common Shares Outstanding (1), i.e., S Factor

	1 2002 Common Shares Outstanding (1)	2 02-03 Growth	3 2003 Common Shares Outstanding (1)	4 03-04 Growth	5 2004 Common Shares Outstanding (1)	6 04-05 Growth	7 2005 Common Shares Outstanding (1)	8 05-06 Growth	9 2006 Common Shares Outstanding (1)	10 06-07 Growth	11 2007 Common Shares Outstanding (1)	12 Five Year Average Common Share Growth
Proxy Group of Six AUS Utility Reports												
Water Companies												
American States Water Co.	15.181	0.20 %	15.212	10.12 %	16.752	0.27 %	16.796	1.49 %	17.049	1.07 %	17.231	2.68 %
Aqua America, Inc.	119.195	8.06	123.452	3.02	127.180	1.41	128.969	2.60	132.325	1.34	134.099	3.49
California Water Service Group	16.182	11.53	18.932	8.48	18.367	0.13	18.390	12.33	20.657	0.04	20.666	6.30
SJW Corp.	18.270	0.00	18.270	0.00	18.270	0.00	18.270	0.07	18.282	0.44	18.362	0.10
Southwest Water Company	13.862	18.36	15.173	25.92	20.365	3.75	21.129	12.85	23.802	0.00	23.802	13.14
York Water Company	9.547	0.66	9.628	7.29	10.331	0.67	10.400	7.70	11.201	0.57	11.265	3.43
Average												4.71 %
Median												3.46 %

Notes: (1) Year-end shares outstanding.
(2) Excludes negatives.

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Database
EDGAR Online's I-Metrix Database
Company Annual Forms 10-K

Exhibit (PMA-28)
Page 7 of 46

Utilities Inc.
Calculation of the Premium/Discount of a
Company's Stock Price Relative to its Book Value, i.e., V Factor

	1	2	3	4	5	6	7
	2003 Market to Book Ratio (1)	2004 Market to Book Ratio (1)	2005 Market to Book Ratio (1)	2006 Market to Book Ratio (1)	2007 Market to Book Ratio (1)	Five Year Average Market to Book Ratio	V Factor (2)
Proxy Group of Six AUS Utility Reports							
Water Companies							
American States Water Co.	180.32 %	164.33 %	191.52 %	228.93 %	233.23 %	199.67 %	49.92 %
Aqua America, Inc.	295.83	291.42	383.81	376.47	319.27	333.32	70.00
California Water Service Group	199.83	212.56	231.58	228.96	215.26	217.64	54.05
SJW Corp.	157.17	178.24	210.59	266.55	278.31	222.17	54.99
Southwest Water Company	206.16	222.48	185.64	215.62	204.75	206.97	51.68
York Water Company	286.90	287.48	311.01	339.98	287.96	302.67	66.96
Average						247.07 %	57.93 %
Median						219.91 %	54.52 %

Notes: (1) Market to Book Ratio = average of yearly high-low market price divided by the average of beginning and ending year's balance of book common equity per share.
(2) (1 - (100 / column 6)).

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Database
EDGAR Online's I-Metrix Database
Company Annual Forms 10-K

Utilities Inc.
Calculation of Projected BR + SV

	1	2	3	4	5	6	7	8	9	10	11
	Common Shares Outstanding (1) (000,000)			Projected 2011 - 2013 (1)							
	Actual 2007	Projected 2011-2013	S Factor (2)	High Stock Price	Low Stock Price	Book Value	Average Stock Price (3)	V Factor (4)	SV (5)	BR (6)	BR + SV (7)
Proxy Group of Six AUS Utility Reports											
Water Companies											
American States Water Co.	17.23	19.00	1.97 %	$ 85.00	$ 40.00	$ 19.20	$ 62.50	69.43 %	1.25 %	7.16 %	8.41 %
Aqua America, Inc.	133.40	139.00	0.83	35.00	25.00	10.10	30.00	66.33	0.55	11.77	12.32
California Water Service Group	20.67	26.00	3.88	60.00	40.00	21.80	50.00	56.40	2.19	5.55	7.74
SJW Corp.	15.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Southwest Water Company	24.27	28.00	2.90	20.00	14.00	7.85	17.00	53.82	1.56	5.40	6.96
York Water Company	11.27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Average			2.40 %					60.00 %	1.39 %	7.47 %	8.86 %
Median			2.44					59.92 %	1.41 %	6.36 %	8.08 %

NA = Not Available

Notes:
(1) From pages 31 through 46 of this Exhibit.
(2) The S Factor is the six or five year compound growth rate between the 2007 and 2012 (mid-point of 2011-2013 projection) common shares outstanding.
(3) The Average Stock Price is the average of column 4 and column 5.
(4) (1 - (column 6 / column 7))
(5) Column 3 * column 8.
(6) From page 10, column 14 of this Exhibit.
(7) Column 9 + column 10.

Source of Information: Value Line Investment Survey

Liberias Inc.
Projected Internal Growth Rate

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	2007			2011-2013					2011-2013					
	Common Equity (%) (1)	Total Capital ($ mill) (1)	Common Equity ($ mill) (2)	Common Equity (%) (1)	Total Capital ($ mill) (1)	Common Equity ($ mill) (3)	Annual Common Equity Growth Rate (4)	ROE Adjustment Factor (5)	Return on Common Equity (1)	Return on Average Common Equity (6)	EPS (1)	DPS (1)	Retention Ratio (7)	Projected Internal Growth (8)
Proxy Group of Six AUS Utility Reports														
Water Companies														
American States Water Co.	53.10 %	$ 869.40	$ 302.35	50.00 %	$ 730.00	$ 365.00	3.84 %	1.02 %	13.50 %	13.77 %	$ 2.60	$ 1.20	52.00 %	7.16 %
Aqua America, Inc.	44.80	2,191.40	877.36	48.00	2,655.00	1,308.98	7.44	1.04	12.00	12.48	1.20	0.68	84.33	11.77
California Water Service Group	56.60	674.90	361.99	52.00	1,050.00	546.00	7.41	1.04	11.00	11.44	2.35	1.21	48.51	5.58
SJW Corp.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Southwest Water Company	80.00	290.00	145.00	82.00	370.00	229.40	9.81	1.05	8.00	8.48	0.70	0.30	57.14	8.40
York Water Company	83.50	128.70	87.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Average														7.47 %
Median														6.38 %

NA = Not Available

Notes:
(1) From pages 31 through 46 of this Exhibit.
(2) Column 1 * column 2.
(3) Column 4 * column 5.
(4) Five year compound growth rate in common equity from 2007 to 2011-2013 or ((((column 6 / column 3) ^ (1/5)) - 1)).
(5) 2 * ((1 + column 7) / (2 + column 7)) .
(6) Column 8 * column 9.
(7) 1 - (column 12 / column 11).
(8) Column 10 * column 13.

Source of Information: Value Line Investment Survey

Utilities Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Proxy Group of Six AUS Utility Reports Water Companies	Florida PSC Natural Gas Index
1.	Prospective Yield on Aaa Rated Corporate Bonds (1)	5.87 %	5.87 %
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A Rated Public Utility Bonds	0.71 (2)	0.71 (2)
3.	Adjusted Prospective Yield on A Rated Public Utility Bonds	6.58 %	6.58 %
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	0.00 (3)	0.18 (4)
5.	Adjusted Prospective Bond Yield	6.58	6.76
6.	Equity Risk Premium (5)	5.58	4.96
7.	Risk Premium Derived Common Equity Cost Rate (6)	12.16 %	11.72 %

Notes:
(1) Derived in Note (3) on page 16 of this Exhibit.
(2) The average yield spread of A rated public utility bonds over Aaa rated corporate
(3) No adjustment necessary as the average Moody's bond rating of the proxy group is A2 as shown on page 2 of this Exhibit.
(4) Adjustment to reflect the A3 Moody's Bond Rating of the Florida PSC Natural Gas Index. The 18 basis point adjustment is derived by taking 1/3 of the spread between Baa and A2 Public Utility Bonds (1/3 * 0.55% = 0.18%)
(5) From page 15 of this Exhibit.
(6) Ms. Ahern did not utilize the average of the historical and projected market risk premia in calculating the Risk Premium Derived Common Equity Cost Rate. If she had utilized the average of the historical and projected market risk premia, the conclusions of her Risk Premium results would be 13.67% and 12.95% for the proxy group of six AUS Utility Reports water companies and the Florida PSC Natural Gas Index respectively.

Comparison of Bond Ratings, Business Risk and Financial Risk Profiles for
the Proxy Group of Six AUS Utility Reports Water Companies
and the Florida PSC Natural Gas Index

		Moody's Bond Rating August 2008		Standard & Poor's Bond Rating August 2008							
		Bond Rating	Numerical Weighting (1)	Bond Rating	Numerical Weighting (1)	Credit Rating	Numerical Weighting (1)	Business Risk Profile (2)	Numerical Weighting (1)	Financial Risk Profile (2)	Numerical Weighting (1)
Proxy Group of Six AUS Utility Reports Water Companies											
American States Water Company (3)		A2	6	A	6	A	6	Excellent	1	Intermediate	2
Aqua America, Inc.(4)		NR	--	AA-	4	A+	5	Excellent	1	Intermediate	2
California Water Services Group (5)		NR	--	NR	--	A+	5	Excellent	1	Intermediate	2
SJW Corporation (6)		NR	--	NR	--	NR	--	NR	--	NR	--
Southwest Water Company (7)		NR	--	NR	--	NR	--	NR	--	NR	--
York Water Company (The)		NR	--	A-	7	A-	7	Excellent	1	Intermediate	2
	Average	A2	6.0	A	5.7	A	6.0	Excellent	1.0	Intermediate	2.0
Florida PSC Natural Gas Index											
AGL Resources Inc. (8)		A3	7	A-	7	A	6	Excellent	1	Intermediate	2
Atmos Energy		Baa3	10	BBB	9	BBB	9	Excellent	1	Aggressive	3
Equitable Resources Inc.		Baa1	9	BBB	9	BBB+	8	Satisfactory	3	Intermediate	2
Nicor Inc. (9)		A1	5	AA	3	AA	3	Excellent	1	Intermediate	2
Laclede Group, Inc.(The) (10)		A3	7	A	6	A	6	Excellent	1	Intermediate	2
Northwest Natural Gas Company		A2	6	A-	7	AA-	4	Excellent	1	Intermediate	2
Piedmont Natural Gas Company		A3	7	A	6	A	6	Excellent	1	Intermediate	2
South Jersey Industries (12)		Baa1	8	A	6	BBB+	8	Excellent	1	Aggressive	3
Southwest Gas Corp.		Baa3	10	BBB-	10	BBB-	10	Strong	2	Aggressive	3
WGL Holdings, Inc. (13)		A2	6	AA-	4	AA-	4	Excellent	1	Intermediate	2
	Average	A3	7.4	A/A-	6.7	A	6.4	Excellent	1.3	Intermediate	2.3

Notes:

(1) From page 13 of this Exhibit.
(2) From Standard & Poor's Issuer Ranking: U.S. Investor-Owned Water Utilities, Strongest to Weakest, August 8, 2008.
(3) Ratings, business risk and financial risk profiles are those of Golden State Water Company
(4) Ratings, business risk and financial risk profiles are those of Aqua Pennsylvania, Inc.
(5) Ratings, business risk and financial risk profiles are those of California Water Service Company.
(6) Ratings, business risk and financial risk profiles are those of San Jose Water Company.
(7) Ratings, business risk and financial risk profiles are a composite of those of Hornsby Bend Utility Co., New Mexico Utilities, Inc., Suburban Water Systems, and Windermere Utility Co.
(8) Ratings, business risk and financial risk profiles are those of Atlanta Gas Light Company.
(9) Ratings, business risk and financial risk profiles are those of Nicor Gas Company.
(10) Ratings, business risk and financial risk are those of Laclede Gas Company.
(11) Ratings, business risk and financial risk profiles are those of New Jersey Natural Gas Company.
(12) Ratings, business risk and financial risk profiles are those of South Jersey Gas.
(13) Ratings, business risk and financial risk profiles are those of Washington Gas Light Company.

Source info: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

Utilities Inc.
Numerical Assignment for
Moody's and Standard & Poor's Bond Ratings
Standard & Poor's Business and Financial Risk Profiles

Moody's Bond Rating	Numerical Bond Weighting	Standard & Poor's Bond Rating
Aaa	1	AAA
Aa1	2	AA+
Aa2	3	AA
Aa3	4	AA-
A1	5	A+
A2	6	A
A3	7	A-
Baa1	8	BBB+
Baa2	9	BBB
Baa3	10	BBB-
Ba1	11	BB+
Ba2	12	BB
Ba3	13	BB-

Standard & Poor's

Business Risk Profile	Numerical Weighting	Financial Risk Profile	Numerical Weighting
Excellent	1	Modest	1
Strong	2	Intermediate	2
Satisfactory	3	Aggressive	3
Weak	4	Highly Leveraged	4
Vulnerable	4		

Moody's
Comparison of Interest Rate Trends
for the Three Months Ending July 2008 (1)

Years	Corporate Bonds Aaa Rated	Public Utility Bonds Aa Rated	Public Utility Bonds A Rated	Public Utility Bonds Baa Rated	Spread - Corporate v. Public Utility Bonds Aa (Pub. Util.) over Aaa (Corp.)	Spread - Corporate v. Public Utility Bonds A (Pub. Util.) over Aaa (Corp.)	Spread - Corporate v. Public Utility Bonds Baa (Pub. Util.) over Aaa (Corp.)	Spread - Public Utility Bonds A over Aa	Spread - Public Utility Bonds Baa over A
May-08	5.57	6.07	6.27	6.79 %					
June-08	5.66	6.19	6.38	6.93					
July-08	5.67	6.13	6.40	6.97					
Average of Last 3 Months	5.64 %	6.13 %	6.35 %	6.90 %	0.49 %	0.71 %	1.26 %	0.22 %	0.55 %

Notes: (1) All yields are distributed yields.

Source of Information: Mergent Bond Record, August 2008, Vol. 75, No. 8

Utilities Inc.
Judgment of Equity Risk Premium for
the Proxy Group of Six AUS Utility Reports Water Companies
and the Florida PSC Natural Gas Index

Line No.		Proxy Group of Six AUS Utility Reports Water Companies	Florida PSC Natural Gas Index
1.	Calculated equity risk premium based on the total market using the beta approach (1)	6.51	5.27
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A rated bonds (2)	4.65	4.65
3.	Average equity risk premium (3)	5.58 %	4.96 %

Notes: (1) From page 16 of this Exhibit.
(2) From page 17 of this Exhibit.
(3) If the average of the historical and projected equity risk premium were used in deriving the average equity risk premium the results would be 7.09% and 6.18% for the proxy group of six AUS Utility Reports water companies and the Florida PSC Natural Gas Index respectively.

Utilities Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
the Proxy Group of Six AUS Utility Reports Water Companies
and the Florida PSC Natural Gas Index

Line No.		Proxy Group of Six AUS Utility Reports Water Companies	Florida PSC Natural Gas Index
1.	Arithmetic mean total return rate on the Standard & Poor's 500 Composite Index - 1926-2007 (1)	12.30 %	12.30 %
2.	Arithmetic mean yield on Aaa and Aa Corporate Bonds 1926-2007 (2)	(6.10)	(6.10)
3.	Historical Equity Risk Premium	6.20 %	6.20 %
4.	Forecasted 3-5 year Total Annual Market Return (3)	17.83 %	17.83 %
5.	Prospective Yield on Aaa Rated Corporate Bonds (4)	(5.87)	(5.87)
6.	Forecasted Equity Risk Premium	11.96 %	11.96 %
7.	Conclusion of Equity Risk Premium (5)	6.20 %	6.20 %
8.	Adjusted Value Line Beta (6)	1.05	0.85
9.	Beta Adjusted Equity Risk Premium	6.51 %	5.27 %

Notes:

(1) From Ibbotson SBBI - 2008 Valuation Yearbook - Market Results for Stocks Bonds Bills and Inflation for 1926-2007 - 2008 Yearbook Valuation Edition, Morningstar, Inc., 2008 Chicago, IL.

(2) From Moody's Industrial Manual and Mergent Bond Record Monthly Update.

(3) From page 21 of this Exhibit.

(4) Average forecast based upon six quarterly estimates of Aaa rated corporate bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated September 1, 2008 (see Exhibit (PMA-2) Page 2 of 2. The estimates are detailed below.

Third Quarter 2008	5.70 %
Fourth Quarter 2008	5.70
First Quarter 2009	5.80
Second Quarter 2009	5.90
Third Quarter 2009	6.00
Fourth Quarter 2009	6.10
Average	5.87 %

(5) The average of the Historical Equity Risk Premium of 6.20% from Line No. 3 and the Forecasted Equity Risk Premium of 11.60% from Line No. 6 ((6.20% + 11.60%) / 2 = 8.90%. Normally, Ms. Ahern would use the average Historical Equity Risk Premium in her Risk Premium Analysis. However, in Ms. Ahern's opinion, the current and recent substantial volatility in the stock market is extraordinary and not representative of the expected long-term. Consequently, in this instance, Ms. Ahern will not consider what she believes is an extraordinary expected capital appreciation and instead will rely only upon the 6.20% historical market premium. If she had relied on the average of the historical and the forcasted equity risk premium, the results for the beta adjusted equity risk premium would be 9.53% and 7.72% for the proxy group of six AUS Utility reports water companies and the Florida PSC Natural Gas Index respectively

(6) From page 18 of this Exhibit.

Utilities Inc.
Derivation of Mean Equity Risk Premium Based on a Study
Using Holding Period Returns of Public Utilities

Line No.		Over A Rated Public Utility Bonds AUS Consultants - Utility Services Study (1)
Time Period		1928-2007
1.	Arithmetic Mean Holding Period Returns (2): Standard & Poor's Public Utility Index	11.24 %
2.	Arithmetic Mean Yield on: Moody's A Rated Public Utility Bonds	(6.59)
3.	Equity Risk Premium	4.65 %

Notes: (1) S&P Public Utility Index and Moody's Public Utility Bond Average Annual Yields 1928-2007, (AUS Consultants - Utility Services, 2008).

(2) Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.

Utilities Inc.
Value Line Adjusted Betas for
the Proxy Group of Six AUS Utility Reports Water Companies
and the Florida PSC Natural Gas Index

	Value Line Adjusted Beta
Proxy Group of Six AUS Utility Reports Water Companies	
American States Water Co.	1.05
Aqua America, Inc.	0.95
California Water Service Group	1.15
SJW Corp.	1.15
Southwest Water Company	1.05
York Water Company	0.50
Average	0.98
Median	1.05
Florida PSC Natural Gas Index	
AGL Resources	0.85
Atmos Energy	0.85
Equitable Resources	0.95
Laclede Group	0.85
Nicor Inc.	0.95
Northwest Nat. Gas	0.80
Piedmont Natural Gas	0.85
South Jersey Inds.	0.85
Southwest Gas	0.90
WGL Holdings Inc.	0.90
Average	0.88
Median	0.85

Source of Information: Value Line Investment Survey March 14, 2008 and January 25, 2008
Standard Edition and Small and Mid-Cap Edition

Utilities Inc.
of the Capital Asset Pricing Model for
the Proxy Group of Six AUS Utility Reports Water Companies
and the Florida PSC Natural Gas Index

Line No.		Proxy Group of Six AUS Utility Reports Water Companies	Florida PSC Natural Gas Index
1.	Traditional Capital Asset Pricing Model (1)	12.24 %	10.82 %
2.	Empirical Capital Asset Pricing Model (1)	12.15 %	11.08 %
3.	Conclusion (2)	12.20 %	10.95 %

Notes: (1) From page 20 of this Exhibit.
(2) Ms. Ahern did not utilize the average of the historical and projected market risk premia in calculating the CAPM/ECAPM Derived Common Equity Cost Rate. If she had utilized the average of the historical and projected market risk premia the conclusions of her CAPM results would be 15.02% and 13.54% for the proxy group of six AUS Utility Reports water companies and the Florida PSC Natural Gas Index respectively.

Utilities Inc.
Indicated Common Equity Cost Rate Through Use
of the Capital Asset Pricing Model

	1 Value Line Adjusted Beta	2 Company-Specific Risk Premium Based on Market Premium of 7.10% (1)	3 CAPM Result Including Risk-Free Rate of 4.78% (2)
		Traditional Capital Asset Pricing Model (3)	
Proxy Group of Six AUS Utility Reports Water Companies			
American States Water Co.	1.05	7.46 %	12.24 %
Aqua America, Inc.	0.95	6.75	11.53
California Water Service Group	1.15	8.17	12.95
SJW Corp.	1.15	8.17	12.95
Southwest Water Company	1.05	7.46	12.24
York Water Company	0.50	3.55	8.33
Average	0.98	6.93 %	11.71 %
Median	1.05	7.46 %	12.24 %
Florida PSC Natural Gas Index			
AGL Resources	0.85	6.04 %	10.82 %
Atmos Energy	0.85	6.04	10.82
Equitable Resources	0.95	6.75	11.53
Laclede Group	0.85	6.04	10.82
Nicor Inc.	0.95	6.75	11.53
Northwest Nat. Gas	0.80	5.68	10.46
Piedmont Natural Gas	0.85	6.04	10.82
South Jersey Inds.	0.85	6.04	10.82
Southwest Gas	0.90	6.39	11.17
WGL Holdings Inc.	0.90	6.39	11.17
Average	0.88	6.22 %	11.00 %
Median	0.85	6.04 %	10.82 %
		Empirical Capital Asset Pricing Model (5)	
Proxy Group of Six AUS Utility Reports Water Companies			
American States Water Co.	1.05	7.37 %	12.15 %
Aqua America, Inc.	0.95	6.83	11.61
California Water Service Group	1.15	7.90	12.68
SJW Corp.	1.15	7.90	12.68
Southwest Water Company	1.05	7.37	12.15
York Water Company	0.50	4.44	9.22
Average	0.98	6.97 %	11.75 %
Median	1.05	7.37 %	12.15 %
Florida PSC Natural Gas Index			
AGL Resources	0.85	6.30 %	11.08
Atmos Energy	0.85	6.30	11.08
Equitable Resources	0.95	6.83	11.61
Laclede Group	0.85	6.30	11.08
Nicor Inc.	0.95	6.83	11.61
Northwest Nat. Gas	0.80	6.04	10.82
Piedmont Natural Gas	0.85	6.30	11.08
South Jersey Inds.	0.85	6.30	11.08
Southwest Gas	0.90	6.57	11.35
WGL Holdings Inc.	0.90	6.57	11.35
Average	0.88	6.43 %	11.21 %
Median	0.85	6.30 %	11.08 %

See page 21 for notes.

Utilities Inc.
Development of the Market-Required Rate of Return on Common Equity Using
the Capital Asset Pricing Model for
the Proxy Group of Six AUS Utility Reports Water Companies
and the Florida PSC Natural Gas Index
Adjusted to Reflect a Forecasted Risk-Free Rate and Market Return

Notes:

(1) For reasons explained in Ms. Ahern's accompanying direct testimony, from the three previous month-end (Jun. '08 – Aug. '08), as well as a recently available (Aug. 29, 2008), Value Line Summary & Index, a forecasted 3-5 year total annual market return of 17.83% can be derived by averaging the 3-month and spot forecasted total 3-5 year total appreciation, converting it into an annual market appreciation and adding the Value Line average forecasted annual dividend yield.

The 3-5 year average total market appreciation of 78% produces a four-year average annual return of 15.51% ($(1.78^{.25}) - 1$). When the average annual forecasted dividend yield of 2.32% is added, a total average market return of 17.83% (2.32% + 15.51%) is derived.

The 3-month and spot forecasted total market return of 17.83% minus the risk-free rate of 4.78% (developed in Note 2) is 13.05% (17.83% - 4.78%). The Morningstar, Inc. (Ibbotson Associates) calculated market premium of 7.10% for the period 1926-2007 results from a total market return of 12.30% less the average income return on long-term U.S. Government Securities of 5.20% (12.30% - 5.20% = 7.10%). This is then averaged with the 13.05% Value Line market premium resulting in a 10.08% market premium. In Ms. Ahern's opinion, the current and recent substantial decline in the stock market is extraordinary and not representative of the expected long-term. Consequently, in this instance, Ms. Ahern will not consider what she believes is an extraordinary expected capital appreciation and instead will rely only upon the 7.10% historical market premium which will be then multiplied by the beta in column 1 of page20 of this Exhibit.

(2) Average forecast based upon six quarterly estimates of 30-year Treasury Note yields per the consensus of nearly 50 economists reported in the Blue Chip Financial Forecasts dated September 1, 2008 (see page 2 of Exhibit. (PMA-2)_) The estimates are detailed below:

	30-Year Treasury Note Yield
First Quarter 2008	4.60%
Second Quarter 2008	4.60
Third Quarter 2008	4.70
Fourth Quarter 2008	4.80
First Quarter 2009	4.90
Second Quarter 2009	5.10
Average	4.78%

(3) The traditional Capital Asset Pricing Model (CAPM) is applied using the followig formula:

$R_S = R_F + \beta (R_M - R_F)$

Where R_S = Return rate of common stock
R_F = Risk Free Rate
β = Value Line Adjusted Beta
R_M = Return on the market as a whole

(4) The empirical CAPM is applied using the following formula:

$R_S = R_F + .25 (R_M - R_F) + .75 \beta (R_M - R_F)$

Where R_S = Return rate of common stock
R_F = Risk-Free Rate
β = Value Line Adjusted Beta
R_M = Return on the market as a whole

Source of Information:
Value Line Summary & Index
Blue Chip Financial Forecasts, September 1, 2008
Value Line Investment Survey, Standard Edition and Small and Mid-Cap Edition
2008 Ibbotson Risk Premia Over Time Report– Estimates for 1926-2007, Morningstar, Inc., Chicago, IL, 2008

Utilities Inc.
Comparable Earnings Analysis
for a Proxy Group of Two Hundred Twenty Two Non-Utility Companies Comparable to the
Proxy Group of Six AUS Utility Reports Water Companies (1)

Proxy Group of Two Hundred Twenty Two Non-Utility Companies Comparable to the Proxy Group of Six AUS Utility Reports Water Companies (1)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth or Partners' Capital: 5-Year Average (2) Percent	5-Year Average (2) Student's Statistic	5-Year Projected (3) Percent	5-Year Projected (3) Student's Statistic
Advance Auto Parts	1.00	0.84	3.4143	0.1262	24.84 %	1.02	20.00 %	0.54
AllianceBernstein Hldg.	1.20	1.27	2.9343	0.1102	21.08	0.62	30.50	1.86
Applied Biosystems	0.85	0.77	3.5627	0.1082	15.59	-	15.00	0.28
ABM Industries Inc.	0.85	0.80	3.2921	0.1232	8.86	(0.79)	13.00	(0.38)
Amer. Cap. Strategies	1.15	1.21	3.0430	0.1143	10.72	(0.84)	15.00	(0.08)
Alcon Inc.	0.80	0.85	3.5142	0.1318	43.22 (4)	3.08	37.50 (4)	2.74
Accenture Ltd.	1.05	1.05	2.8867	0.1063	54.48 (4)	4.36	41.50 (4)	3.35
Affiliated Computer	0.85	0.81	3.4013	0.1277	13.82	(0.23)	14.50	(0.16)
Analog Devices	0.90	0.81	3.5223	0.1323	14.82	(0.10)	31.00	1.82
Archer Daniels Mid'd	1.00	0.89	3.4808	0.1269	10.82	(0.53)	13.00	(0.38)
Allergan, Inc.	0.85	0.76	2.8734	0.1079	37.16	1.30	14.00	(0.22)
Albemarle Corp.	1.27	1.38	2.8897	0.1082	14.08	(0.17)	16.50	0.47
Allied Capital Corp.	0.90	0.81	3.1659	0.1200	14.02	(0.17)	27.40	1.47
Amer. Greetings	0.90	0.83	3.1869	0.1201	6.96	(0.96)	8.00	(0.85)
Amgen	0.80	0.82	3.0887	0.1161	17.48	0.22	13.50	(0.38)
Aon Corp.	1.00	0.93	3.6683	0.1374	12.20	(0.37)	11.50	(0.54)
Apache Corp.	1.05	1.03	3.4830	0.1311	20.40	0.84	16.50	(0.03)
Anadarko Petroleum	1.05	1.04	3.2568	0.1223	18.14	0.40	16.00	(0.08)
Arch Chemicals	1.15	1.22	3.4808	0.1285	8.60	(0.72)	13.00	(0.35)
Arrow Electronics	1.20	1.24	3.5606	0.1333	10.06	(0.61)	8.50	(0.81)
AvalonBay Communities	1.10	1.11	2.8843	0.1071	10.86	(0.62)	11.50	(0.54)
Bed Bath & Beyond	1.05	1.00	3.3247	0.1249	22.98	0.60	20.50	0.60
Brink's (The) Co.	1.05	1.08	3.2067	0.1208	10.06	(0.41)	14.00	(0.22)
Black & Decker	1.00	0.95	2.9777	0.1118	33.92 (4)	2.05	24.00	1.04
Beckman Coulter	0.75	0.59	2.8884	0.1077	16.62	0.12	12.00	(0.47)
Baker Hughes	1.05	1.09	3.5391	0.1338	18.43	0.32	16.50	0.08
Bio-Rad Labs. 'A'	0.90	0.81	3.5259	0.1324	12.84	(0.30)	13.00	(0.34)
Belo Corp. 'A'	0.85	0.88	3.0824	0.1161	8.69	(0.77)	10.00	(0.73)
BMC Software	1.10	1.10	3.6591	0.1374	15.32	(0.03)	18.50	0.47
Bob Evans Farms	0.90	0.82	3.2686	0.1227	8.22	(0.62)	12.50	(0.41)
BRE Properties	0.85	0.80	2.8160	0.1084	7.14	(0.94)	7.50	(1.04)
Brown & Brown	0.80	0.82	2.9873	0.1110	18.88	0.46	13.50	(0.29)
BorgWarner	1.20	1.29	2.9047	0.1080	13.54	(0.22)	18.00	0.32
CA, Inc.	1.05	1.07	3.3007	0.1238	8.14	(1.16)	12.00	(0.47)
Cardinal Health	0.90	0.86	3.6614	0.1374	17.80	0.25	17.50	0.22
Cheesecake Factory	1.15	1.15	3.5295	0.1325	12.76	(0.31)	14.00	(0.22)
Cameron Int'l Corp.	1.10	1.10	3.4636	0.1300	12.74	(0.31)	22.50	0.66
Casey's Gen'l Stores	1.00	0.95	3.2477	0.1219	10.63	(0.59)	13.00	(0.38)
CBRL Group	1.00	0.98	3.6369	0.1365	30.54	1.67	38.50	1.81
Cabot Corp.	1.15	1.20	2.9680	0.1118	10.72	(0.54)	12.50	(0.41)
Clear Channel	0.90	0.78	2.9783	0.1117	7.95	(0.86)	10.00	(0.73)
Cadence Design Sys.	1.15	1.17	3.6729	0.1379	11.46	(0.49)	10.50	(0.86)
C.H. Robinson	1.00	0.98	3.4369	0.1290	25.94	1.18	24.50	1.10
CLARCOR Inc.	1.05	1.05	3.2407	0.1217	15.42	(0.01)	13.50	(0.29)
Mack-Cali R'lty	0.85	0.87	2.9181	0.1098	6.14	(1.05)	6.00	(1.23)
Convergys Corp.	1.10	1.11	3.4669	0.1301	9.00	(0.72)	9.00	(0.86)
Con-way Inc.	1.00	0.95	3.5628	0.1337	20.46	0.58	16.00	0.08
Coca-Cola Bottling	0.70	0.64	3.1679	0.1166	22.62	1.00	17.50	0.22
Columbia Sportswear	0.85	0.89	3.3636	0.1262	16.76	0.14	13.00	(0.38)
ConocoPhillips	1.05	1.08	2.8212	0.1069	17.62	0.26	16.00	0.03
ChoicePoint Inc.	0.90	0.89	3.6266	0.1362	21.86	0.71	18.50	0.38
Charles River	0.90	0.89	3.2066	0.1203	8.30	(0.70)	10.50	(0.88)
Computer Sciences	1.05	1.01	3.2665	0.1234	8.62	(0.63)	10.50	(0.66)
Cisco Systems	1.10	1.12	3.2682	0.1227	21.48	0.66	26.00	1.17
Carlisle Cos.	0.95	0.81	2.9819	0.1118	14.90	0.15	15.00	(0.08)
Capital Trust	1.15	1.21	3.6077	0.1354	14.55	(0.10)	14.00	(0.22)
Covance Inc.	0.75	0.65	3.0639	0.1150	16.32	(0.03)	15.00	(0.08)
CVS Caremark Corp.	0.75	0.65	2.8549	0.1072	12.64	(0.33)	11.50	(0.54)
Corrections Corp. Amer.	0.90	0.86	3.1611	0.1190	11.19	(0.49)	11.50	(0.54)
Community Health	0.85	0.73	3.6535	0.1371	11.54	(0.49)	12.50	(0.41)
Cytec Inds.	1.30	1.36	2.8787	0.1081	11.39	(0.47)	11.50	(0.54)
Developers Div. R'lty	1.05	1.04	3.0249	0.1136	10.70	(0.54)	10.50	(0.66)
Dell Inc.	1.00	0.94	3.3038	0.1214	64.80 (4)	5.45	27.00	1.42
Dionex Corp.	1.00	0.87	3.1785	0.1183	32.10	0.74	28.00	1.54
Duke Realty Corp.	1.05	1.07	2.8763	0.1060	6.84	(1.01)	6.00	(1.23)
DRS Technologies	1.00	0.98	3.5864	0.1346	8.10	(0.83)	8.50	(0.78)
Datascope Corp.	1.05	1.02	3.5626	0.1334	7.76	(0.67)	8.50	(0.81)
DaVita Inc.	0.85	0.71	2.9711	0.1115	32.02	1.84	14.50	(0.16)
Brinker Int'l	1.10	1.14	3.6464	0.1370	20.00	0.80	67.50 (4)	5.26
Electronic Data Sys.	1.15	1.16	3.3581	0.1262	6.82	(1.12)	8.50	(0.78)
Lauder (Estee)	0.90	0.84	3.0828	0.1157	26.82	1.18	37.00 (4)	2.86
Eastman Chemical	1.10	1.11	3.6037	0.1360	15.84	0.36	26.00	1.17
Equity Residential	1.05	1.06	2.8340	0.1064	2.72	(1.43)	3.50	(1.57)
Ethan Allen Interiors	1.15	1.15	3.4948	0.1312	15.55	0.35	16.00	0.28
Edwards Lifesciences	0.75	0.66	2.8816	0.1070	16.46	0.18	17.50	0.22
First Commonwealth	1.10	1.15	3.0867	0.1159	9.22	(0.71)	12.00	(0.47)
Flowers Foods	1.00	0.95	3.0667	0.1159	11.74	(0.42)	15.00	(0.08)
FMC Corp.	1.20	1.24	2.9469	0.1107	16.79	0.36	22.00	0.75
Federal Rlty. Inv. Trust	1.15	1.08	2.8703	0.1077	10.88	(0.61)	12.50	(0.47)
Griffon Corp.	1.15	1.19	3.6608	0.1374	12.89	(0.33)	11.00	(0.60)
G&K Services 'A'	0.85	0.71	2.8601	0.1061	8.10	(0.83)	7.50	(1.04)

Utilities Inc.
Comparable Earnings Analysis
for a Proxy Group of Two Hundred Twenty Two Non-Utility Companies Comparable to the
Proxy Group of Six AUS Utility Reports Water Companies (1)

Proxy Group of Two Hundred Twenty Two Non-Utility Companies Comparable to the Proxy Group of Six AUS Utility Reports Water Companies (1)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth or Partners' Capital: 5-year Average (2) Percent	5-year Average (2) Student's Statistic	5-Year Projected (3) Percent	5-Year Projected (3) Student's Statistic
Gleiftaler	1.15	1.18	3.3834	0.1270	4.78 %	(1.21)	10.00 %	(0.73)
Gartner Corp.	1.20	1.25	3.8028	0.1382	14.88	(0.10)	16.50	0.09
Global Payments	0.85	0.82	3.5142	0.1318	15.30	(0.03)	15.50	(0.03)
Goodrich Corp.	1.05	1.06	3.1958	0.1300	13.76	(0.20)	18.50	0.47
Haemonetics Corp.	0.75	0.61	3.3420	0.1270	11.10	(0.50)	14.00	(0.22)
Hain Celestial Group	0.85	0.74	3.3653	0.1271	6.18	(1.08)	8.00	(0.88)
Halliburton Co.	1.10	1.08	3.6222	0.1380	24.70	1.02	18.00	0.41
Hasbro, Inc.	1.00	0.95	2.8289	0.1069	16.58	0.11	22.00	0.78
Hancock Holding	1.05	1.03	3.3068	0.1242	13.22	(0.28)	11.50	(0.64)
Harte-Hanks	0.80	0.76	2.9641	0.1120	16.73	0.47	18.00	0.41
Hill Corp.	0.90	0.82	3.4664	0.1302	21.14	0.62	17.00	0.19
Harley-Davidson	1.00	0.98	3.3878	0.1275	32.30	1.67	33.50 (4)	2.24
Hewlett-Packard	1.10	1.12	3.0420	0.1142	13.36	(0.24)	22.50	0.85
Healthcare R'ty Trust	1.00	0.93	3.0908	0.1188	4.78	(1.20)	6.50	(1.17)
Block (H&R)	1.05	1.01	3.0772	0.1185	33.28 (4)	1.98	38.50 (4)	2.86
Heartland Express	1.10	1.14	3.5653	0.1340	17.60	0.23	15.50	(0.03)
Integra LifeSciences	0.85	0.78	3.3268	0.1262	10.28	(0.58)	15.00	(0.06)
IDEXX Labs.	0.90	0.86	3.1648	0.1190	18.86	0.50	24.00	1.04
Ingles Markets	0.90	0.85	3.5021	0.1315	11.16	(0.49)	15.50	(0.03)
Intuit Inc.	1.00	0.96	3.0628	0.1150	20.98	0.80	23.50	0.96
Iron Mountain	1.00	0.96	3.1518	0.1183	8.14	(0.80)	12.00	(0.47)
Journal Communications	0.90	0.79	3.1259	0.1234	13.66	(0.32)	7.50	(1.04)
Kaydon Corp.	1.20	1.24	3.0086	0.1126	13.54	(0.22)	15.00	(0.09)
Kelly Services 'A'	1.10	1.14	3.0114	0.1130	4.68	(1.19)	8.50	(0.81)
Kirby Corp.	1.20	1.35	3.2043	0.1203	13.28	(0.28)	12.50	(0.41)
Kimco Realty	1.10	1.05	2.9807	0.1119	11.44	(0.48)	10.50	(0.65)
Leggett & Platt	0.85	0.87	3.2212	0.1206	8.84	(0.84)	13.50	(0.28)
Liz Claiborne	0.85	0.80	3.5960	0.1351	14.78	(0.09)	10.50	(0.60)
Lowe's Cos.	1.00	0.98	3.1374	0.1178	18.86	0.36	11.50	(0.64)
Liberty Property	1.05	1.04	2.8264	0.1061	6.76	(0.76)	11.50	(0.54)
Limited Brands	1.30	1.35	3.5658	0.1336	23.28	0.86	22.00	0.78
Southwest Airlines	0.80	0.80	2.9143	0.1094	6.82	(0.96)	8.50	(0.78)
Macy's Inc.	1.30	1.34	3.5428	0.1330	8.92	(0.63)	4.00	(0.86)
Manpower Inc.	1.15	1.22	3.1950	0.1186	12.80	(0.31)	14.50	(0.16)
Mattel, Inc.	0.85	0.72	3.1067	0.1186	23.44	0.86	28.00	1.17
McKesson Corp.	0.80	0.79	3.2680	0.1235	13.82	(0.22)	14.50	(0.16)
Mohawk Inds.	1.05	1.06	2.9981	0.1122	12.24	(0.37)	8.50	(0.81)
MAXIMUS Inc.	0.85	0.86	3.4987	0.1313	7.08	(0.90)	20.00	0.64
McClatchy Co.	0.80	0.82	3.2886	0.1236	13.12	(0.27)	16.00	0.02
Molex Inc.	1.10	1.13	3.1140	0.1169	8.10	(0.72)	10.00	(0.73)
MSC Industrial Direct	1.25	1.37	3.5803	0.1344	18.02	0.28	18.00	0.41
Murphy Oil Corp.	1.00	0.98	3.4908	0.1310	16.38	0.09	15.00	(0.09)
Max Capital Group	0.85	0.71	2.9360	0.1102	13.86	(0.25)	14.50	(0.16)
National Instruments	1.10	1.06	3.4461	0.1294	11.84	(0.44)	16.00	0.38
Noble Energy	1.15	1.19	3.2900	0.1238	19.30	0.41	13.50	(0.28)
Nabors Inds.	1.10	1.08	3.5307	0.1363	17.20	0.18	16.00	(0.09)
Annaly Capital Mgmt.	0.80	0.82	3.5937	0.1349	8.65	(0.86)	14.00	(0.22)
National Presto Ind.	0.80	0.83	3.1346	0.1177	8.82	(0.79)	16.00	0.03
Nissan Motor ADR	1.10	1.11	3.0168	0.1133	17.46	0.21	12.50	(0.41)
Norfolk Southern	1.15	1.20	3.3607	0.1262	12.30	(0.36)	12.50	(0.41)
Novo Nordisk ADR	0.85	0.86	2.8741	0.1079	21.48	0.66	28.00	1.17
Newell Rubbermaid	1.05	1.04	2.8643	0.1083	22.78	0.81	15.00	(0.09)
New York Community	0.85	0.92	2.9217	0.1097	6.84	(0.78)	11.50	(0.64)
Realty Income Corp.	1.00	0.95	2.8785	0.1081	6.56	(0.76)	9.00	(0.89)
Owens & Minor	0.80	0.81	3.2861	0.1236	12.34	(0.37)	12.50	(0.41)
Old Nat'l Bancorp	1.00	0.98	3.1704	0.1180	11.06	(0.50)	13.00	(0.36)
Oracle Corp.	1.05	1.04	3.1691	0.1198	33.48	1.89	26.50	1.61
O'Reilly Automotive	1.10	1.09	3.2057	0.1203	12.88	(0.30)	12.00	(0.47)
Occidental Petroleum	1.20	1.23	3.0478	0.1144	23.82	0.61	14.50	(0.16)
Penske Auto	1.20	1.27	3.5484	0.1332	8.96	(0.62)	11.00	(0.60)
Paychex, Inc.	0.85	0.77	2.8327	0.1060	28.70	1.25	38.00 (4)	2.83
People's United Fin'l	0.95	0.81	3.0647	0.1150	7.32	(0.92)	6.00	(1.12)
Peterson Cos.	0.85	0.82	3.5620	0.1337	16.04	0.38	16.00	0.03
Pediatrix Medical	0.85	0.82	3.3770	0.1265	16.64	-	14.00	(0.16)
Penn. R.E.I.T.	1.00	0.94	3.2367	0.1218	3.84	(1.33)	6.50	(1.17)
PerkinElmer Inc.	1.10	1.14	3.3790	0.1269	7.58	(0.88)	11.50	(0.64)
Prologis	1.10	1.13	2.9340	0.1101	8.36	(0.80)	14.00	(0.22)
Pall Corp.	1.10	1.08	2.8023	0.1066	13.30	(0.28)	17.50	0.32
Public Storage	1.05	1.00	2.9329	0.1101	6.86	(0.85)	6.50	(1.17)
Pactiv Corp.	1.05	1.08	3.1173	0.1170	21.16	0.63	16.00	(0.09)
Penn Virginia Res.	1.00	0.96	3.1634	0.1198	18.88	0.37	20.00	0.64
Papa John's Int'l	0.80	0.80	3.2565	0.1222	28.60	1.57	20.00	0.64
Qualcomm Inc.	1.05	1.08	3.6137	0.1357	17.82	0.28	19.00	0.41
Ryder System	1.05	1.08	3.3874	0.1272	13.16	(0.27)	12.00	(0.47)
Ralcorp Holdings	0.75	0.58	3.3718	0.1266	16.04	(0.06)	14.00	(0.22)
Reynolds American	0.85	0.79	2.9063	0.1091	12.74	(0.31)	17.50	0.22
Royal Caribbean Cruises	1.10	1.06	3.6703	0.1376	8.84	(0.67)	8.00	(0.88)
Ruddick Corp.	0.80	0.75	3.1180	0.1171	11.40	(0.48)	12.00	(0.47)
Regions Financial	1.05	1.06	2.8632	0.1078	8.12	(0.72)	8.00	(0.98)
Regis Corp.	1.10	1.12	2.9636	0.1113	13.22	(0.28)	10.50	(0.66)
ResMed Inc.	0.80	0.68	3.5209	0.1322	13.92	(0.18)	14.00	(0.22)

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Proxy Group of Two Hundred Twenty Two Non-Utility Companies Comparable to the Proxy Group of Six AUS Utility Reports Water Companies (1)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth or Partners' Capital: 5-year Average (2) Percent	5-year Average (2) Student's Statistic	5-Year Projected (3) Percent	5-Year Projected (3) Student's Statistic
Rockwell Automation	1.20	1.28	3.2202	0.1208	26.00 %	1.08	27.50 %	1.46
Rollins, Inc.	0.95	0.87	3.1334	0.1176	27.34	1.32	26.00	1.29
Ross Stores	1.05	1.06	3.6370	0.1365	26.22	1.19	27.50	1.48
Safeco Corp.	0.90	0.87	3.2776	0.1230	15.44	(0.01)	10.50	(0.86)
Sonic Automotive	1.15	1.19	3.4832	0.1306	12.10	(0.39)	10.50	(0.86)
SAP AG	1.15	1.20	3.0615	0.1149	28.06	1.61	22.00	0.79
Starbucks Corp.	0.85	0.82	3.0988	0.1160	21.88	0.67	28.00	1.17
Scholastic Corp.	0.90	0.83	3.3762	0.1267	6.88	(0.89)	7.00	(1.10)
Sealed Air	0.95	0.85	2.9688	0.1110	17.74	0.24	13.00	(0.30)
Smithfield Foods	0.90	0.81	3.1804	0.1194	8.84	(0.68)	9.00	(0.88)
Schulman (A.)	0.95	0.91	3.5058	0.1316	8.18	(1.08)	7.50	(1.04)
Selective Ins. Group	0.98	0.87	2.9980	0.1125	11.82	(0.42)	11.50	(0.54)
Schlumberger Ltd.	1.10	1.11	3.5245	0.1323	28.88	1.20	18.50	0.36
Silgan Holdings	1.10	1.12	3.1636	0.1188	35.86 (4)	2.25	17.00	0.16
Scotts Miracle-Gro	1.10	1.15	3.1760	0.1192	14.32	(0.14)	17.50	0.22
Snap-on Inc.	1.00	0.97	2.8282	0.1061	10.22	(0.80)	16.00	0.03
Sovereign Bancorp	1.20	1.27	3.4248	0.1286	10.12	(0.61)	6.50	(0.78)
Staples, Inc.	1.10	1.09	3.0686	0.1152	17.50	0.22	16.00	0.03
SPX Corp.	1.10	1.14	3.5298	0.1325	8.89	(0.78)	16.50	(0.03)
Stericycle Inc.	0.85	0.72	3.4111	0.1280	16.89	0.15	16.00	(0.09)
STERIS Corp.	0.85	0.76	3.0578	0.1148	11.50	(0.44)	16.00	0.03
Constellation Brands	0.90	0.81	3.2624	0.1232	11.02	(0.51)	9.50	(0.78)
Susquehanna Bancshs.	1.20	1.24	3.2073	0.1204	8.76	(0.78)	8.50	(0.91)
SUPERVALU INC.	0.85	0.78	3.2781	0.1230	11.44	(0.49)	10.50	(0.68)
Safeway Inc.	0.85	0.76	3.0130	0.1131	14.96	(0.07)	13.50	(0.28)
Standex Int'l	1.10	1.08	3.5850	0.1346	11.42	(0.48)	14.50	(0.16)
Sensient Techn.	1.00	0.93	2.8441	0.1068	10.80	(0.58)	10.50	(0.68)
Sybase Inc.	1.00	0.93	3.2059	0.1203	11.16	(0.49)	12.00	(0.47)
Stryker Corp.	0.90	0.82	2.8494	0.1070	20.58	0.58	22.50	0.86
TCF Financial	1.05	1.07	2.9756	0.1117	24.62	1.05	17.50	0.22
Tidewater Inc.	1.10	1.08	3.6741	0.1379	11.38	(0.47)	13.50	(0.38)
Tech Data	0.95	0.91	3.0721	0.1153	8.44	(1.02)	6.50	(0.91)
Techne Corp.	1.05	1.01	2.9842	0.1120	20.64	0.57	19.00	0.41
Teva Pharmac. (ADR)	0.75	0.65	3.4424	0.1292	17.08	0.17	14.00	(0.22)
Target Corp.	0.95	0.89	2.9380	0.1102	16.90	0.15	20.00	0.84
Hanover Insurance	1.15	1.10	3.0864	0.1158	6.50	(0.98)	9.00	(0.85)
TJX Companies	0.90	0.80	3.0313	0.1138	36.80 (4)	2.58	38.50 (4)	2.89
Teekay Corp.	1.15	1.18	3.6074	0.1354	17.50	0.22	14.50	(0.16)
Tennant Co.	1.00	0.97	3.5886	0.1346	11.10	(0.50)	14.00	(0.22)
Total System Svcs.	1.10	1.10	3.4690	0.1299	21.40	0.65	17.00	0.16
Texas Instruments	1.15	1.16	3.4788	0.1306	17.82	0.28	16.00	0.03
UnitedHealth Group	0.75	0.67	3.4389	0.1290	22.30	0.78	20.00	0.64
Unum Group	1.10	1.13	2.9862	0.1087	7.28	(0.92)	10.00	(0.68)
United Stationers	1.05	1.01	3.1302	0.1175	14.04	(0.17)	15.00	(0.08)
Universal Corp.	0.85	0.74	3.0627	0.1161	11.00	(0.41)	12.50	(0.41)
Varian Medical Sys.	1.00	0.96	3.6151	0.1357	27.80	1.37	21.00	0.66
Varian Inc.	1.10	1.09	3.4638	0.1300	10.42	(0.57)	12.50	(0.41)
Viad Corp.	1.05	1.01	3.4676	0.1489	9.16	(0.71)	10.50	(0.65)
WD-40 Co.	0.95	0.91	3.1968	0.1200	21.88	0.71	16.50	(0.03)
Werner Enterprises	1.05	1.07	3.4316	0.1288	10.78	(0.53)	11.50	(0.54)
Whirlpool Corp.	1.15	1.20	3.3910	0.1273	22.83	0.76	14.50	(0.19)
W.P. Carey & Co. LLC	0.90	0.90	2.8736	0.1075	11.38	(0.47)	17.00	0.16
Watson Pharmac.	0.90	0.81	3.3960	0.1276	3.38	(0.81)	10.00	(0.72)
Berkley (W.R.)	0.85	0.80	2.8016	0.1070	18.72	0.47	17.00	0.16
Whitney Holding	1.10	1.08	2.9088	0.1092	11.34	(0.47)	8.50	(0.78)
World Wrestling Ent.	0.90	0.84	3.3118	0.1243	11.88	(0.45)	28.00	1.28
Wyeth	0.85	0.71	2.8684	0.1077	31.28	1.78	19.00	0.41
Xerox Corp.	1.05	1.06	2.8326	0.1063	12.66	(0.32)	15.00	(0.08)
Zebra Techn. 'A'	1.10	1.09	3.4439	0.1293	12.80	(0.23)	15.00	(0.38)
Zimmer Holdings	0.85	0.70	3.3306	0.1252	14.86	(0.08)	13.30	(0.31)
Average	1.00	0.97	3.2493	0.1218				
Average for the Proxy Group of Six AUS Utility Reports Water Companies	0.99	0.91	3.2489 (5)	0.1219				
Median					13.29%		14.25%	
Conclusion (6)						13.77% (6)		
Conservative Median (7)					13.18%		14.00%	
Conservative Conclusion (8)						13.59% (8)		

See page 30 for notes.

Utilities Inc.
Comparable Earnings Analysis
for a Proxy Group of Forty-Nine Non-Utility Companies Comparable to the
Florida PSC Natural Gas Index (9)

Proxy Group of Fourty-Eight Non-Utility Companies Comparable to the Florida PSC Natural Gas Index (9)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	5-Year Projected (3) Percent	5-Year Projected (3) Student's Statistic
Allstate Corp.	0.90	0.76	2.0704	0.0777	13.50 %	(0.43)
Amer. Financial Group	1.00	0.94	2.0857	0.0787	13.50	(0.43)
Automatic Data Proc.	0.75	0.61	2.1449	0.0805	16.00	(0.24)
Bank of America	0.95	0.90	1.9542	0.0734	13.50	(0.43)
Bank of Nova Scotia	0.75	0.67	1.9721	0.0703	17.50	(0.12)
BOK Financial	0.85	0.74	2.1573	0.0810	12.00	(0.59)
BP PLC ADR	0.85	0.91	2.1561	0.0809	20.00	0.07
Campbell Soup	0.85	0.74	1.7632	0.0662	25.50	0.50
Chevron Corp.	0.95	0.87	2.0291	0.0762	22.50	0.27
Chubb Corp.	0.90	0.80	2.0345	0.0764	11.00	(0.63)
Cincinnati Financial	0.80	0.73	1.9072	0.0716	8.00	(0.86)
Commerce Bancshs.	0.90	0.80	1.7946	0.0670	11.50	(0.59)
ConAgra Foods	0.85	0.84	2.1589	0.0810	16.50	(0.28)
Cullen/Frost Bankers	1.00	0.96	2.0222	0.0759	12.00	(0.58)
Du Pont	1.05	1.00	2.0316	0.0763	23.50	0.34
Ecolab Inc.	0.95	0.88	1.9821	0.0737	21.00	0.15
Emerson Electric	1.00	0.98	1.8985	0.0713	27.00	0.52
Exxon Mobil Corp.	0.95	0.91	2.0148	0.0756	27.50	0.55
Fortune Brands	0.90	0.81	2.0484	0.0768	14.00	(0.38)
Gen'l Dynamics	0.90	0.83	2.0702	0.0777	16.00	(0.24)
Gen'l Electric	0.85	0.77	2.0649	0.0775	19.50	0.03
Genuine Parts	0.80	0.76	1.7633	0.0662	18.00	(0.08)
Hershey Co.	0.75	0.68	2.1425	0.0804	41.00	1.70
Illinois Tool Works	0.95	0.91	2.0896	0.0784	24.00	0.38
Int'l Flavors & Frag.	0.85	0.76	2.1110	0.0792	31.00	0.93
Kraft Foods	0.75	0.62	2.0323	0.0763	10.50	(0.66)
Lockheed Martin	0.90	0.83	2.1675	0.0810	31.00	0.93
Manulife Fin'l	1.00	0.93	1.9509	0.0732	17.00	(0.16)
Mercury General	0.85	0.77	2.1415	0.0804	14.00	(0.38)
MetLife Inc.	1.00	0.98	2.0883	0.0773	13.50	(0.43)
News Corp.	1.00	0.98	2.1348	0.0801	10.50	(0.65)
Northrop Grumman	0.75	0.60	1.9696	0.0738	12.50 (4)	(0.51)
Novartis AG ADR	0.75	0.69	2.0977	0.0787	14.50	(0.35)
PartnerRe Ltd.	0.75	0.69	1.9747	0.0741	11.00	(0.63)
Pitney Bowes	0.85	0.70	1.8430	0.0692	31.50	0.82
Plains All Amer. Pipe.	0.75	0.58	2.1916	0.0823	11.50	(0.59)
PNC Financial Serv.	1.00	0.98	2.0740	0.0778	12.00	(0.55)
Raytheon Co.	0.85	0.77	1.9697	0.0739	14.00	(0.39)
Republic Services	0.90	0.79	1.9996	0.0747	22.50	0.27
Sara Lee Corp.	0.90	0.87	2.1206	0.0796	34.50	1.20
Sigma-Aldrich	0.90	0.78	1.9743	0.0741	19.50	0.03
SunTrust Banks	1.00	0.94	2.1064	0.0791	8.00	(0.86)
Tootsie Roll Ind.	0.85	0.77	2.1858	0.0821	7.00	(0.94)
Travelers Cos.	1.00	0.96	2.1783	0.0818	11.00	(0.63)
U.S. Bancorp	0.90	0.83	2.0009	0.0751	19.50	0.03
United Parcel Serv.	0.75	0.60	2.0606	0.0774	28.00	0.54
United Technologies	1.00	0.94	1.7710	0.0665	17.50	(0.12)
Washington Post	0.75	0.61	2.1127	0.0793	8.50	(0.82)
Waste Management	0.95	0.85	2.0442	0.0767	22.00	0.23
Average	0.88	0.79	2.0368	0.0762		
Average for the Florida PSC Natural Gas Index	0.85	0.76	1.9481 (10)	0.0731		
Median					16.00%	
Conservative Median (7)					15.75%	

See page 30 for notes.

Liberty Inc.
Comparable Earnings Analysis
for a Proxy Group of Two Hundred Twenty Two Non-Utility Companies Comparable to the
Proxy Group of Six AUS Utility Regents Water Companies (1)

Proxy Group of Two Hundred Twenty Two Non-Utility Companies Comparable to the Proxy Group of Six AUS Utility Regents Water Companies (1)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth or Partners' Capital					
					2003	2004	2005	2006	2007	5-Year Projected (3)
Advance Auto Parts	1.00	0.84	3.4143	0.1282	26.4 %	28.5 %	28.5 %	22.4 %	23.6 %	30.0 %
AllianceBernstein Hldg.	1.30	1.37	2.8945	0.1102	19.2	18.9	20.2	24.3	27.8	32.5
Applied Biosystems	0.88	0.77	2.9827	0.1062	13.8	13.9	16.6	16.8	16.9	16.0
ABM Industries Inc.	0.95	0.80	3.2521	0.1232	8.2	8.5	8.9	8.9	8.3	13.0
Amer. Cap. Strategies	1.15	1.21	3.0436	0.1143	12.0	11.8	10.8	8.8	8.3	16.0
Alcon Inc.	0.80	0.65	3.5143	0.1318	37.1	36.6	44.8	46.1	46.8 (3)	37.0
Accenture Ltd.	1.05	1.08	3.0887	0.1093	53.7	46.9	50.0	52.6	60.2 (3)	41.5
Affiliated Computer	0.85	0.91	3.4713	0.1277	12.6	13.9	14.3	14.6	12.2	14.0
Analog Devices	0.90	0.81	3.0233	0.1330	9.1	16.0	13.3	16.8	20.3	31.0
Anheuser Daimler Mkt'd	1.00	0.98	3.4606	0.1288	8.2	8.7	10.6	13.4	13.2	13.5
Allergan, Inc.	0.95	0.78	3.8734	0.1079	49.4	53.2	30.4	14.4	16.4	14.0
Albemarle Corp.	1.20	1.28	3.8266	0.1398	10.3	10.9	11.8	19.2	19.5	18.5
Allied Capital Corp.	0.90	0.91	3.1888	0.1300	10.0	13.8	20.3	8.8	6.8	27.4
Amer. Greetings	0.80	0.83	3.1966	0.1291	8.3	7.8	7.4	2.8	5.8	8.5
Amgen	0.80	0.82	3.2997	0.1181	11.7	14.8	16.1	25.0	21.8	13.5
Aon Corp.	1.00	0.93	3.3693	0.1374	14.8	11.3	12.1	12.2	10.8	11.5
Apache Corp.	1.05	1.08	3.4630	0.1311	19.1	20.4	24.8	18.3	18.3	18.5
Associate Petroleum	1.05	1.04	3.2898	0.1233	14.4	17.3	23.3	14.7	23.1	18.0
Ash Chemicals	1.15	1.23	3.4808	0.1286	4.8	4.8	10.9	10.8	11.8	13.0
Arrow Electronics	1.20	1.24	3.8509	0.1333	8.0	10.7	11.2	12.0	11.8	8.5
Archstoney Communities	1.10	1.11	3.8843	0.1071	10.9	11.8	11.8	10.8	8.8	11.5
Bed Bath & Beyond	1.05	1.03	3.3247	0.1248	29.1	32.8	36.3	33.1	32.0	30.5
Belo's (The) Co.	1.05	1.06	3.2587	0.1226	3.7	14.8	8.1	12.8	14.2	14.0
Black & Decker	1.00	0.88	3.8772	0.1116	36.8	38.3	38.7	41.8	37.3	34.0
Bowtown Gaulier	0.75	0.88	3.2884	0.1277	20.3	18.3	18.8	23.8	14.2	12.0
Bitter Hughes	1.05	1.03	3.8881	0.1336	8.9	13.8	15.8	28.0	34.3	16.5
Bio-Rad Labs. 'A'	0.90	0.81	3.5288	0.1324	17.3	18.1	11.7	11.7	10.4	13.0
Bole Corp. 'A'	0.85	0.88	3.0824	0.1161	6.1	8.7	8.3	8.0	8.3	10.0
BMC Software	1.10	1.10	3.8881	0.1374	8.0	8.5	16.8	20.8	26.0 (3)	18.5
Bob Evans Farms	0.85	0.82	3.2898	0.1227	11.4	8.7	8.8	8.2	8.8 (3)	12.5
BRE Properties	0.85	0.85	2.5160	0.1094	8.8	7.8	8.8	7.4	7.3	7.5
Brown & Brown	0.80	0.82	3.8873	0.1110	22.2	20.8	18.7	18.8	17.4	13.5
BorgWarner	1.20	1.28	3.8847	0.1080	15.8	13.8	18.0	12.8	12.8	18.0
CA, Inc.	1.05	1.07	3.3007	0.1228	1.8	4.1	3.3	3.2	13.8	13.0
Cardinal Health	0.95	0.88	3.8814	0.1974	18.8	18.8	18.5	18.8	18.7	17.5
Cheesecake Factory	1.15	1.15	3.8288	0.1305	12.8	12.8	13.8	11.4	13.8	14.0
Clarcom Int'l Corp.	1.10	1.18	3.4828	0.1308	8.7	7.7	10.7	17.2	22.4	23.8
Casey's Gen'l Stores	1.00	0.98	3.2477	0.1218	8.3	9.1	12.8	10.8	13.1	13.0
CBRL Group	1.00	0.98	3.8388	0.1388	13.4	13.2	14.8	28.8	13.8	28.8
Cabot Corp.	1.15	1.28	3.8880	0.1110	11.8	10.3	11.8	8.8	11.3	13.8
Clear Channel	0.80	0.78	3.8783	0.1117	4.8	8.7	7.2	8.8	8.8	10.8
Cadence Design Sys.	1.15	1.17	3.8728	0.1378	8.8	11.8	14.8	8.4	14.2	18.8
C.H. Robinson	1.00	0.88	3.4088	0.1280	22.1	23.1	28.1	28.3	31.1	24.5
CLARCOR Inc.	1.05	1.08	3.2407	0.1217	14.7	14.8	16.8	18.4	18.3	13.8
Meals-Call Rity	0.95	0.87	2.8181	0.1038	8.3	8.4	8.8	4.8	4.8	8.0
Comsed Corp.	1.10	1.11	3.4888	0.1301	10.2	11.3	8.2	8.4	7.8	8.0
Con-way Inc.	1.00	0.98	3.8828	0.1337	18.8	18.4	24.4	28.3	18.7	18.8
Coca-Cola Bottling	0.70	0.84	3.1878	0.1185	28.8	28.8	30.8	34.7	18.8	17.8
Columbia Sportswear	0.85	0.89	3.2888	0.1388	18.7	17.8	17.8	14.8	14.8	13.8
ConocoPhillips	1.05	1.06	3.2372	0.1259	13.4	18.8	28.3	18.8	18.8	18.8
ChoicePoint Inc.	0.80	0.88	3.8288	0.1382	18.1	18.8	18.8	28.8	41.4	18.8
Charles River	0.80	0.88	3.2258	0.1283	17.3	8.8	8.4	7.8	8.8	12.8
Computer Sciences	1.05	1.01	3.2888	0.1234	8.7	7.8	8.3	11.1	18.8	18.8
Cisco Systems	1.10	1.12	3.2882	0.1227	18.3	20.7	24.8	23.8	23.3	28.8
Cadiale Cos.	0.85	0.81	2.8818	0.1118	14.1	18.8	18.3	18.8	18.4	18.8
Capital Trust	1.15	1.21	3.8877	0.1354	23.8	8.8	13.8	12.7	18.8	14.0
Cervance Inc.	0.78	0.83	3.0838	0.1188	13.8	18.4	18.3	18.7	18.7	18.8
CVS Caremark Corp.	0.78	0.88	2.8848	0.1072	14.1	13.1	14.1	13.8	8.4	11.8
Convellana Corp. Amer.	0.85	0.88	3.1811	0.1138	18.2	7.7	8.8	10.1	10.8	11.8
Community Health	0.85	0.72	3.8828	0.1371	8.7	12.8	13.2	12.8	18.7	12.8
Cytec Indi.	1.20	1.28	3.8787	0.1081	13.8	18.2	11.4	10.8	8.7	11.8
Developers Div. R'ty	1.05	1.04	3.0248	0.1188	14.8	18.8	18.3	8.8	8.8	18.8
Del Inc.	1.00	0.91	3.2238	0.1214	42.1	81.3	82.8	88.2	78.8	27.8
Daniel Corp.	1.00	0.87	3.1788	0.1183	18.7	22.8	24.8	18.8	24.1	28.8
Duke Realty Corp.	1.05	1.08	2.8783	0.1088	7.8	8.4	8.1	8.8	8.8	8.8
DRS Technologies	1.00	0.88	3.8804	0.1348	7.8	8.7	8.8	8.8	8.8	8.8
Catapaga Corp.	1.05	1.02	3.3828	0.1284	7.8	8.3	8.8	8.1	8.3	8.8
DeVita Inc.	0.88	0.71	2.8711	0.1118	88.2	41.8	34.4	31.3	18.7	14.8
Sabine Int'l	1.10	1.14	3.8484	0.1378	18.1	20.7	18.8	18.8	27.3	87.8
Electronic Data Sys.	1.15	1.18	3.3381	0.1282	7.8	2.1	3.2	8.8	8.7	8.8
Lauder (Estee)	0.80	0.84	3.0828	0.1187	18.7	21.7	28.8	28.7	27.4	37.8
Eastman Chemical	1.10	1.11	3.8837	0.1888	7.3	18.8	38.1	38.8	38.4	38.8
Equity Residential	1.08	1.08	2.8348	0.1084	4.8	2.8	2.8	1.8	1.8	3.8
Ethan Allen Interiors	1.15	1.18	3.4848	0.1312	18.8	18.3	18.4	21.2	18.8	18.8
Edwards Lifesciences	0.75	0.88	2.8818	0.1870	18.2	18.8	18.1	17.8	18.8	17.8
First Commonwealth	1.10	1.18	3.0887	0.1188	11.8	7.8	8.4	8.3	8.1	13.8
Flowers Foods	1.00	0.88	3.0887	0.1188	8.1	8.8	13.3	13.3	14.8	18.8
FMC Corp.	1.30	1.34	3.0488	0.1107	18.8	18.4	17.8	21.2	24.3	28.8
Federal Rity. Inv. Trust	1.10	1.08	3.8728	0.1077	10.8	12.8	10.8	13.1	8.8	18.8
Gallan Corp.	1.15	1.18	3.8808	0.1374	18.1	18.8	13.8	12.8	4.7	11.8

Utilities Inc.
Comparable Earnings Analysis
for a Proxy Group of Two Hundred Twenty Two Non-Utility Companies Comparable to the Proxy Group of Six AUS Utility Reports Water Companies (1)

Proxy Group of Two Hundred Twenty Two Non-Utility Companies Comparable to the Proxy Group of Six AUS Utility Reports Water Companies (1)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth or Partners' Capital 2003	2004	2005	2006	2007	5-Year Projected (2)
G&K Services 'A'	0.85	0.71	2.8801	0.1081	8.9 %	8.3 %	8.4 %	7.8 %	7.3 %	7.8 %
Glatfelter	1.15	1.18	3.3836	0.1270	3.5	3.2	4.0	6.3	7.4	10.0
Gentex Corp.	1.20	1.28	3.6028	0.1352	18.4	14.4	13.0	19.5	18.1	16.5
Global Payments	0.90	0.92	3.5142	0.1319	14.8	13.8	16.5	16.6	18.1	18.5
Goodrich Corp.	1.05	1.06	3.1989	0.1200	3.2	12.6	16.9	17.0	19.2	19.5
Haemonetics Corp.	0.75	0.61	3.3826	0.1270	10.8	11.2	11.5	10.5	11.5	14.0
Hain Celestial Group	0.85	0.74	3.3683	0.1271	6.2	8.4	6.0	6.8	8.8	9.0
Halliburton Co.	1.10	1.08	3.6022	0.1350	18.2	8.6	28.3	37.4	34.8	18.0
Hasbro, Inc.	1.00	0.93	2.9289	0.1099	18.3	13.3	13.5	16.0	28.4	22.0
Hancock Holding	1.05	1.00	3.3085	0.1242	12.6	12.5	11.3	16.9	13.6	11.5
Harte-Hanks	0.80	0.78	2.9841	0.1120	18.7	17.1	20.4	22.7	22.7	19.0
HNI Corp.	0.80	0.82	3.4684	0.1302	13.5	17.1	23.7	24.3	27.2	17.0
Harley-Davidson	1.00	0.88	3.3976	0.1275	28.7	27.6	31.1	37.8	30.3	33.5
Hewlett-Packard	1.10	1.12	3.0420	0.1142	8.4	10.8	12.7	18.1	18.3	22.5
Healthcare R'ty Trust	1.00	0.93	3.0808	0.1159	7.7	8.0	4.1	4.6	3.8	8.8
Block (H&R)	1.05	1.01	3.0772	0.1155	37.1	32.2	34.8	28.5	48.0	38.5
Heartland Express	1.10	1.14	3.5663	0.1340	18.6	18.0	16.8	17.6	22.2	18.5
Integra LifeSciences	0.85	0.75	3.5289	0.1352	10.0	6.6	12.9	8.9	13.9	18.0
IDEXX Labs.	0.80	0.88	3.1649	0.1188	14.5	18.8	21.5	21.4	23.3	24.0
Ingles Markets	0.90	0.83	3.5021	0.1319	7.0	11.0	9.8	14.0	14.2	16.8
Intuit Inc.	1.00	0.85	3.0828	0.1180	18.0	17.4	22.1	28.4	24.8	23.5
Iron Mountain	1.00	0.88	3.1518	0.1183	7.8	7.7	8.3	8.3	6.8	12.0
Journal Communications	0.80	0.78	3.1288	0.1224	14.4	18.0	12.5	11.8	8.8	7.5
Kaydon Corp.	1.20	1.34	3.0088	0.1129	10.9	12.4	12.9	18.0	18.5	18.0
Kelly Services 'A'	1.10	1.14	3.0114	0.1130	0.8	3.4	5.8	7.5	6.8	8.5
Kirby Corp.	1.20	1.29	3.2045	0.1203	11.0	11.4	12.8	16.1	18.0	12.5
Kimco Realty	1.10	1.08	2.9807	0.1119	11.4	12.6	13.9	10.8	8.7	10.5
Leggett & Platt	0.95	0.87	3.2212	0.1209	9.7	12.3	12.3	12.8	2.4	13.5
Liz Claiborne	0.85	0.88	3.5080	0.1331	17.7	17.3	16.6	14.6	8.6	10.5
Lowe's Cos.	1.00	0.88	3.1374	0.1176	18.1	18.9	19.3	18.7	17.4	11.5
Liberty Property	1.05	1.04	2.8264	0.1061	10.8	10.1	6.0	8.2	6.9	11.8
Limited Brands	1.30	1.38	3.5665	0.1338	11.1	27.3	23.7	22.8	32.4	22.0
Southwest Airlines	0.90	0.80	2.8143	0.1054	6.8	5.7	7.0	9.3	5.5	9.5
Macy's Inc.	1.20	1.24	3.5438	0.1330	11.0	11.2	8.2	8.4	8.8	8.0
Manpower Inc.	1.15	1.22	3.1860	0.1199	10.8	11.3	12.1	13.3	18.8	14.8
Mattel, Inc.	0.85	0.72	3.1087	0.1166	24.9	21.3	23.1	22.8	25.3	28.0
McKesson Corp.	0.80	0.78	3.2860	0.1236	12.8	12.4	12.6	14.0	18.7	14.5
Mohawk Inds.	1.05	1.06	2.9881	0.1122	13.5	13.8	12.8	12.0	8.3	8.8
MAXIMUS Inc.	0.95	0.88	3.4087	0.1313	10.6	10.4	8.8	0.9	4.9	20.0
McClatchy Co.	0.80	0.82	3.2886	0.1236	11.9	11.1	10.3	8.7	28.0	16.0
Molex Inc.	1.10	1.13	3.1140	0.1169	8.0	8.5	9.0	11.6	10.4	10.0
MSC Industrial Direct	1.20	1.27	3.5803	0.1344	10.2	13.1	21.2	21.8	24.1	19.0
Murphy Oil Corp.	1.00	0.95	3.4906	0.1310	13.1	17.5	21.0	14.9	15.1	18.0
Max Capital Group	0.85	0.71	2.9360	0.1102	18.0	14.3	9.8	18.6	18.4	14.5
National Instruments	1.10	1.09	3.4461	0.1294	7.8	10.0	12.2	12.3	18.2	18.0
Noble Energy	1.15	1.19	3.2800	0.1236	13.1	22.4	20.4	20.9	18.3	13.5
Nabors Inds.	1.10	1.09	3.5307	0.1303	7.7	10.3	17.3	30.8	20.1	18.0
Annaly Capital Mgmt.	0.80	0.82	3.5887	0.1349	18.7	14.5	4.9	8.6	7.8	14.0
National Presto Ind.	0.90	0.83	3.1348	0.1177	5.3	6.0	7.2	10.0	13.1	16.0
Nissan Motor ADR	1.10	1.11	3.0186	0.1133	24.9	28.8	17.3	12.8	11.5 (P)	12.5
Norfolk Southern	1.15	1.20	3.3807	0.1282	7.8	10.9	12.8	18.4	18.1	13.5
Novo Nordisk ADR	0.85	0.85	2.8741	0.1079	18.3	18.9	21.3	21.4	28.5	28.0
Newell Rubbermaid	1.05	1.04	2.8843	0.1083	20.2	21.9	28.8	34.8	31.3	18.0
New York Community	0.95	0.92	2.8217	0.1067	11.3	11.1	9.8	6.3	6.7	11.5
Realty Income Corp.	1.00	0.93	2.8788	0.1081	9.8	9.2	8.0	6.7	6.3	8.0
Owens & Minor	0.90	0.81	3.2661	0.1226	13.1	13.1	13.0	10.2	11.8	12.5
Old Nat'l Bancorp	1.00	0.98	3.1704	0.1190	8.6	8.9	12.1	12.4	11.8	13.0
Oracle Corp.	1.05	1.04	3.1681	0.1189	38.5	33.5	32.7	38.3	31.3	28.8
O'Reilly Automotive	1.10	1.09	3.2037	0.1203	12.8	12.4	13.9	13.1	12.2	12.0
Occidental Petroleum	1.20	1.23	3.0478	0.1144	30.3	28.4	28.4	22.7	18.3	14.8
Penske Auto	1.20	1.27	3.5494	0.1333	10.4	10.4	10.4	8.8	9.0	11.0
Paychex, Inc.	0.85	0.77	2.8327	0.1063	27.3	28.3	28.8	38.1	38.4	38.0
People's United Fin'l	0.90	0.81	3.0847	0.1160	8.4	7.5	9.7	8.3	3.4	6.8
Patterson Cos.	0.80	0.82	3.5620	0.1337	18.5	18.1	16.0	18.1	22.4	19.0
Pediatrix Medical	0.85	0.82	3.3770	0.1268	14.7	17.1	18.1	14.4	18.4	14.5
Penn. R.E.I.T.	1.00	0.94	3.2387	0.1216	2.8	4.8	6.1	3.2	2.3	6.5
PerkinElmer Inc.	1.10	1.14	3.3786	0.1268	4.1	8.7	8.4	8.1	9.8	11.5
Prologis	1.10	1.13	2.9340	0.1101	8.7	7.8	8.8	11.2	11.6	14.0
Pall Corp.	1.10	1.08	2.9023	0.1089	18.4	14.4	12.4	12.3	12.0	17.5
Public Storage	1.05	1.00	2.9328	0.1101	8.0	8.3	8.8	3.8	6.2	6.8
Pactiv Corp.	1.05	1.08	3.1173	0.1170	31.7	18.7	17.7	28.8	18.8	18.0
Penn Virginia Res.	1.00	0.98	3.1824	0.1196	14.8	22.9	23.0	18.4	18.3	20.0
Papa John's Int'l	0.80	0.80	3.2866	0.1222	23.0	28.0	28.7	32.0	38.3	20.0
Qualcomm Inc.	1.05	1.06	3.6127	0.1357	12.1	18.9	19.5	18.4	20.8	18.0
Ryder System	1.05	1.06	3.3874	0.1272	10.1	12.7	14.5	14.3	13.5	13.0
Ralcorp Holdings	0.75	0.68	3.3718	0.1268	13.0	16.0	13.6	18.4	18.0	14.0
Reynolds American	0.85	0.78	2.8060	0.1061	4.3	10.2	18.0	18.1	18.1	17.5
Royal Caribbean Cruises	1.10	1.08	3.6703	0.1378	8.6	9.9	11.9	10.4	8.9	9.0
Ruddick Corp.	0.90	0.78	3.1188	0.1171	12.1	11.5	11.3	10.8	11.0	12.0
Regions Financial	1.05	1.08	2.8632	0.1079	14.8	8.1	8.4	6.6	7.0	8.0

Utilities Inc.
Comparable Earnings Analysis
for a Proxy Group of Two Hundred Twenty Two Non-Utility Companies Comparable to the
Proxy Group of Six AUS Utility Reports Water Companies (1)

Proxy Group of Two Hundred Twenty Two Non-Utility Companies Comparable to the Proxy Group of Six AUS Utility Reports Water Companies (1)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth or Partners' Capital 2003	2004	2005	2006	2007	5-Year Projected (2)
Regis Corp.	1.10	1.13	2.9636	0.1113	16.4 %	16.3 %	12.8 %	11.4 %	10.4 %	10.5 %
ResMed Inc.	0.85	0.88	3.8309	0.1322	16.0	16.8	13.7	12.6	11.6	14.0
Rockwell Automation	1.20	1.28	3.2203	0.1309	13.4	16.5	28.7	32.7	32.7	27.5
Rollins, Inc.	0.85	0.87	3.1334	0.1179	26.5	26.1	28.8	27.3	37.7	28.0
Ross Stores	1.05	1.03	3.6370	0.1368	30.2	23.8	23.9	28.4	28.9	27.5
Safeco Corp.	0.80	0.87	3.2776	0.1230	8.1	14.8	18.8	19.9	18.9	10.5
Sonic Automotive	1.15	1.16	3.4832	0.1305	12.8	12.4	13.3	10.9	12.3	10.8
SAP AG	1.15	1.20	3.0818	0.1149	28.0	25.5	27.6	30.5	28.7	22.0
Starbucks Corp.	0.90	0.92	3.0896	0.1160	13.8	18.4	23.7	26.1	28.4	25.0
Scholastic Corp.	0.80	0.83	3.3782	0.1287	7.8	7.1	8.9	8.5	8.2	7.0
Sealed Air	0.95	0.88	2.8986	0.1110	21.4	18.2	18.4	17.1	15.8	13.0
Smithfield Foods	0.80	0.81	3.1904	0.1194	10.1	18.7	9.4	8.4	4.8	8.0
Schulman (A.)	0.85	0.81	3.5085	0.1316	4.2	6.4	6.8	8.1	8.3	7.5
Selective Ins. Group	0.86	0.87	2.9950	0.1128	7.7	12.6	14.0	13.0	11.6	11.5
Schlumberger Ltd.	1.10	1.11	3.8246	0.1323	18.8	20.2	24.8	30.0	34.8	18.5
Sigma Holdings	1.10	1.13	3.1636	0.1105	48.8	40.1	34.6	28.8	28.3	17.0
Scotts Miracle-Gro	1.10	1.15	3.1780	0.1182	14.3	11.5	8.6	12.3	23.7	17.5
Snap-on Inc.	1.00	0.97	2.8232	0.1081	7.8	7.4	9.9	11.2	14.8	18.0
Sovereign Bancorp	1.20	1.27	3.4246	0.1286	12.9	11.1	11.5	7.8	7.4	9.8
Staples, Inc.	1.10	1.09	3.0690	0.1162	18.1	17.2	18.9	18.8	17.4	18.8
SPX Corp.	1.10	1.14	3.5286	0.1328	12.5	1.0	8.7	8.8	13.6	18.5
Stericycle Inc.	0.85	0.72	3.4111	0.1280	18.3	16.8	17.8	17.4	18.1	18.0
STERIS Corp.	0.85	0.76	3.0875	0.1146	13.8	11.4	8.8	11.4	12.6	16.5
Constellation Brands	0.80	0.81	3.2824	0.1232	11.2	11.3	12.9	11.9	8.0	9.8
Susquehanna Bancshs.	1.20	1.24	3.2073	0.1204	11.4	9.3	10.2	8.8	4.0	8.8
SUPERVALU INC.	0.88	0.78	3.2781	0.1230	13.1	13.3	12.3	8.5	10.0	10.5
Safeway Inc.	0.85	0.76	3.0130	0.1131	22.0	13.0	12.8	13.7	13.5	13.5
Standex Int'l	1.10	1.09	3.3850	0.1346	11.1	13.8	14.4	10.5	7.8	14.5
Sensient Techs.	1.00	0.83	2.8441	0.1068	13.4	11.8	9.1	9.4	9.8	10.6
Sybase Inc.	1.00	0.95	3.2068	0.1203	10.5	8.7	12.2	11.3	13.1	12.0
Stryker Corp.	0.90	0.82	2.8484	0.1070	21.0	21.3	22.1	18.8	18.8	22.5
TCF Financial	1.05	1.07	2.8786	0.1117	23.4	25.6	26.8	23.7	24.3	17.5
Tidewater Inc.	1.10	1.08	3.6741	0.1378	4.3	4.8	11.8	17.8	18.4	13.8
Tech Data	0.85	0.81	3.0721	0.1183	8.4	7.8	6.7	4.2	7.1	8.8
Techne Corp.	1.05	1.01	2.8842	0.1120	18.2	18.3	24.7	21.8	18.4	18.0
Teva Pharmac. (ADR)	0.75	0.85	3.4424	0.1288	18.8	17.8	17.7	18.8	14.3	14.0
Target Corp.	0.85	0.89	2.9350	0.1102	18.6	14.6	17.0	17.6	18.8	20.0
Hanover Insurance	1.15	1.19	3.0854	0.1156	4.5	8.0	3.9	8.7	10.2	9.0
TJX Companies	0.80	0.80	3.0313	0.1136	42.4	41.3	33.6	33.9	41.3	38.5
Teekay Corp.	1.15	1.19	3.6074	0.1354	10.7	33.8	28.5	10.7	8.7	14.5
Tennant Co.	1.00	0.97	3.5868	0.1349	8.8	8.8	11.8	13.0	13.8	14.0
Total System Svcs.	1.10	1.10	2.4890	0.1289	19.2	17.4	18.2	20.9	28.7	17.0
Texas Instruments	1.15	1.18	3.4768	0.1308	7.1	14.2	18.8	23.2	28.5	16.0
UnitedHealth Group	0.75	0.87	3.4368	0.1280	25.8	24.1	18.6	20.0	23.2	20.0
Unum Group	1.10	1.13	2.8882	0.1087	4.4	7.8	7.0	7.8	8.7	10.8
United Stationers	1.05	1.01	3.1302	0.1175	12.3	13.4	12.7	12.9	18.8	18.0
Universal Corp.	0.85	0.74	3.0827	0.1161	18.3	13.8	8.8	10.8	11.8	12.8
Varian Medical Sys.	1.00	0.98	3.8161	0.1387	23.2	27.3	31.3	28.0	28.2	21.0
Varian Inc.	1.10	1.08	3.4828	0.1300	11.7	11.7	9.3	8.1	10.3	12.5
Viad Corp.	1.05	1.01	3.4678	0.1468	13.2	8.7	9.3	8.8	7.8	10.5
WD-40 Co.	0.85	0.81	3.1868	0.1200	27.8	23.6	21.8	18.2	18.5	16.5
Werner Enterprises	1.05	1.07	3.4316	0.1288	10.4	11.3	11.4	11.3	9.5	11.5
Whirlpool Corp.	1.15	1.20	3.2910	0.1273	31.8	23.3	24.2	14.5	18.8	14.5
W.P. Carey & Co. LLC	0.80	0.80	2.8726	0.1078	10.8	11.2	7.1	13.8	14.2	17.0
Watson Pharmac.	0.90	0.81	3.3860	0.1276	10.0	9.1	7.3	8.7	8.2	10.0
Berkley (W.R.)	0.95	0.80	2.8518	0.1070	17.0	18.5	20.7	20.5	20.8	17.0
Whitney Holding	1.10	1.05	2.8068	0.1082	11.7	10.7	10.9	13.0	10.7	9.5
World Wrestling Ent.	0.80	0.84	3.3119	0.1240	14.0	18.1	11.9	8.3	13.8	20.0
Wyeth	0.85	0.71	2.8694	0.1077	32.8	34.8	33.0	28.2	28.4	18.0
Xerox Corp.	1.05	1.05	2.8326	0.1065	11.6	11.0	12.8	14.8	13.2	16.0
Zebra Techn. 'A'	1.10	1.08	3.4428	0.1283	14.1	18.1	13.1	13.0	12.3	13.0
Zimmer Holdings	0.85	0.70	3.3358	0.1283	9.3	18.2	18.6	17.0	18.3	13.3
Average	1.00	0.97	3.2432	0.1216						
Average for the Proxy Group of Six AUS Utility Reports Water Companies	0.86	0.81	3.2465	0.1218						

See page 30 for notes.

Utilities Inc.
Comparable Earnings Analysis
for a Proxy Group of Forty-Nine Non-Utility Companies Comparable to the
Florida PSC Natural Gas Index (9)

Proxy Group of Fourty-Eight Non-Utility Companies Comparable to the Florida PSC Natural Gas Index (9)	Adj. Beta	Unadj. Beta	Standard Error of the Regression	Standard Deviation of Beta	5-Year Projected (3)
Allstate Corp.	0.90	0.78	2.0704	0.0777	13.5 %
Amer. Financial Group	1.00	0.84	2.0967	0.0787	13.5
Automatic Data Proc.	0.75	0.61	2.1449	0.0805	16.0
Bank of America	0.95	0.90	1.9542	0.0734	13.5
Bank of Nova Scotia	0.75	0.57	1.8721	0.0703	17.5
BOK Financial	0.85	0.74	2.1573	0.0810	12.0
BP PLC ADR	0.95	0.91	2.1561	0.0809	20.0
Campbell Soup	0.85	0.74	1.7832	0.0669	25.5
Chevron Corp.	0.95	0.87	2.0291	0.0762	22.5
Chubb Corp.	0.90	0.86	2.0348	0.0764	11.0
Cincinnati Financial	0.85	0.73	1.9072	0.0716	8.0
Commerce Bancshs.	0.90	0.80	1.7846	0.0670	11.5
ConAgra Foods	0.80	0.64	2.1569	0.0810	15.5
Cullen/Frost Bankers	1.00	0.96	2.0222	0.0759	12.0
Du Pont	1.05	1.00	2.0316	0.0763	23.5
Ecolab Inc.	0.85	0.83	1.9621	0.0737	21.0
Emerson Electric	1.00	0.96	1.8988	0.0713	27.0
Exxon Mobil Corp.	0.95	0.91	2.0146	0.0756	27.5
Fortune Brands	0.90	0.81	2.0484	0.0769	14.0
Gen'l Dynamics	0.90	0.83	2.0702	0.0777	16.0
Gen'l Electric	0.85	0.77	2.0549	0.0775	19.5
Genuine Parts	0.90	0.78	1.7933	0.0682	18.0
Hershey Co.	0.75	0.68	2.1426	0.0804	41.0
Illinois Tool Works	0.95	0.91	2.0898	0.0784	24.0
Int'l Flavors & Frag.	0.85	0.76	2.1110	0.0792	31.0
Kraft Foods	0.75	0.62	2.0323	0.0763	10.5
Lockheed Martin	0.90	0.83	2.1575	0.0810	31.0
Manulife Fin'l	1.00	0.83	1.9509	0.0732	17.0
Mercury General	0.85	0.77	2.1415	0.0804	14.0
MetLife Inc.	1.00	0.98	2.0563	0.0773	13.5
News Corp.	1.00	0.98	2.1348	0.0801	10.5
Northrop Grumman	0.75	0.69	1.9596	0.0735	12.5
Novartis AG ADR	0.75	0.69	2.0977	0.0787	14.5
PartnerRe Ltd.	0.75	0.58	1.9747	0.0741	11.0
Pitney Bowes	0.85	0.70	1.8430	0.0692	91.5
Plains All Amer. Pipe.	0.75	0.56	2.1918	0.0823	11.5
PNC Financial Serv.	1.00	0.96	2.0740	0.0779	12.0
Raytheon Co.	0.85	0.77	1.9697	0.0739	14.0
Republic Services	0.90	0.79	1.9896	0.0747	22.5
Sara Lee Corp.	0.80	0.67	2.1205	0.0796	34.5
Sigma-Aldrich	0.90	0.78	1.9743	0.0741	19.5
SunTrust Banks	1.00	0.94	2.1084	0.0791	9.0
Tootsie Roll Ind.	0.85	0.77	2.1858	0.0821	7.0
Travelers Cos.	1.00	0.96	2.1783	0.0818	11.0
U.S. Bancorp	0.90	0.83	2.0005	0.0751	19.5
United Parcel Serv.	0.75	0.60	2.0608	0.0774	28.0
United Technologies	1.00	0.94	1.7710	0.0665	17.5
Washington Post	0.75	0.61	2.1127	0.0793	8.5
Waste Management	0.95	0.85	2.0442	0.0767	22.0
Average	0.88	0.79	2.0306	0.0762	
Average for the Florida PSC Natural Gas Index	0.88	0.79	1.9491	0.0731	

See page 30 for notes.

Utilities Inc.
Comparable Earnings Analysis

Notes:

(P) = Preliminary

(1) The criteria for selection of the proxy group of two hundred twenty-two non-utility companies was that the non-utility companies be domestic and have a meaningful rate of return on book common equity, shareholders' equity, net worth, or partners' capital for each of the five years ended 2007 and projected 2011 - 2013 as reported in Value Line Investment Survey (Standard Edition). The proxy group of two hundred twenty-two non-utility companies was selected based upon the proxy group of six AUS Utility Reports water companies' unadjusted beta range of 0.54 – 1.28 and standard error of the regression range of 2.8187 – 3.6743. These ranges are based upon plus or minus three standard deviations of the unadjusted beta and standard error of the regression as detailed in Ms. Ahern's rebuttal testimony. Plus or minus three standard deviations captures 99.73% of the distribution of unadjusted betas and standard errors of the regression.

(2) Ending 2007.

(3) 2011 - 2013.

(4) The Student's T-statistic associated with these returns exceeds 1.96 at the 95% level of confidence. Therefore, they have been excluded, as outliers, to arrive at proper mean historical and projected returns as fully explained in Ms. Ahern's testimony.

(5) The standard deviation of group of six AUS Utility Reports water companies' standard error of the regression is 0.1426. The standard deviation of the standard error of the regression is calculated as follows:

$$\text{Standard Deviation of the Std. Err. of the Regr.} = \frac{\text{Standard Error of the Regression}}{\sqrt{2N}}$$

where: N = number of observations. Since Value Line betas are derived from weekly price change observations over a period of five years, N = 259

$$\text{Thus, } 0.1426 = \frac{3.2465}{\sqrt{518}} = \frac{3.2465}{22.7596}$$

(6) Median five year projected rate of return on book common equity, shareholder's equity, net worth, or partners' capital including returns identified as outliers as outlined in Note (4) above.

(7) Median five year historical and projected rate of return on book common equity, shareholder's equity, net worth, or partner's capital excluding returns identified as outliers as outlined in Note (4) above.

(8) Median of the five year historical and five year projected return on book common equity, shareholder's equity, net worth or partner's capital excluding returns identified as outliers as outlined on Note (4) above.

(9) The criteria for selection of the proxy group of forty-nine non-utility companies was that the non-utility companies be domestic and have a meaningful projected rate of return on book common equity, shareholders' equity, net worth, or partners' capital 2011 - 2013 as reported in Value Line Investment Survey (Standard Edition). The proxy group of forty-nine non-utility companies was selected based upon the Florida PSC Natural Gas Index's unadjusted beta range of 0.56 – 1.00 and standard error of the regression range of 1.6896 – 2.2026. These ranges are based upon plus or minus three standard deviations of the unadjusted beta and standard error of the regression as detailed in Ms. Ahern's rebuttal testimony. Plus or minus three standard deviations captures 99.73% of the distribution of unadjusted betas and standard errors of the regression.

(10) The standard deviation of the Florida PSC Natural Gas Index's standard error of the regression is 0.0867 (1.9731 / 22.7596).

Source of Information: Value Line Investment Survey (Standard Edition)

AMER. STATES WATER NYSE-AWR

RECENT PRICE 37.23 | P/E RATIO 21.6 (Trailing: 25.3 / Median: 18.0) | RELATIVE P/E RATIO 1.36 | DIV'D YLD 2.7% | VALUE LINE

TIMELINESS 3 Raised 9/7/07
SAFETY 3 New 7/7/00
TECHNICAL 1 Raised 12/5/08
BETA 1.00 (1.00 = Market)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
High:	16.1	17.1	19.5	26.5	25.3	25.4	28.0	29.0	28.6	34.6	43.8	46.1
Low:	12.5	13.5	14.1	14.8	16.7	19.0	20.3	21.5	20.8	24.3	30.3	33.6

LEGENDS
— 1.25 x Dividends p sh divided by Interest Rate
···· Relative Price Strength
3-for-2 split 9/02
Options: No
Shaded area indicates recession

2010-12 PROJECTIONS

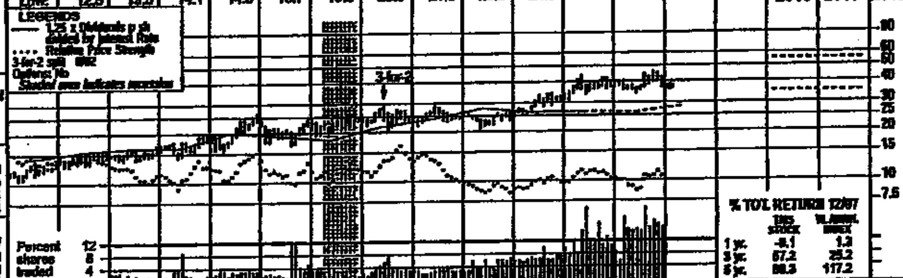
	Price	Gain	Ann'l Total Return
High	55	(+50%)	13%
Low	35	(-5%)	2%

Insider Decisions

	M	A	M	J	J	A	S	O	N
to Buy	0	0	0	0	0	1	1	0	0
Options	0	0	2	1	0	2	2	0	4
to Sell	0	0	2	1	0	2	2	0	4

Institutional Decisions

	1Q2007	2Q2007	3Q2007
to Buy	57	65	63
to Sell	47	44	63
Hld's(000)	9282	9778	10424



% TOT. RETURN 12/07

	THIS STOCK	VL ARITH. INDEX
1 yr.	-8.1	1.3
3 yr.	67.2	25.2
5 yr.	98.3	117.2

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	© VALUE LINE PUB., INC.	10-12
9.15	10.10	9.27	10.43	11.03	11.37	11.44	11.82	12.91	12.17	13.06	13.70	13.96	13.81	14.08	15.75	17.40	18.00	Revenues per sh	20.65
1.78	1.81	1.87	1.68	1.75	1.75	1.85	2.04	2.26	2.20	2.63	2.54	2.06	2.23	2.04	2.50	3.30	3.55	"Cash Flow" per sh	3.80
1.19	1.15	1.11	.95	1.03	1.13	1.04	1.00	1.10	1.28	1.35	1.34	.70	1.05	1.32	1.33	1.63	1.90	Earnings per sh A	2.20
.73	.77	.79	.80	.81	.82	.83	.84	.85	.86	.87	.87	.88	.89	.90	.91	.96	1.02	Div'd Decl'd per sh B ■	1.18
2.77	2.51	1.90	2.43	2.19	2.40	2.68	3.11	4.30	3.83	3.16	2.80	3.76	5.03	4.24	3.61	3.60	3.90	Cap'l Spending per sh	3.25
8.39	8.65	8.95	10.07	10.29	11.01	11.24	11.40	11.82	12.74	13.22	14.05	13.97	15.01	15.72	16.64	17.70	18.00	Book Value per sh	19.10
8.91	8.95	11.71	11.77	11.77	13.33	13.44	13.44	13.44	15.12	15.12	15.18	15.21	16.75	16.80	17.05	17.25	17.50	Common Shs Outst'g C	18.00
8.8	10.8	13.4	12.8	11.6	12.6	14.5	16.5	17.1	15.9	16.7	18.3	31.9	22.2	21.9	27.7	23.9		Avg Ann'l P/E Ratio	21.0
.56	.84	.79	.84	.78	.79	.84	.81	.97	1.03	.86	1.00	1.82	1.23	1.17	1.47	1.27		Relative P/E Ratio	1.40
7.8%	6.3%	5.3%	6.6%	6.7%	6.6%	5.5%	5.0%	4.2%	4.2%	3.9%	3.6%	3.8%	3.8%	3.1%	2.4%	2.5%		Avg Ann'l Div'd Yield	2.6%

CAPITAL STRUCTURE as of 9/30/07
Total Debt $297.2 mill. Due in 5 Yrs $20.0 mill.
LT Debt $267.6 mill. LT Interest $24.0 mill.
(LT interest earned: 3.5x; total interest coverage: 3.4x) (47% of Cap'l)

Leases, Uncapitalized: None
Pension Assets-12/06 $84.3 mill.
Oblig. $86.1 mill.
Pfd Stock None. Pfd Div'd None.

Common Stock 17,197,055 shs.
MARKET CAP: $650 million (Small Cap)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	© VALUE LINE PUB., INC.	10-12
153.8	149.1	173.4	184.9	197.5	209.2	212.7	228.0	236.2	268.6	300	315	Revenues ($mill)	390
14.1	14.6	16.1	18.9	28.4	20.3	11.9	16.6	22.6	23.1	29.9	33.0	Net Profit ($mill)	43.0
41.1%	40.9%	46.0%	45.7%	43.0%	38.9%	43.6%	37.4%	47.9%	46.5%	40.5%	41.0%	Income Tax Rate	42.0%
--	--	--	--	--	--	--	--	--	--	NMF	NMF	AFUDC % to Net Profit	NMF
43.6%	43.6%	51.0%	47.5%	54.9%	52.0%	52.0%	47.7%	50.4%	48.6%	47.0%	40.0%	Long-Term Debt Ratio	50.0%
56.3%	55.7%	48.4%	51.9%	44.7%	48.0%	48.0%	52.3%	49.6%	51.4%	53.0%	62.0%	Common Equity Ratio	50.0%
268.4	277.1	328.2	371.1	447.5	444.4	442.3	480.4	532.5	551.8	575	605	Total Capital ($mill)	725
383.6	414.8	449.6	509.1	530.0	563.3	602.3	654.2	713.2	750.5	770	800	Net Plant ($mill)	900
6.8%	7.9%	6.5%	6.4%	6.1%	6.6%	4.6%	5.2%	5.4%	6.0%	7.0%	7.5%	Return on Total Cap'l	8.0%
9.2%	9.4%	10.0%	9.2%	10.1%	9.5%	5.8%	6.5%	8.5%	8.1%	9.5%	10.5%	Return on Shr. Equity	12.0%
9.2%	9.4%	10.1%	9.3%	10.1%	9.5%	5.8%	6.6%	8.6%	8.1%	9.5%	10.5%	Return on Com Equity	12.0%
1.8%	2.1%	2.8%	3.0%	3.6%	3.3%	NMF	1.0%	2.8%	2.7%	5.5%	5.0%	Retained to Com Eq	6.0%
89%	78%	72%	68%	65%	65%	113%	84%	67%	67%	57%	54%	All Div'ds to Net Prof	51%

CURRENT POSITION ($MILL.)	2005	2006	9/30/07
Cash Assets	13.0	3.2	3.6
Receivables	13.3	14.8	19.6
Inventory (Avg Cst)	1.4	1.6	1.8
Other	41.2	44.8	44.2
Current Assets	68.9	64.4	69.2
Accts Payable	19.7	24.0	26.3
Debt Due	27.6	32.6	29.6
Other	30.3	29.3	34.1
Current Liab.	77.6	85.9	90.0
Fix. Chg. Cov.	413%	266%	330%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '04-'06 to '10-'12
Revenues	3.0%	2.5%	6.0%
"Cash Flow"	4.0%	2.0%	7.0%
Earnings	1.5%	-0.5%	10.0%
Dividends	1.0%	1.0%	4.5%
Book Value	4.0%	4.5%	3.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2004	46.7	59.3	69.0	53.0	228.0
2005	49.0	60.6	69.1	57.8	236.2
2006	64.3	63.0	75.0	66.3	268.6
2007	72.3	79.2	75.8	72.7	300
2008	77.0	82.0	81.0	75.0	315

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2004	.08	.30	.52	.15	1.05
2005	.22	.34	.47	.29	1.32
2006	.35	.36	.32	.30	1.33
2007	.31	.42	.44	.46	1.63
2008	.37	.45	.57	.41	1.80

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.221	.221	.221	.225	.89
2005	.225	.225	.225	.225	.90
2006	.225	.225	.225	.235	.91
2007	.235	.235	.235	.250	.96
2008					

BUSINESS: American States Water Co. operates as a holding company. Through its principal subsidiary, Golden State Water Company, it supplies water to more than 250,000 customers in 75 communities in 10 counties. Service areas include the greater metropolitan areas of Los Angeles and Orange Counties. The company also provides electric utility services to nearly 23,250 customers in the city of Big Bear Lake and in areas of San Bernardino County. Acquired Chaparral City Water of Arizona (10/00). Has roughly 555 employees. Officers & directors own 3.1% of common stock (4/07 Proxy). Chairman: Lloyd Ross. President & CEO: Floyd Wicks. Inc.: CA. Addr.: 630 East Foothill Boulevard, San Dimas, CA 91773. Tele.: 909-394-3600. Internet: www.aswater.com.

We've raised our near-term expectations for American States Water. The California Public Utilities Commission (CPUC) recently announced that it approved the company's general rate case appeal for its Region II service area as well as the request to recover general office expenses. The decision, which is retroactive to January 1, 2007, and will be recorded in the company's fourth-quarter 2007 results (set to be released as we headed to press), ought to increase revenue by roughly $6.4 million and add more than a dime to share earnings for the quarter. We now look for the company to earn $0.46 a share in the final quarter of 2007. Note that our estimate would have been higher if not for the unfavorable weather conditions that have limited usage rates in recent months. **There may be additional regulatory backing on the horizon.** Although the regulatory climate is much improved from years ago, the CPUC is mulling over the idea of instituting a few of the proposals included in the Water Action Plan of 2005. Doing so would likely further streamline the decision making process, while removing some earnings volatility through the adoption of a weather normalization clause.

Even still, we advise investors to look elsewhere at this time. The aforementioned changes at the CPUC are still speculation and are not being factored into our estimates just yet. That said, earnings growth will probably slow considerably in 2008. Even if adopted, we suspect that a fair portion of the benefits coming from these changes would likely be offset by capital constraints. Indeed, American is highly leveraged and had only $3.6 million in cash on hand at the end of the most recent quarter. Infrastructure costs are expected to remain high, given aging systems and tighter EPA regulations, forcing management to look to outside financiers for help. The higher interest costs associated with taking on more debt and/or additional shares will likely limit shareholder gains, as well. Meanwhile, the once robust dividend yield pales in comparison to years past, despite the recent 6% hike. **These shares offer limited 3- to 5-year total-return appeal,** despite the 10% drop in price since our October review.

Andre J. Costanza *January 25, 2008*

(A) Primary earnings. Excludes nonrecurring gains: '91, 73¢; '92, 13¢; '04, 14¢; '05, 25¢; '06, 6¢. Next earnings report due early February.

(B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.

(C) In millions, adjusted for splits.

Company's Financial Strength	B++
Stock's Price Stability	75
Price Growth Persistence	75
Earnings Predictability	60

AQUA AMERICA NYSE-WTR

RECENT PRICE 20.42 | P/E RATIO 23.2 (Trailing: 28.4; Median: 24.0) | RELATIVE P/E RATIO 1.46 | DIV'D YLD 2.5% | VALUE LINE

TIMELINESS 4 Raised 2/8/07
SAFETY 3 Lowered 6/7/08
TECHNICAL 2 Raised 1/11/08
BETA .60 (1.00 = Market)

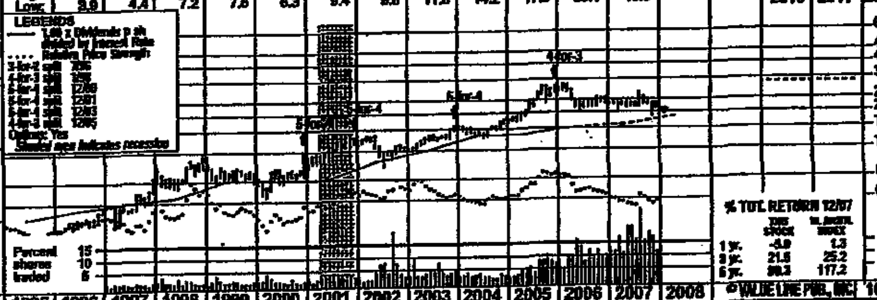
High:	6.7	8.5	11.5	11.6	12.0	14.8	16.0	16.8	18.5	28.2	29.8	28.6
Low:	3.9	4.4	7.2	7.6	8.3	9.4	9.6	11.8	14.2	17.5	20.1	16.9

Target Price Range 2010 | 2011 | 2012

2010-12 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	30	(+45%)	13%
Low	20	(Nil)	3%

LEGENDS
— 1.60 x Dividends p sh divided by Interest Rate
···· Relative Price Strength
3-for-2 split 7/96
4-for-3 split 1/98
5-for-4 split 12/00
5-for-4 split 12/01
5-for-4 split 12/03
4-for-3 split 12/05
Options: Yes
Shaded area indicates recession



Insider Decisions

	M	A	M	J	J	A	S	O	N
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	2	0	2	3	2	1	1
to Sell	0	0	2	0	2	2	3	1	1

Institutional Decisions

	1Q2007	2Q2007	3Q2007
to Buy	108	109	84
to Sell	95	108	114
Hld's(000)	56295	64821	65922

Percent shares traded 15 / 10 / 5

% TOT. RETURN 12/07

	THIS STOCK	VL ARITH. INDEX
1 yr.	-4.0	1.3
3 yr.	21.5	25.2
5 yr.	80.3	117.2

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	© VALUE LINE PUB., INC.	10-12
2.14	1.82	1.70	1.82	1.84	1.88	2.02	2.08	2.41	2.48	2.70	2.85	2.97	3.48	3.85	4.03	4.55	4.80	Revenues per sh	5.35
.45	.39	.42	.42	.47	.50	.58	.61	.72	.76	.88	.94	.98	1.09	1.21	1.26	1.45	1.55	"Cash Flow" per sh	1.90
.25	.24	.24	.26	.29	.30	.34	.40	.42	.47	.51	.54	.57	.64	.71	.70	.75	.90	Earnings per sh A	1.05
.19	.20	.21	.21	.22	.23	.24	.26	.27	.28	.30	.32	.35	.37	.40	.44	.48	.55	Div'd Decl'd per sh B =	.70
.54	.60	.47	.46	.52	.48	.56	.82	.90	1.16	1.08	1.20	1.32	1.54	1.84	2.05	2.10	2.15	Cap'l Spending per sh	2.30
2.07	2.09	2.29	2.41	2.46	2.59	2.84	3.21	3.42	3.85	4.15	4.36	5.34	5.89	6.30	6.88	7.15	7.45	Book Value per sh	8.30
41.42	61.20	68.40	68.77	63.74	65.75	67.47	72.28	108.80	111.82	113.97	113.19	123.45	127.18	128.97	132.33	134.00	136.00	Common Shs Outst'g C	140.00
10.8	12.5	14.4	13.5	12.0	15.6	17.8	22.5	21.2	18.2	23.6	23.8	24.5	25.1	31.8	34.7	30.3		Avg Ann'l P/E Ratio	25.0
.69	.76	.85	.88	.80	.98	1.03	1.17	1.21	1.18	1.21	1.29	1.40	1.33	1.69	1.87	1.60		Relative P/E Ratio	1.65
7.2%	6.6%	5.9%	6.0%	6.2%	4.8%	3.9%	2.9%	3.0%	3.3%	2.6%	2.6%	2.5%	2.3%	1.8%	1.8%	2.1%		Avg Ann'l Div'd Yield	2.7%
						136.2	161.8	257.3	275.5	307.3	322.0	367.2	442.0	496.8	533.5	610	650	Revenues ($mill)	750
						23.2	28.8	45.0	50.7	58.6	62.7	67.3	80.0	91.2	92.0	100	118	Net Profit ($mill)	150
						40.0%	40.5%	38.4%	38.3%	38.3%	38.5%	38.3%	38.4%	38.4%	38.5%	38.5%	38.0%	Income Tax Rate	38.0%
						--	--	--	--	--	--	--	--	2.9%	2.8%	2.0%	2.0%	AFUDC % to Net Profit	2.0%
						54.4%	52.7%	52.9%	52.0%	52.2%	54.2%	51.4%	50.0%	52.0%	51.6%	52.0%	52.0%	Long-Term Debt Ratio	51.0%
						44.9%	46.6%	46.7%	47.8%	47.7%	45.8%	48.6%	50.0%	48.0%	48.4%	48.0%	48.0%	Common Equity Ratio	49.0%
						427.2	496.6	762.7	901.1	990.4	1076.2	1355.7	1497.3	1680.4	1904.4	2090	2110	Total Capital ($mill)	2550
						634.5	698.8	1135.4	1251.4	1358.1	1490.8	1824.3	2069.8	2280.8	2506.0	2750	2900	Net Plant ($mill)	3500
						7.4%	7.6%	7.6%	7.4%	7.8%	7.6%	6.4%	6.7%	6.8%	6.4%	6.5%	7.0%	Return on Total Cap'l	7.5%
						11.8%	12.3%	12.2%	11.7%	12.3%	12.7%	10.2%	10.7%	11.2%	10.0%	10.5%	11.5%	Return on Shr. Equity	11.5%
						12.0%	12.4%	12.9%	11.7%	12.4%	12.7%	10.2%	10.7%	11.2%	10.0%	10.5%	11.5%	Return on Com Equity	11.5%
						3.6%	4.5%	4.3%	4.7%	5.1%	5.2%	4.2%	4.6%	4.9%	3.7%	3.5%	3.5%	Retained to Com Eq	4.0%
						70%	64%	65%	60%	58%	59%	59%	57%	55%	63%	64%	61%	All Div'ds to Net Prof	67%

CAPITAL STRUCTURE as of 9/30/07
Total Debt $1062.3 mill. Due in 5 Yrs $150.0 mill.
LT Debt $1038.0 mill. LT Interest $66.5 mill.
(LT interest earned: 3.6x; total interest coverage: 3.4x) (52% of Cap'l)

Pension Assets-12/06 $126.5 mill. Oblig. $178.3 mill.

Pfd Stock None
Common Stock 133,249,378 shares as of 10/23/07

MARKET CAP: $2.7 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2005	2006	9/30/07
Cash Assets	11.9	44.0	15.6
Receivables	62.7	72.1	94.4
Inventory (AvgCst)	7.6	10.2	9.6
Other	7.8	8.4	9.1
Current Assets	90.0	134.7	128.7
Accts Payable	55.5	49.4	27.4
Debt Due	163.1	150.4	24.3
Other	44.7	55.8	263.7
Current Liab.	263.3	255.6	315.4
Fix. Chg. Cov.	377%	360%	360%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '04-'06 to '10-'12
Revenues	7.5%	8.5%	6.0%
"Cash Flow"	10.0%	9.0%	7.0%
Earnings	9.0%	8.0%	7.5%
Dividends	6.5%	7.0%	9.5%
Book Value	9.5%	11.0%	6.5%

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	99.8	106.5	120.3	115.4	442.0
2005	114.0	123.1	136.8	122.9	496.8
2006	118.0	131.7	147.0	136.8	533.5
2007	137.3	150.6	165.5	156.6	610
2008	145	165	185	155	650

Calendar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.13	.14	.20	.17	.64
2005	.15	.17	.22	.17	.71
2006	.13	.17	.21	.19	.70
2007	.13	.18	.22	.22	.75
2008	.20	.24	.24	.22	.90

Calendar	QUARTERLY DIVIDENDS PAID B = Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.09	.09	.09	.098	.37
2005	.098	.098	.098	.107	.40
2006	.107	.107	.115	.115	.44
2007	.115	.115	.125	.125	.48
2008					

BUSINESS: Aqua America, Inc. is the holding company for water and wastewater utilities that serve approximately 2.8 million residents in Pennsylvania, Ohio, North Carolina, Illinois, Texas, New Jersey, Florida, Indiana, and five other states. Divested three of four non-water businesses in '91; telemarketing group in '93; and others. Acquired AquaSource, 7/03; Consumers Water, 4/99; and others. Water supply revenues '06: residential, 59%; commercial, 14%; industrial & other, 26%. Officers and directors own 1.2% of the common stock (4/07 Proxy). Chairman & Chief Executive Officer: Nicholas DeBenedictis. Incorporated: Pennsylvania. Address: 762 West Lancaster Avenue, Bryn Mawr, Pennsylvania 19010. Telephone: 610-525-1400. Internet: www.aquaamerica.com.

We have lowered our share-net estimate for Aqua America's recently completed fourth quarter. Due to the struggling housing market and the inability of the company to raise its rates in a few markets, we now believe that the company earned $0.22 a share during the December period, down from our previous estimate of $0.24 (WTR will release its fourth-quarter financial results within the next few weeks). On the bright side,

We expect a healthy share-net advance this year. Aqua's profits will likely be fueled by its recent acquisition activities. Over the last several months, it has purchased a number of water companies that have expanded its market reach to new areas in Florida, New Jersey, Indiana, Pennsylvania, and Texas. Moreover, management continues to implement rate hikes throughout the nation, which will help advance the operating margin and profits this year. In sum, Aqua will likely post share earnings of $0.90 this year, 20% better than our estimate for 2007.

The company's balance sheet should be able to support a few more purchases. Although Aqua does not have a huge stash of cash (only $15 million), and already possesses an ample amount of debt, it probably generates enough funds to complete a few more acquisitions this year. Aqua will likely seek opportunities to bolster its water utility businesses in Texas, Pennsylvania, and Virginia.

These shares are not particularly appealing at this time. Although recent acquisitions should help Aqua America register a solid share-earnings advance in 2008, our Timeliness Ranking System suggests that this issue will lag the year-ahead market. Furthermore, looking long term, this stock already trades at the low end of our projected Target Price Range for 2010-2012, limiting appreciation potential out to that time frame. That said, our share-net estimates would likely be raised if Aqua can complete a few additional acquisitions over the next few years. Lastly, **Income-oriented accounts can probably find better options elsewhere.** Although Aqua has raised its quarterly dividend every year over the past decade, its current yield of 2.5% is probably not a good enough reason to look here.

Ian Gendler *January 25, 2008*

(A) Primary shares outstanding through '96; diluted thereafter. Excl. nonrec. gains (losses): '91, (34¢); '92, (39¢); '99, (11¢); '00, 2¢; '01, 2¢; '02, 5¢; '03, 4¢. Excl. gain from disc. operations: '96, 2¢. Next earnings report due early Feb.
(B) Dividends historically paid in early March, June, Sept. & Dec. = Div'd. reinvestment plan available (5% discount).
(C) In millions, adjusted for stock splits.

Company's Financial Strength	B+
Stock's Price Stability	90
Price Growth Persistence	80
Earnings Predictability	100

CALIFORNIA WATER NYSE-CWT

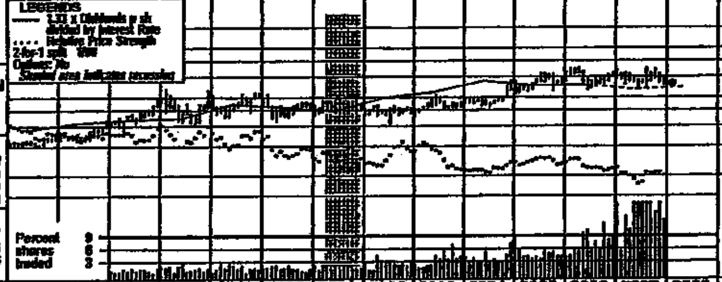
RECENT PRICE 36.23 | P/E RATIO 24.2 (Trailing: 25.3, Median: 20.0) | RELATIVE P/E RATIO 1.52 | DIV'D YLD 3.2% | VALUE LINE

TIMELINESS 4 Lowered [illegible]
SAFETY 3 Lowered [illegible]
TECHNICAL 1 Raised [illegible]
BETA 1.15 (1.00 = Market)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
High:	21.9	29.6	33.8	32.0	31.4	28.6	26.9	31.4	37.9	42.1	45.8	45.4
Low:	16.3	18.6	20.8	22.8	21.6	22.9	20.5	23.7	28.1	31.2	32.8	34.2

LEGENDS
— 1.33 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
2-for-1 split 1998
Options: No
Shaded area indicates recession

Target Price Range 2010 2011 2012



2010-12 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	55	(+50%)	13%
Low	35	(-5%)	3%

Insider Decisions

	M	A	M	J	J	A	S	O	N
to Buy	0	0	0	0	0	1	0	0	0
Options	0	0	0	0	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	1Q2007	2Q2007	3Q2007
to Buy	51	64	45
to Sell	39	43	46
Hld's(000)	8026	8544	8581

Percent shares traded 9 6 3

% TOT. RETURN 12/07

	THIS STOCK	VL ARITH. INDEX
1 yr.	-6.3	1.3
3 yr.	0.9	25.2
5 yr.	64.5	117.2

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	© VALUE LINE PUB., INC.	10-12
11.18	12.28	13.34	12.58	13.17	14.48	15.48	14.76	15.86	16.18	16.26	17.33	16.37	17.18	17.44	16.20	17.49	18.16	Revenues per sh	21.00
1.98	1.82	2.25	2.02	2.97	2.50	2.92	2.60	2.75	2.52	2.28	2.65	2.51	2.83	3.03	2.71	3.10	3.30	"Cash Flow" per sh	3.95
1.21	1.08	1.35	1.22	1.17	1.51	1.83	1.45	1.53	1.31	.94	1.25	1.21	1.46	1.47	1.34	1.43	1.65	Earnings per sh A	2.25
.90	.93	.96	.99	1.02	1.04	1.06	1.07	1.09	1.10	1.12	1.12	1.12	1.13	1.14	1.15	1.16	1.17	Div'd Decl'd per sh B ■	1.25
3.03	3.09	2.53	2.26	2.17	2.83	2.61	2.74	3.44	2.45	4.08	5.82	4.39	3.73	5.14	5.05	4.88	3.85	Cap'l Spending per sh	4.00
10.35	10.51	10.80	11.56	11.72	12.22	13.00	13.38	13.43	12.90	12.95	13.12	14.44	15.58	15.78	16.15	16.95	18.05	Book Value per sh C	20.80
11.38	11.38	11.38	12.49	12.54	12.62	12.62	12.62	12.94	15.15	15.18	15.18	16.93	18.37	18.39	20.66	20.70	21.50	Common Shs Outst'g D	22.50
11.2	14.1	13.8	14.1	13.7	11.8	12.8	17.8	17.8	19.6	27.1	19.0	22.1	20.1	24.9	29.2	27.3		Avg Ann'l P/E Ratio	21.0
.72	.89	.80	.92	.92	.75	.73	.93	1.01	1.27	1.39	1.00	1.26	1.06	1.33	1.58	1.44		Relative P/E Ratio	1.40
6.6%	6.1%	6.2%	5.8%	6.4%	5.8%	4.6%	4.2%	4.0%	4.3%	4.4%	4.8%	4.2%	3.9%	3.1%	2.9%	3.0%		Avg Ann'l Div'd Yield	2.7%

CAPITAL STRUCTURE as of 9/30/07
Total Debt $292.9 mill. Due in 5 Yrs $12.0 mill.
LT Debt $291.1 mill. LT Interest $21.5 mill.
(LT interest earned: 3.3x; total int. cov.: 3.2x)

Pension Assets-12/06 $78.4 mill.
Oblig. $109.1 mill.
Pfd Stock $3.5 mill. Pfd Div'd $.15 mill.
139,000 shares, 4.4% cumulative ($25 par).

Common Stock 20,666,669 shs.
as of 11/1/07
MARKET CAP: $750 million (Small Cap)

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	© VALUE LINE PUB., INC.	10-12
195.3	186.3	206.4	244.8	246.8	263.2	277.1	315.6	320.7	334.7	365	390	Revenues ($mill)	490
23.3	18.4	19.9	20.0	14.4	19.1	19.4	26.0	27.2	25.6	30.9	35.0	Net Profit ($mill)	50.0
37.4%	38.4%	37.9%	42.3%	38.4%	38.7%	35.9%	38.5%	42.4%	37.4%	40.0%	41.0%	Income Tax Rate	41.0%
--	--	--	--	--	--	10.2%	3.2%	3.3%	10.6%	6.0%	6.0%	AFUDC % to Net Profit	6.0%
45.4%	44.2%	46.0%	49.0%	50.3%	55.3%	50.2%	40.6%	40.5%	43.5%	44.5%	46.0%	Long-Term Debt Ratio	48.5%
53.6%	54.7%	52.0%	50.2%	48.8%	44.0%	49.1%	58.8%	51.1%	55.9%	55.0%	53.5%	Common Equity Ratio	51.0%
306.7	306.6	333.8	388.8	402.7	453.1	498.4	555.9	566.1	670.1	720	765	Total Capital ($mill)	900
460.4	476.3	515.4	562.0	624.3	687.9	769.5	800.3	852.7	941.5	995	1050	Net Plant ($mill)	1175
9.4%	7.8%	7.8%	6.8%	5.3%	5.9%	5.6%	6.1%	6.3%	6.2%	5.5%	6.0%	Return on Total Cap'l	7.5%
13.8%	10.7%	11.2%	10.0%	7.2%	9.4%	7.8%	9.5%	9.3%	6.9%	7.5%	8.5%	Return on Shr. Equity	11.0%
14.1%	10.8%	11.4%	10.1%	7.2%	8.5%	7.9%	9.6%	9.3%	6.9%	7.5%	8.5%	Return on Com Equity	11.0%
6.0%	2.8%	3.5%	1.8%	NMF	1.0%	.7%	2.1%	2.1%	1.0%	1.5%	2.5%	Retained to Com Eq	5.0%
58%	74%	70%	82%	115%	90%	91%	77%	76%	86%	81%	72%	All Div'ds to Net Prof	54%

CURRENT POSITION ($MILL.)	2005	2006	9/30/07
Cash Assets	9.5	60.3	26.5
Other	42.7	49.3	61.9
Current Assets	52.2	109.6	88.4
Accts Payable	36.1	33.1	39.1
Debt Due	1.1	1.8	1.8
Other	39.6	35.3	40.8
Current Liab.	76.8	70.2	81.7
Fix. Chg. Cov.	361%	317%	380%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '04-'06 to '10-'12
Revenues	2.5%	1.0%	4.5%
"Cash Flow"	2.5%	3.0%	5.5%
Earnings	1.0%	2.5%	7.5%
Dividends	1.0%	.5%	1.0%
Book Value	3.5%	5.0%	3.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	60.2	88.9	97.1	69.4	315.6
2005	60.3	81.5	101.1	77.8	320.7
2006	65.2	81.1	107.8	80.6	334.7
2007	71.6	95.8	113.9	83.7	365
2008	78.0	102	120	92.0	390

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.08	.59	.59	.20	1.46
2005	.03	.41	.71	.32	1.47
2006	.04	.31	.68	.31	1.34
2007	.07	.37	.67	.32	1.43
2008	.09	.42	.77	.37	1.65

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.283	.283	.283	.283	1.13
2005	.285	.285	.285	.285	1.14
2006	.2875	.2875	.2875	.2875	1.15
2007	.290	.290	.290	.290	1.16
2008					

BUSINESS: California Water Service Group provides regulated and nonregulated water service to over 2 million people (463,900 customers) in 83 communities in California, Washington, New Mexico, and Hawaii. Main service areas: San Francisco Bay area, Sacramento Valley, Salinas Valley, San Joaquin Valley & parts of Los Angeles. Acquired National Utility Company (5/04); Rio Grande Corp. (11/06). Revenue breakdown, '06: residential, 70%; business, 18%; public authorities, 5%; industrial, 5%; other, 2%. '06 reported deprec. rate: 3.3%. Has roughly 870 employees. Chairman: Robert W. Foy. President & CEO: Peter C. Nelson. Inc.: Delaware. Address: 1720 North First Street, San Jose, California 95112-4598. Telephone: 408-367-8200. Internet: www.calwatergroup.com.

We've softened our outlook for California Water Service Group a bit since our October report. The water utility provider ran into some unforeseen problems in the third quarter 2007, when unfavorable weather conditions, and lower usage rates, caused it to post earnings of $0.67 a share, a penny off the prior year's mark. Meanwhile, there has been an unexpected holdup on the regulatory front. The California Public Utilities Commission, which appeared to have turned over a new leaf and had been handing out more timely and favorable rulings in recent memory, has yet to rule on the company's 2006 general rate case. Also, approval of parts of the Water Action Plan, namely of a Water Revenue Adjustment Mechanism (WRAM) and modified cost-balancing accounting was postponed. As a result, we've reduced our fourth-quarter 2007 share-net estimate by a few pennies to $0.32 and our full-year 2008 figure by a dime to $1.65. Note, that our 2008 figure would receive a boost if any of the WRAM amendments are implemented before the third quarter.

The stock has given back most of the gains it enjoyed last year . . . Indeed, it has fallen from its $45-plus perch, trading down more than 10% since our October report. The issue is now ranked 4 (Below Average) for Timeliness based on our momentum-driven system.

. . . however, we still think it is richly valued according to current market conditions. The stock is currently trading at nearly 25 times 12-month earnings (through June), a premium compared to our 2010-2012 projections. Although we suspect that recent regulatory lag is just a hiccup, and that an improving landscape paints a favorable backdrop for the industry as a whole, we think that the current share price accounts for these potential changes. Meanwhile, capital constraints continue to concern us. Infrastructure costs are likely to continue rising as systems and pipelines age and EPA requirements grow tougher. However, California does not have the cash to fund these endeavors and will probably have to issue more shares and/or debt, thereby limiting shareholders' gains. Although the dividend provides some downside risk, income-minded investors have better options.

Andre J. Costanza *January 25, 2008*

(A) Basic EPS. Excl. nonrecurring gain (loss): '00, (7¢); '01, 4¢; 02, 8¢. Next earnings report due early February.

(B) Dividends historically paid in mid-Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.

(C) Incl. deferred charges. In '06: $69.6 mill., $3.36/sh.
(D) In millions, adjusted for split.

Company's Financial Strength	B++
Stock's Price Stability	65
Price Growth Persistence	75
Earnings Predictability	70

SJW CORP. NYSE-SJW

RECENT PRICE 31.79 | TRAILING P/E RATIO 30.3 | RELATIVE P/E RATIO 1.81 | DIV'D YLD 1.9% | VALUE LINE

RANKS
PERFORMANCE 2 Above Average
Technical 2 Above Average
SAFETY 3 Average
BETA 1.10 (1.00 = Market)

Financial Strength B+
Price Stability 85
Price Growth Persistence 80
Earnings Predictability 85

LEGENDS
12 Mos Mov Avg
Rel Price Strength
3-for-1 split 3/04
3-for-1 split 3/06
Shaded area indicates recession

	20.17 8.54	20.33 15.83	17.83 11.58	16.07 12.67	14.95 12.67	19.64 14.60	27.80 16.07	45.83 21.16	43.00 27.65	High Low

© VALUE LINE PUBLISHING, INC.	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008/2009
SALES PER SH	6.40	6.74	7.45	7.97	8.20	9.14	9.86	10.35	--	
"CASH FLOW" PER SH	1.43	1.23	1.49	1.66	1.75	1.89	2.21	2.38	--	
EARNINGS PER SH	.87	.58	.77	.78	.91	.87	1.12	1.19	1.09 A,B	1.48 C/NA
DIV'DS DECL'D PER SH	.40	.41	.43	.46	.49	.51	.53	.57	--	
CAP'L SPENDING PER SH	1.77	1.89	2.63	2.06	3.41	2.31	2.83	3.87	--	
BOOK VALUE PER SH	7.58	7.90	8.17	8.40	9.11	10.11	10.72	12.48	--	
COMMON SHS OUTST'G (MILL.)	16.27	16.27	16.27	16.27	16.27	16.27	16.27	16.28	--	
AVG ANN'L P/E RATIO	16.5	23.1	18.5	17.3	15.4	19.6	19.7	23.5	29.2	21.5/NA
RELATIVE P/E RATIO	.88	2.15	.95	.94	.88	1.04	1.04	1.27	--	
AVG ANN'L DIV'D YIELD	3.0%	2.1%	3.0%	3.4%	3.5%	3.0%	2.4%	2.0%	--	
SALES ($MILL.)	117.0	123.2	136.1	145.7	149.7	166.9	180.1	189.2	--	
OPERATING MARGIN	33.2%	30.2%	64.4%	63.7%	56.0%	56.4%	56.9%	57.0%	--	
DEPRECIATION ($MILL.)	10.2	11.9	13.2	14.0	15.2	16.5	19.7	21.3	--	
NET PROFIT ($MILL.)	15.9	10.7	14.0	14.2	16.7	16.0	20.7	22.2	--	
INCOME TAX RATE	35.9%	41.0%	34.5%	40.4%	36.2%	42.1%	41.6%	40.8%	--	
NET PROFIT MARGIN	13.6%	8.7%	10.3%	9.8%	11.2%	9.6%	11.5%	11.7%	--	
WORKING CAP'L ($MILL.)	d3.0	d11.4	d3.8	d4.9	12.0	13.0	10.8	22.2	--	
LONG-TERM DEBT ($MILL.)	90.0	90.0	110.0	110.0	139.6	143.6	145.3	163.6	--	
SHR. EQUITY ($MILL.)	143.9	144.3	148.4	153.6	166.4	184.7	195.9	228.2	--	
RETURN ON TOTAL CAP'L	8.2%	5.9%	8.7%	6.9%	6.9%	6.5%	7.6%	7.0%	--	
RETURN ON SHR. EQUITY	11.0%	7.4%	9.4%	9.3%	10.0%	8.7%	10.6%	9.7%	--	
RETAINED TO COM EQ	6.9%	2.2%	4.1%	3.8%	4.7%	3.6%	5.6%	5.2%	--	
ALL DIV'DS TO NET PROF	46%	70%	56%	69%	53%	58%	47%	46%	--	

Bold figures are consensus earnings estimates and, using the recent price, P/E ratios.

A No. of analysts changing estim. est. in last 13 days: 0 up, 0 down, consensus 5-year earnings growth 10.5% per year. B Based upon one analyst's estimate. C Based upon one analyst's estimate.

ANNUAL RATES

of change (per share)	5 Yrs.	1 Yr.
Sales	7.5%	5.0%
"Cash Flow"	9.5%	7.5%
Earnings	7.5%	6.0%
Dividends	5.5%	6.5%
Book Value	7.0%	16.5%

Fiscal Year	QUARTERLY SALES ($mill.) 1Q	2Q	3Q	4Q	Full Year
12/31/05	33.3	44.8	66.5	43.5	180.1
12/31/06	33.7	47.9	63.1	44.5	189.2
12/31/07	39.0	55.1	64.8		
12/31/08					

Fiscal Year	EARNINGS PER SHARE 1Q	2Q	3Q	4Q	Full Year
12/31/04	.09	.27	.30	.21	.87
12/31/05	.15	.31	.53	.13	1.12
12/31/06	.14	.35	.48	.22	1.19
12/31/07	.11	.29	.43	.25	
12/31/08	.21	.42			

Calendar	QUARTERLY DIVIDENDS PAID 1Q	2Q	3Q	4Q	Full Year
2005	.134	.134	.134	.134	.54
2006	.141	.141	.141	.141	.56
2007	.151	.151	.151	.151	.60
2008					

INSTITUTIONAL DECISIONS

	1Q'07	2Q'07	3Q'07
to Buy	35	40	32
to Sell	23	27	28
Hld's(000)	7905	8965	8564

ASSETS ($mill.)	2005	2006	9/30/07
Cash Assets	8.4	3.8	2.2
Receivables	18.4	28.9	32.6
Inventory	.6	.9	.9
Other	3.3	33.8	2.9
Current Assets	31.7	59.5	38.6
Property, Plant & Equip., at cost	695.0	776.2	--
Accum Depreciation	210.2	234.5	--
Net Property	484.8	541.7	625.6
Other	71.2	104.7	97.4
Total Assets	587.7	705.9	761.6
LIABILITIES ($mill.)			
Accts Payable	5.1	7.3	8.0
Debt Due	.3	16.8	8.2
Other	15.5	13.9	24.9
Current Liab	20.9	37.2	41.1

LONG-TERM DEBT AND EQUITY as of 9/30/07

Total Debt $204.6 mill. Due in 5 Yrs. NA
LT Debt $186.5 mill. Including Cap. Leases NA (45% of Cap'l)
Leases, Uncapitalized Annual rentals NA

Pension Liability $26.3 mill. in '06 vs. $13.2 mill. in '05

Pfd Stock None Pfd Div'd Paid None

Common Stock 16,360,952 shares (55% of Cap'l)

INDUSTRY: Water Utility

BUSINESS: SJW Corp. engages in the production, purchase, storage, purification, distribution, and retail sale of water. It provides water service to customers in Cupertino, San Jose, Campbell, Monte Sereno, Saratoga, and the Town of Los Gatos, as well as in the county of Santa Clara, CA. The company also offers nonregulated water related services, including water system operations, billings, and cash remittance services. SJW owns commercial buildings and other undeveloped land in the San Jose and California; some properties in the states of Florida, Texas, and Connecticut; and a 70% limited partnership interest in 444 West Santa Clara Street, L.P. As of September 30, 2007, SJW provided water service to a population of approximately one million people in the metropolitan San Jose, California area; and to approximately 7,800 connections that served approximately 22,000 residents in the region between San Antonio and Austin, Texas. Has 357 employees. Chairman: Charles J. Toeniskoetter. Inc.: CA. Address: 374 West Santa Clara Street, San Jose, CA 95113. Tel.: (408) 279-7800. Internet: http://www.sjwater.com.

L.Y.

January 25, 2008

TOTAL SHAREHOLDER RETURN
Dividends plus appreciation as of 12/31/2007

3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.
2.02%	5.15%	-8.89%	103.21%	203.66%

SOUTHWEST WATER NDQ-SWWC

RECENT PRICE 12.11 | P/E RATIO 31.1 (Trailing: 36.3; Median: 21.0) | RELATIVE P/E RATIO 1.96 | DIV'D YLD 2.0% | VALUE LINE

TIMELINESS 4 Lowered 11/23/07
SAFETY 3 New 10/28/05
TECHNICAL 2 Raised 12/28/07
BETA 1.00 (1.00 = Market)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
High:	3.7	5.0	5.6	8.2	8.3	10.2	12.4	11.2	14.3	15.2	18.1	16.4
Low:	2.0	2.8	3.5	3.6	6.1	6.9	7.8	8.1	10.3	9.0	10.8	11.5

Target Price Range 2010 | 2011 | 2012

2010-12 PROJECTIONS

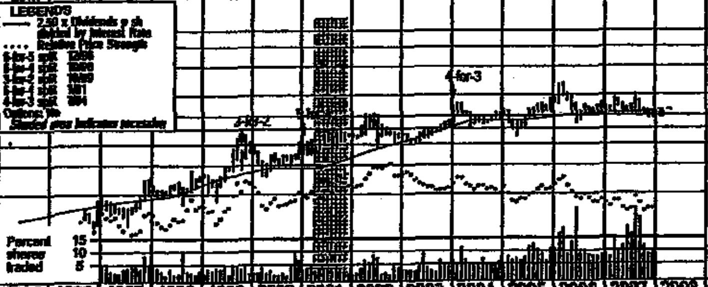
	Price	Gain	Ann'l Total Return
High	20	(+65%)	15%
Low	14	(+15%)	6%

Insider Decisions

	M	A	M	J	J	A	S	O	N
to Buy	1	0	1	0	0	0	1	0	0
Options	2	1	2	0	0	1	0	0	0
to Sell	1	1	2	1	1	2	1	1	1

Institutional Decisions

	1Q2007	2Q2007	3Q2007
to Buy	34	33	34
to Sell	26	29	27
Hld's(000)	11936	12590	10913



% TOT. RETURN 12/07

	THIS STOCK	VL ARITH. INDEX
1 yr.	-7.4	1.3
3 yr.	-2.2	26.2
5 yr.	43.2	117.2

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	© VALUE LINE PUB., INC.	10-12
3.34	3.77	4.03	4.20	4.84	5.31	5.81	5.63	6.16	7.49	8.18	9.12	10.70	9.23	9.10	9.42	[illegible]	8.85	Revenues per sh	11.00
.28	.44	.38	.38	.44	.46	.53	.59	.65	.76	.87	.86	.81	.87	.78	.85	[illegible]	1.10	"Cash Flow" per sh	1.40
.02	.19	.06	.09	.12	.15	.21	.25	.31	.38	.42	.39	.44	.23	.34	.40	.30	.50	Earnings per sh A	.70
.18	.18	.14	.06	.08	.09	.09	.10	.11	.13	.14	.15	.16	.18	.20	.21	.23	.24	Div'd Decl'd per sh B	.30
.39	.42	.60	.72	.84	.95	.74	.79	.53	.56	1.06	1.78	1.14	1.26	1.66	1.87	1.89	1.95	Cap'l Spending per sh	2.65
2.41	2.42	2.31	2.31	2.45	2.49	2.52	2.70	3.05	3.44	3.84	4.27	4.89	6.17	6.49	6.98	7.15	8.45	Book Value per sh D	10.50
11.60	11.60	11.67	12.13	11.74	12.45	12.65	12.83	13.12	13.99	14.17	14.35	16.17	20.36	22.33	23.80	24.50	26.60	Common Shs Outst'g C	30.00
NMF	14.5	35.8	22.3	14.0	16.5	16.9	17.2	18.8	17.8	19.5	24.8	21.2	51.6	35.5	34.0	43.5		Avg Ann'l P/E Ratio	28.0
NMF	.88	2.11	1.46	.98	1.03	.97	.89	1.12	1.11	1.01	1.35	1.21	2.73	1.89	1.88	2.30		Relative P/E Ratio	1.85
6.5%	6.6%	4.7%	4.2%	4.7%	3.4%	2.7%	2.3%	1.8%	2.0%	1.7%	1.6%	1.7%	1.5%	1.6%	1.5%	2.3%		Avg Ann'l Div'd Yield	1.7%
						71.8	72.2	80.9	104.7	115.5	130.8	173.0	188.0	203.2	224.2	229	235	Revenues ($mill)	330
						2.6	3.4	4.2	5.4	8.2	6.8	7.2	4.5	7.3	9.3	8.0	14.0	Net Profit ($mill)	22.0
						41.0%	39.5%	39.0%	37.0%	36.5%	34.6%	35.9%	35.1%	36.0%	35.0%	36.0%	36.0%	Income Tax Rate	35.5%
						--	--	--	--	14.4%	3.2%	--	11.0%	9.5%	12.5%	11.5%	12.0%	AFUDC % to Net Profit	12.5%
						47.9%	49.7%	45.2%	49.0%	51.4%	56.7%	47.9%	47.9%	44.7%	43.5%	44.5%	44.0%	Long-Term Debt Ratio	42.5%
						51.3%	50.5%	54.1%	50.7%	48.2%	42.9%	51.8%	52.0%	55.1%	56.3%	55.5%	56.0%	Common Equity Ratio	56.5%
						62.2	68.5	73.9	95.0	113.0	142.8	152.8	242.0	262.8	295.2	315	380	Total Capital ($mill)	560
						102.1	109.2	113.7	157.8	171.1	203.9	219.5	302.6	344.0	380.5	430	510	Net Plant ($mill)	750
						6.8%	7.1%	7.6%	7.6%	7.8%	6.8%	6.2%	3.1%	4.1%	4.6%	4.0%	5.0%	Return on Total Cap'l	6.0%
						8.0%	9.5%	10.3%	11.1%	11.4%	9.7%	9.0%	3.6%	5.0%	5.6%	4.5%	6.0%	Return on Shr. Equity	7.0%
						8.1%	9.6%	10.4%	11.1%	11.4%	9.7%	9.1%	3.6%	5.0%	5.6%	4.5%	6.0%	Return on Com Equity	7.0%
						4.5%	6.0%	7.0%	7.8%	7.8%	6.3%	5.8%	.8%	2.1%	2.6%	1.5%	3.0%	Retained to Com Eq	3.5%
						45%	38%	33%	31%	32%	36%	36%	78%	58%	54%	77%	49%	All Div'ds to Net Prof	43%

CAPITAL STRUCTURE as of 9/30/07
Total Debt $144.6 mill. Due in 5 Yrs $60.0 mill.
LT Debt $143.1 mill. LT Interest $8.4 mill.
(Total interest coverage: 2.7x) (46% of Cap'l)

Leases, Uncapitalized: Annual rentals $6.7 mill.
Pension Liability None

Pfd Stock $.458 mill. Pfd Div'd $.016 mill.
Common Stock 24,232,637 shs.
as of 11/2/07

MARKET CAP: $300 million (Small Cap)

CURRENT POSITION ($MILL.)	2005	2006	9/30/07
Cash Assets	3.0	4.3	2.4
Receivables	26.5	27.5	27.4
Inventory (Avg Cst)	--	--	--
Other	18.2	16.5	11.9
Current Assets	47.7	48.3	41.7
Accts Payable	10.0	12.7	9.7
Debt Due	9.5	1.4	1.5
Other	21.1	21.7	22.6
Current Liab.	40.6	35.8	33.8

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '04-'06 to '10-'12
Revenues	7.0%	5.0%	3.0%
"Cash Flow"	8.0%	0.5%	10.5%
Earnings	10.5%	-2.5%	14.0%
Dividends	9.0%	9.0%	7.5%
Book Value	10.5%	13.5%	8.0%

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2004	39.8	45.7	55.0	47.5	188.0
2005	45.2	51.3	54.7	52.0	203.2
2006	50.8	55.4	60.1	57.9	224.2
2007	48.1	65.0	57.4	59.5	229
2008	55.0	58.0	60.0	62.0	235

Calendar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2004	--	.13	.11	d.01	.23
2005	d.01	.15	.14	.06	.34
2006	.03	.08	.16	.13	.40
2007	.03	.09	.08	.10	.30
2008	.06	.15	.18	.11	.50

Calendar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.044	.044	.044	.048	.18
2005	.048	.048	.048	.052	.20
2006	.052	.052	.052	.058	.21
2007	.058	.058	.058	.058	.23
2008	.06				

BUSINESS: Southwest Water Company provides a broad range of services including water production, treatment and distribution; wastewater collection and treatment; utility billing and collection; utility infrastructure construction management; and public works services. It operates out of two groups, Utility (38% of 2006 revenues) and Services (62%). Utility owns and manages rate-regulated public water utilities in California, New Mexico, Oklahoma, and Texas. Services does mostly maintenance work on a contract basis. Off. & dir. own 6.3% of com. shs.; Stein Roe Investment Council, 9.7% (4/07 proxy). CEO and Chairman: Mark Swatek. Inc.: DE. Addr.: One Wilshire Building, 624 S. Grand Ave. Ste. 2900, Los Angeles, CA 90017. Tel.: 213-929-1800. Internet: www.swwc.com.

Southwest Water has struggled of late. A couple of months ago, it reported weak September-period financial results. For the quarter, due to record rainfall in Texas and the weak housing market, share net came in at just $0.08, well below our estimate of $0.15. In addition, for the recently completed fourth quarter, we have lowered our share-net estimate by $0.03 to $0.10. Along with the struggles of the housing market, which probably limited construction and repair opportunities for SWWC, profits were likely hampered by increased operating costs, stemming from its restructuring initiative.

On the bright side, the situation should improve this year. Although the housing market has shown few signs of rebounding, Southwest will likely begin to benefit from the improvement of its operations. It recently introduced a new integrated operating system, which has helped improve its communication processes and should help lower operating expenses. Thus, we estimate that this new system will help widen the operating margin by about 50 basis points this year.

Profits will be fueled by Southwest's recent acquisition activity, as well. A few months ago, it purchased Diamond Water Company, which provides services to approximately 7,500 residents near San Antonio. This purchase helped SWWC expand its market reach and customer base in the Lone Star State. Moreover, the company is currently attempting to implement rate hikes in several of its markets. This action will help margins and profits this year. All told, we believe that 2008 share net will be $0.50, about 67% better than last year's 2007 probable results.

These shares do not stand out for the short or long term. Although its restructuring initiative and recent acquisitions may well help the company achieve a large share-net gain this year, our Timeliness Ranking System suggests that this issue will lag the year-ahead market. In addition, looking out to the 2010-2012 period, this stock offers below average appreciation potential to that timeframe. That said, Southwest will probably remain active on the acquisition front. Additional purchases would probably cause us to raise our earnings projections.

Ian Gendler *January 25, 2008*

(A) Diluted earnings. Excludes nonrecurring gains (losses): '00, (3¢); '01, (5¢); '02, 1¢; '05, (23¢). Next earnings report due mid-Mar.
(B) Dividends historically paid in late January, April, July, and October.
(C) In millions, adjusted for splits.
(D) Includes intangibles. In 2006: $36.0 million, $1.51/share.

Company's Financial Strength	B
Stock's Price Stability	65
Price Growth Persistence	70
Earnings Predictability	60

YORK WATER CO NDQ-YORW

RECENT PRICE 15.73 | TRAILING P/E RATIO 27.6 | RELATIVE P/E RATIO 1.65 | DIV'D YLD 3.1% | VALUE LINE

RANKS

PERFORMANCE 3 Average
Technical 2 Above Average
SAFETY 3 Average
BETA .50 (1.00 = Market)

Financial Strength B+
Price Stability 65
Price Growth Persistence 40
Earnings Predictability 80

LEGENDS
12 Mos Mov Avg
Rel Price Strength
2-for-1 split 5/02
3-for-2 split 5/06
Shaded area indicates recession

10.22 5.67 | 13.45 8.20 | 13.49 9.33 | 14.08 11.00 | 17.67 11.67 | 20.99 15.33 | 18.55 15.45 | High Low

18
13
9
5
4
3
2
200
VOL. (thous.)

© VALUE LINE PUBLISHING, INC.

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008/2009
REVENUES PER SH	--	--	2.05	2.05	2.17	2.18	2.58	2.56	--	
"CASH FLOW" PER SH	--	--	.59	.57	.65	.66	.79	.77	--	
EARNINGS PER SH	--	--	.43	.40	.47	.49	.56	.58	.57[A,B]	.57[C]/NA
DIV'D DECL'D PER SH	--	--	.34	.35	.37	.39	.42	.45	--	
CAP'L SPENDING PER SH	--	--	.78	.66	1.07	2.60	1.69	1.86	--	
BOOK VALUE PER SH	--	--	3.79	3.80	4.06	4.85	4.86	5.84	--	
COMMON SHS OUTST'G (MILL)	--	--	9.46	9.56	9.63	10.33	10.40	11.20	--	
AVG ANN'L P/E RATIO	--	--	17.9	26.9	24.5	25.7	26.3	31.2	27.6	23.5/NA
RELATIVE P/E RATIO	--	--	.92	1.47	1.40	1.36	1.39	1.68	--	
AVG ANN'L DIV'D YIELD	--	--	4.3%	3.3%	3.2%	3.1%	2.9%	2.5%	--	
REVENUES ($MILL)	--	18.6	19.4	19.6	20.9	22.6	26.8	28.7	--	
NET PROFIT ($MILL)	--	3.8	4.0	3.8	4.4	4.8	5.8	6.1	--	
INCOME TAX RATE	--	35.7%	35.8%	34.9%	34.8%	36.7%	36.7%	34.4%	--	
AFUDC % TO NET PROFIT	--	--	2.2%	3.7%	--	--	--	7.2%	--	
LONG-TERM DEBT RATIO	--	50.2%	47.7%	46.7%	43.4%	42.5%	44.1%	48.3%	--	
COMMON EQUITY RATIO	--	49.8%	52.3%	53.3%	56.6%	57.5%	55.9%	51.7%	--	
TOTAL CAPITAL ($MILL)	--	65.2	68.6	68.9	69.0	83.6	90.3	126.5	--	
NET PLANT ($MILL)	--	97.0	102.3	106.7	116.5	140.0	155.3	174.4	--	
RETURN ON TOTAL CAP'L	--	7.9%	7.9%	7.4%	8.5%	7.6%	8.4%	6.2%	--	
RETURN ON SHL EQUITY	--	11.6%	11.2%	10.2%	11.4%	10.0%	11.6%	9.3%	--	
RETURN ON COM EQUITY	--	11.6%	11.2%	10.2%	11.4%	10.0%	11.6%	9.3%	--	
RETAINED TO COM EQ	--	2.5%	2.5%	1.3%	2.6%	2.1%	3.0%	2.2%	--	
ALL DIV'DS TO NET PROF	--	78%	78%	86%	77%	79%	74%	77%	--	

Bold figures are consensus earnings estimates and, using the recent prices, P/E ratios.

[A] No. of analysts changing earn. est. in last 13 days: 0 up, 0 down, consensus 5-year earnings growth 11.3% per year. [B] Based upon 3 analysts' estimates. [C] Based upon 3 analysts' estimates.

ANNUAL RATES

of change (per share)	5 Yrs.	1 Yr.
Revenues	3.5%	-0.5%
"Cash Flow"	4.5%	-2.5%
Earnings	4.5%	3.5%
Dividends	-3.0%	7.0%
Book Value	6.0%	20.5%

Fiscal Year	QUARTERLY SALES ($mill.) 1Q	2Q	3Q	4Q	Full Year
12/31/05	6.2	6.7	7.2	6.7	26.8
12/31/06	6.6	7.0	7.7	7.4	28.7
12/31/07	7.4	8.0	8.3		
12/31/08					

Fiscal Year	EARNINGS PER SHARE 1Q	2Q	3Q	4Q	Full Year
12/31/04	.12	.11	.12	.14	.49
12/31/05	.12	.14	.17	.13	.56
12/31/06	.12	.14	.17	.15	.58
12/31/07	.12	.16	.15	.15	
12/31/08	.14	.17			

Cal-endar	QUARTERLY DIVIDENDS PAID 1Q	2Q	3Q	4Q	Full Year
2005	.104	.104	.104	.104	.42
2006	.112	.112	.112	.112	.45
2007	.118	.118	.118	.118	.47
2008	.121				

INSTITUTIONAL DECISIONS

	1Q'07	2Q'07	3Q'07
to Buy	13	14	10
to Sell	1	5	4
Hld's(000)	1222	1416	1595

ASSETS ($mill.)	2005	2006	9/30/07
Cash Assets	.8	.8	.8
Receivables	3.8	4.8	6.5
Inventory (Avg cost)	.8	.8	.8
Other	.5	1.1	.8
Current Assets	5.1	6.7	7.1
Property, Plant & Equip. at cost	182.4	202.7	--
Accum Depreciation	27.1	28.3	--
Net Property	155.3	174.4	194.4
Other	11.9	15.0	14.9
Total Assets	172.3	196.1	208.4
LIABILITIES ($mill.)			
Accts Payable	2.6	1.6	3.3
Debt Due	19.3	1.2	6.3
Other	2.8	3.1	3.6
Current Liab	24.7	5.9	13.2

LONG-TERM DEBT AND EQUITY as of 9/30/07

Total Debt $67.3 mill. Due in 5 Yrs. NA
LT Debt $61.1 mill. Including Cap. Leases NA (48% of Cap'l)
Leases, Uncapitalized Annual rentals NA
Pension Liability $5.9 mill. in '06 vs. $3.8 mill. in '05
Pfd Stock None Pfd Div'd Paid None
Common Stock 11,247,944 shares (52% of Cap'l)

INDUSTRY: Water Utility

BUSINESS: The York Water Company engages in the impounding, purification, and distribution of water in York County and Adams County, Pennsylvania. It supplies water for residential, commercial, industrial, and other customers. The company has two reservoirs, Lake Williams and Lake Redman, which together hold approximately 2.2 billion gallons of water. It also has a 15-mile pipeline from the Susquehanna River to Lake Redman that provides access to an additional supply of water. The company serves 34 municipalities in York County and four municipalities in Adams County. Has 106 employees. C.E.O. & President: Jeffrey S. Osman. Inc.: PA. Address: 130 East Market Street, York, PA 17401. Tel.: (717) 845-3601. Internet: http://www.yorkwater.com.

L.Y.

January 25, 2008

TOTAL SHAREHOLDER RETURN
Dividends plus appreciation as of 12/31/2007

3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.
-7.26%	-11.40%	-10.84%	29.93%	88.84%

AGL RESOURCES NYSE-ATG

RECENT PRICE 35.54 | P/E RATIO 12.4 (Trailing: 13.1, Median: 14.0) | RELATIVE P/E RATIO 0.80 | DIV'D YLD 4.7% | VALUE LINE

TIMELINESS 3 Raised 3/14/08
SAFETY 2 New 10/2/90
TECHNICAL 3 Raised 10/26/07
BETA .85 (1.00 = Market)

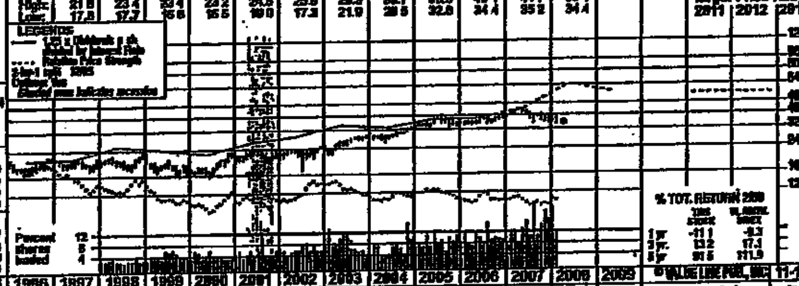
2011-13 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	65	(+85%)	19%
Low	40	(+15%)	7%

High: 21.8 23.4 23.4 23.2 24.5 25.8 28.2 33.7 39.3 40.1 44.7 39.1
Low: 17.8 17.7 15.6 16.5 19.0 17.3 21.9 28.5 32.8 34.4 35.2 34.4

Target Price Range 2011 2012 2013

LEGENDS — 1.25 x Dividends p sh divided by Interest Rate; ···· Relative Price Strength; 3-for-1 split 12/95; Options: Yes; Shaded area indicates recession



Insider Decisions

Institutional Decisions

	2Q2007	3Q2007	4Q2007
to Buy	132	106	129
to Sell	101	112	99
Hld's(000)	50323	47302	47489

Percent shares traded 12 8 4

% TOT. RETURN 2/08

	THIS STOCK	VL ARITH. INDEX
1 yr.	-11.1	-9.3
3 yr.	13.2	17.1
5 yr.	91.5	111.9

1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	© VALUE LINE PUB., INC.	11-13
20.43	22.73	22.50	19.32	21.91	22.75	23.38	18.71	11.25	19.04	15.22	15.26	[illegible]	[illegible]	33.73	32.64	34.65	36.20	Revenues per sh A	41.25
2.31	2.25	2.24	2.33	2.49	2.42	2.65	2.29	2.80	3.31	3.39	3.47	3.29	4.29	4.80	4.77	4.95	5.15	"Cash Flow" per sh	5.65
1.13	1.00	1.17	1.33	1.37	1.37	1.41	.81	1.29	1.50	1.82	2.00	2.28	2.40	2.72	2.72	2.80	2.90	Earnings per sh A B	3.30
[illegible]	1.05	1.04	1.04	1.05	1.06	1.08	1.08	1.08	1.08	1.08	1.11	1.15	1.30	1.48	1.64	1.68	1.72	Div'ds Decl'd per sh C	1.84
2.74	2.40	2.37	2.17	2.37	2.59	2.65	2.51	2.92	2.83	3.20	2.46	3.44	3.41	3.26	3.39	3.50	3.60	Cap'l Spending per sh	3.85
[illegible]	[illegible]	[illegible]	10.12	[illegible]	10.90	11.42	11.59	11.60	12.10	[illegible]	14.66	[illegible]	[illegible]	20.71	21.74	22.35	23.05	Book Value per sh D	22.50
[illegible]	48.72	[illegible]	[illegible]	[illegible]	[illegible]	67.30	[illegible]	[illegible]	[illegible]	[illegible]	64.50	76.70	77.70	77.70	76.40	[illegible]	[illegible]	Common Shs Outst'g E	[illegible]
[illegible]	17.5	15.1	12.6	13.6	14.7	[illegible]	21.4	12.6	14.6	12.5	12.6	13.1	14.3	13.5	14.7	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	15.0
.94	[illegible]	.99	.84	.85	.85	.72	1.22	[illegible]	.75	[illegible]	.71	.69	.76	.73	.77			Relative P/E Ratio	1.00
[illegible]	6.4%	[illegible]	6.2%	[illegible]	6.4%	5.8%	5.5%	6.2%	[illegible]	4.7%	4.3%	3.9%	3.7%	[illegible]	4.1%			Avg Ann'l Div'd Yield	[illegible]

CAPITAL STRUCTURE as of 12/31/07
Total Debt $2264.0 mill. Due in 5 Yrs $897.0 mill.
LT Debt $1674.0 mill. LT Interest $95.0 mill.

(Total interest coverage: 3.7x)
Leases, Uncapitalized Annual rentals $28.0 mill.

Pension Assets-12/07 $303.0 mill. Oblig. $427.0 mill.

Pfd Stock None
Common Stock 76,420,395 shs as of 1/31/08

MARKET CAP: $2.7 billion (Mid Cap)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	© VALUE LINE PUB., INC.	11-13
[illegible]	[illegible]	[illegible]	1049.3	[illegible]	983.7	1832.0	2718.0	2621.0	2494.0	2625	2750	Revenues ($mill) A	3300
[illegible]	52.1	71.1	82.3	103.0	132.4	153.0	193.0	212.0	[illegible]	215	225	Net Profit ($mill)	[illegible]
32.5%	33.1%	[illegible]	[illegible]	[illegible]	[illegible]	37.0%	37.7%	[illegible]	[illegible]	[illegible]	[illegible]	Income Tax Rate	[illegible]
[illegible]	4.9%	11.7%	[illegible]	[illegible]	[illegible]	8.4%	7.1%	8.1%	8.4%	8.2%	8.2%	Net Profit Margin	7.6%
47.5%	[illegible]	[illegible]	61.3%	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Long-Term Debt Ratio	[illegible]
47.1%	[illegible]	[illegible]	[illegible]	41.7%	[illegible]	[illegible]	48.1%	[illegible]	[illegible]	[illegible]	[illegible]	Common Equity Ratio	[illegible]
[illegible]	[illegible]	1286.2	[illegible]	1704.3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3400	3500	Total Capital ($mill)	[illegible]
[illegible]	[illegible]	1637.5	[illegible]	[illegible]	2352.4	[illegible]	3271.0	[illegible]	[illegible]	3700	[illegible]	Net Plant ($mill)	[illegible]
[illegible]	5.7%	7.4%	6.5%	[illegible]	8.5%	[illegible]	7.9%	[illegible]	7.6%	7.5%	[illegible]	Return on Total Cap'l	8.5%
11.1%	[illegible]	[illegible]	12.3%	[illegible]	[illegible]	[illegible]	12.9%	13.2%	12.7%	[illegible]	[illegible]	Return on Shr. Equity	[illegible]
[illegible]	[illegible]	[illegible]	12.3%	14.5%	[illegible]	[illegible]	[illegible]	13.2%	12.7%	12.5%	13.0%	Return on Com Equity	14.5%
[illegible]	NMF	3.2%	4.2%	[illegible]	6.6%	[illegible]	6.2%	[illegible]	[illegible]	[illegible]	5.5%	Retained to Com Eq	6.5%
84%	[illegible]	72%	65%	52%	53%	49%	[illegible]	[illegible]	58%	59%	60%	All Div'ds to Net Prof	57%

CURRENT POSITION ($MILL.)	2005	2006	12/31/07
Cash Assets	30.0	20.0	21.0
Other	2002.0	1802.0	1790.0
Current Assets	2032.0	1822.0	1811.0
Accts Payable	284.0	213.0	172.0
Debt Due	522.0	639.0	590.0
Other	1153.0	675.0	883.0
Current Liab.	1959.0	1527.0	1645.0
Fix. Chg. Cov.	442%	397%	391%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '05-'07 to '11-'13
Revenues	3.5%	13.5%	2.5%
"Cash Flow"	6.5%	7.0%	4.0%
Earnings	7.0%	15.0%	3.5%
Dividends	2.5%	4.5%	4.0%
Book Value	6.5%	10.5%	1.5%

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	986	436	387	993	2718
2006	1044	436	434	707	2621
2007	973	467	369	685	2494
2008	1049	475	490	750	2625
2009	1025	500	425	800	2750

Calendar	EARNINGS PER SHARE B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	1.14	.30	.19	.85	2.40
2006	1.41	.25	.40	.66	2.72
2007	1.20	.40	.17	.95	2.72
2008	1.35	.35	.30	.80	2.80
2009	1.35	.40	.35	.80	2.90

Calendar	QUARTERLY DIVIDENDS PAID C ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.28	.29	.29	.29	1.15
2005	.31	.31	.31	.37	1.30
2006	.37	.37	.37	.37	1.48
2007	.41	.41	.41	.41	1.64
2008	.42				

BUSINESS: AGL Resources, Inc. is a public utility holding company. Its distribution subsidiaries include Atlanta Gas Light, Chattanooga Gas, and Virginia Natural Gas. The utilities have more than 2.2 million customers in Georgia, Virginia, Tennessee, New Jersey, Florida, and Maryland. Engaged in nonregulated natural gas marketing and other allied services. Also wholesales and retails propane. Deregulated subsidiaries: Georgia Natural Gas markets natural gas at retail. Sold Utilipro, 3/01. Acquired Compass Energy Services, 10/07. Off./dir. own less than 1.0% of common; Barclays Global Investors, 5.0% (3/07 Proxy). Pres. & CEO: John W. Somerhalder II. Inc.: GA. Addr.: Ten Peachtree Place N.E., Atlanta, GA 30309. Telephone: 404-584-4000. Internet: www.aglresources.com.

AGL Resources reported solid performance for the fourth quarter. Revenues declined slightly in the recent interim. However, the company enjoyed lower operating costs, and the bottom-line improved considerably. But share earnings for 2007 as a whole only matched the prior year's figure, owing to unfavorable comparisons in the first and third quarters. Operating earnings were lower at the company's Wholesale Services business, resulting from a significant decrease in commercial activity due to lower volatility in the natural gas market during the year. Performance was supported by solid earnings growth in the company's Distribution Operations, and a strong bottom-line advance in its Retail Energy Operations. The Distribution business benefited from modest customer growth and higher base rates at Chattanooga Gas. The Retail Energy line experienced higher average customer usage, a greater customer base, and increased late payment fees.

Earnings growth ought to resume in 2008. The company has initiated share-net guidance of $2.75 to $2.85 for the current year. Our estimate lies at the midpoint of this range. This assumes normal weather patterns and average volatility for gas prices in 2008. Earnings per share stand a good chance of advancing at about the same deliberate pace in 2009, as well.

The board of directors recently approved a modest dividend increase. The quarterly dividend will now increase to $0.42, beginning with the March payout. This represents slower growth than in the past few years, which makes sense, considering the company's flat earning comparison for 2007 and its lower cash balance in recent times. Nevertheless, this level of dividend growth will probably continue going forward.

These shares have improved a notch in Timeliness, and are now ranked 3 (Average). That said, this issue earns good marks for Safety and Price Stability, and we project steady earnings growth at AGL Resources over the pull to 2011-2013. Income-seeking investors may also find this stock attractive, considering its healthy dividend yield. Overall, these shares offer worthwhile total return potential for the coming years.

Michael Napoli, CPA *March 14, 2008*

(A) Fiscal year ends December 31st. Ended September 30th prior to 2002.
(B) Diluted earnings per share. Excl. nonrecurring gains (losses): '95, ($0.8?); '99, $0.3?; '99, $0.12; '01, $0.12; '03, ($0.07). Next earnings report due late April/early May.
(C) Dividends historically paid early March, June, Sept., and Dec. ■ Div'd reinvest. plan available.
(D) Includes intangibles. In 2007: $420 million, $5.50/share.
(E) In millions, adjusted for stock split.

Company's Financial Strength	B++
Stock's Price Stability	100
Price Growth Persistence	70
Earnings Predictability	80

ATMOS ENERGY CORP. NYSE-ATO

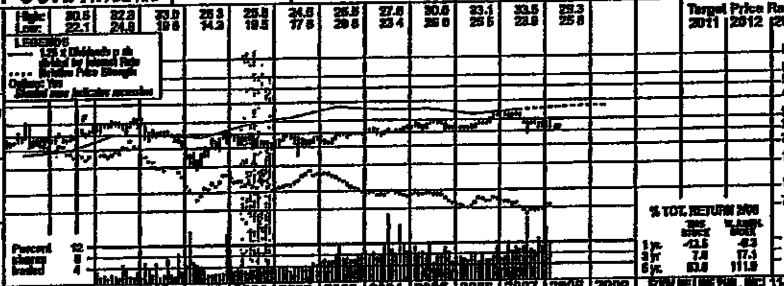
RECENT PRICE 26.34 | P/E RATIO 13.2 (Trailing: 14.5, Median: 15.0) | RELATIVE P/E RATIO 0.85 | DIV'D YLD 5.0% | VALUE LINE

TIMELINESS 3 Raised [illegible]
SAFETY 2 Raised [illegible]
TECHNICAL 3 Lowered [illegible]
BETA .85 (1.00 = Market)

High:	30.5	32.3	33.0	25.3	25.8	24.5	25.5	27.8	30.6	33.1	33.5	29.3
Low:	22.1	24.8	19.6	14.2	19.5	17.5	20.6	23.4	25.0	25.5	23.9	25.8

Target Price Range 2011 | 2012 | 2013

LEGENDS
— 1.25 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
Options: Yes
Shaded area indicates recession



2011-13 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	40	(+50%)	15%
Low	30	(+15%)	8%

Insider Decisions

	A	M	J	J	A	S	O	N	D
to Buy	0	0	0	0	1	0	0	2	2
Options	0	1	0	0	0	0	0	0	0
to Sell	0	1	0	0	0	0	0	3	0

Institutional Decisions

	2Q2007	3Q2007	4Q2007
to Buy	116	100	113
to Sell	101	112	106
Hld's(000)	58150	59311	59097

Percent shares traded 12 / 8 / 4

% TOT. RETURN 2/08

	THIS STOCK	VL ARITH. INDEX
1 yr.	-13.6	-8.3
3 yr.	7.8	17.3
5 yr.	53.8	111.9

Atmos Energy's history dates back to 1906 in the Texas Panhandle. Over the years, through various mergers, it became part of Pioneer Corporation, and, in 1981, Pioneer named its gas distribution division Energas. In 1983, Pioneer organized Energas as a separate subsidiary and distributed the outstanding shares of Energas to Pioneer shareholders. Energas changed its name to Atmos in 1988. Atmos acquired Trans Louisiana Gas in 1986, Western Kentucky Gas Utility in 1987, Greeley Gas in 1993, United Cities Gas in 1997, and others.

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	© VALUE LINE PUB., INC.	11-13
27.00	22.49	26.61	35.30	22.12	54.20	46.50	61.75	75.27	68.03	65.30	64.05	Revenues per sh A	70.50
3.30	2.62	3.01	3.13	3.39	3.23	2.91	3.90	4.20	4.14	4.25	4.35	"Cash Flow" per sh	4.85
1.84	.81	1.83	1.47	1.45	1.71	1.58	1.72	2.00	1.94	2.09	2.10	Earnings per sh A B	2.45
1.06	1.10	1.14	1.16	1.18	1.20	1.22	1.24	1.26	1.28	1.30	1.32	Div'ds Decl'd per sh C	1.40
4.44	3.53	2.36	2.77	3.17	3.16	2.85	4.14	5.30	4.39	4.85	5.00	Cap'l Spending per sh	5.30
12.21	12.00	12.20	14.31	13.75	16.66	16.95	19.90	20.16	22.01	22.75	22.50	Book Value per sh	25.75
30.49	31.25	31.85	40.73	41.50	51.48	62.90	80.54	81.74	89.33	94.00	95.00	Common Shs Outst'g D	110.00
15.4	33.8	14.9	15.6	16.2	13.4	15.9	16.1	13.5	15.9	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	14.5
.80	1.93	1.23	.80	.88	.76	.84	.86	.73	.83			Relative P/E Ratio	.85
3.7%	4.1%	5.8%	5.1%	5.4%	5.2%	4.9%	4.5%	4.7%	4.2%			Avg Ann'l Div'd Yield	4.0%
841.2	690.2	850.2	1442.3	950.8	2799.9	2920.0	4973.3	6152.4	5898.4	6140	6400	Revenues ($mill) A	8090
56.2	25.9	32.2	56.1	59.7	79.5	86.2	135.8	162.3	170.5	190	210	Net Profit ($mill)	300
38.5%	35.0%	36.7%	37.3%	37.1%	37.3%	37.4%	37.7%	37.5%	35.8%	36.0%	36.0%	Income Tax Rate	36.0%
6.6%	3.8%	3.8%	3.9%	6.3%	2.8%	3.0%	2.7%	2.6%	2.9%	3.1%	3.3%	Net Profit Margin	3.2%
51.0%	50.0%	48.1%	54.3%	53.9%	50.2%	43.2%	57.7%	57.0%	52.0%	51.0%	52.0%	Long-Term Debt Ratio	51.0%
48.2%	50.5%	51.9%	45.7%	46.1%	49.8%	56.8%	42.3%	43.0%	48.0%	49.0%	48.0%	Common Equity Ratio	49.0%
765.7	765.1	765.7	1275.3	1242.7	1721.4	1994.0	3785.6	3828.5	4092.1	4360	4640	Total Capital ($mill)	6000
917.0	963.0	982.3	1335.4	1300.3	1516.0	1722.5	3374.4	3629.2	3836.3	4040	4250	Net Plant ($mill)	6450
9.0%	5.1%	5.8%	5.9%	6.0%	6.2%	5.8%	6.3%	6.1%	5.8%	6.0%	6.0%	Return on Total Cap'l	6.5%
14.9%	6.6%	8.2%	9.6%	10.4%	9.3%	7.5%	8.8%	9.8%	8.7%	8.9%	9.5%	Return on Shr. Equity	9.5%
14.9%	6.8%	8.2%	9.0%	10.4%	9.3%	7.5%	8.5%	9.8%	8.7%	9.0%	9.5%	Return on Com Equity	9.5%
6.7%	NMF	NMF	2.1%	1.0%	2.0%	1.7%	2.3%	3.6%	3.0%	3.0%	3.5%	Retained to Com Eq	4.0%
58%	NMF	112%	79%	82%	70%	77%	73%	63%	65%	64%	62%	All Div'ds to Net Prof	58%

CAPITAL STRUCTURE as of 12/31/07
Total Debt $2330.8 mill. Due in 5 Yrs $920.0 mill.
LT Debt $2124.8 mill. LT Interest $125.0 mill.
(LT interest earned: 2.8x; total interest coverage: 2.8x)
Leases, Uncapitalized Annual rentals $16.9 mill.
Pfd Stock None
Pension Assets-9/07 $389.1 mill. Oblig. $325.5 mill.
Common Stock 89,957,651 shs. as of 1/31/08
MARKET CAP: $2.4 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2006	2007	12/31/07
Cash Assets	75.8	60.7	51.8
Other	1041.7	1008.2	1468.1
Current Assets	1117.5	1068.9	1520.0
Accts Payable	345.1	355.3	739.8
Debt Due	385.6	154.4	205.9
Other	388.5	410.0	389.9
Current Liab.	1119.2	919.7	1335.8
Fix. Chg. Cov.	408%	405%	400%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '05-'07 to '11-'13
Revenues	8.5%	19.0%	2.0%
"Cash Flow"	4.0%	5.5%	2.0%
Earnings	3.5%	7.5%	4.5%
Dividends	2.5%	1.5%	2.0%
Book Value	7.0%	9.0%	3.5%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2005	1371.8	1687.4	909.9	1004.6	4973.3
2006	2283.8	2033.8	863.2	971.6	6152.4
2007	1602.8	2076.5	1218.2	1002.9	5898.4
2008	1557.5	2125	1290	1167.5	6140
2009	1600	1699	1600	1500	6400

Fiscal Year Ends	EARNINGS PER SHARE A B E Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2005	.79	1.11	.08	d.21	1.72
2006	.88	1.10	d.22	.25	2.00
2007	.97	1.20	d.15	d.05	1.94
2008	.82	1.30	d.07	d.05	2.09
2009	.89	1.30	d.05	d.04	2.10

Calendar	QUARTERLY DIVIDENDS PAID C ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.305	.305	.305	.31	1.23
2005	.31	.31	.31	.315	1.25
2006	.315	.315	.315	.32	1.27
2007	.32	.32	.32	.325	1.29
2008	.325				

BUSINESS: Atmos Energy Corporation is engaged primarily in the distribution and sale of natural gas to 3.2 million customers via six regulated natural gas utility operations: Louisiana Division, West Texas Division, Mid-Tex Division, Mississippi Division, Colorado-Kansas Division, and Kentucky/Mid-States Division. Combined 2007 gas volumes: 297 MMcf. Breakdown: 58%, residential; 32%, commercial; 6%, industrial; and 4% other. 2007 depreciation rate 3.7%. Has around 4,470 employees. Officers and directors own approximately 1.8% of common stock (12/07 Proxy). Chairman and Chief Executive Officer: Robert W. Best. Incorporated: Texas. Address: P.O. Box 650205, Dallas, Texas 75265. Telephone: 972-934-9227. Internet: www.atmosenergy.com

Atmos Energy began fiscal 2008 (ends September 30th) on a sour note. That was attributable primarily to the nonregulated marketing segment, which experienced a drop in margins because of less volatility in natural gas prices. We look for this trend to continue, barring major storm activity.

But one bright spot was the utility unit, thanks to higher rates in Texas, Louisiana, Tennessee, and Kentucky. It should also be mentioned that mechanisms reducing exposure to possible adverse weather patterns during the 2007-2008 winter heating season are in place for virtually all operations.

Nonetheless, we think share net will advance only 8%, to $2.09, this fiscal year. The bottom line stands to increase at a somewhat stronger 5% pace, to $2.10 a share, in fiscal 2009, assuming additional expansion in operating margins. Please note that our estimates exclude amounts from pending rate cases in Texas, where Atmos is seeking a $52 million increase in annual revenues, and Kansas (where a $5 million boost in annual revenues is being sought).

We envision steady, albeit unspectacular, earnings gains out to 2011-2013. With the utility unit currently serving customers across 12 states, Atmos does not depend on the business climate in any one region of the country. Moreover, the nonregulated segments, particularly pipelines, possess healthy overall prospects. Lastly, management will undoubtedly stick to its winning strategy of purchasing less-efficient utilities and shoring up their profitability via expense-reduction initiatives, rate relief, and aggressive marketing efforts. (Future business combinations are not factored into our presentation, however.) In the present configuration, annual share-net growth may be in the mid-single-digit range over the 3- to 5-year horizon.

The good-quality stock offers an attractive dividend, which is well covered by the company's earnings. Further moderate increases in the distribution seem plausible.

Risk-adjusted total return possibilities are decent, too. But the shares are ranked only 3 (Average) for Timeliness.

Frederick L. Harris, III *March 14, 2008*

(A) Fiscal year ends Sept. 30th. (B) Diluted shrs. Excl. nonrec. items: '99, d23¢; '00, 12¢; '03, d17¢; '05, d10¢; '07, d2¢. Next egs. rpt. due early May. (C) Dividends historically paid in early March, June, Sept., and Dec. ■ Div. reinvestment plan. Direct stock purchase plan avail. (D) In millions, adjusted for stock splits. (E) Qtrs may not add due to change in shrs outstanding. (F) ATO completed United Cities merger 7/97.

Company's Financial Strength	B+
Stock's Price Stability	100
Price Growth Persistence	25
Earnings Predictability	80

EQUITABLE RES. NYSE-EQT

RECENT PRICE 62.38 | P/E RATIO 32.3 (Trailing: 41.9 Median: 16.0) | RELATIVE P/E RATIO 2.70 | DIV'D YLD 1.4% | VALUE LINE

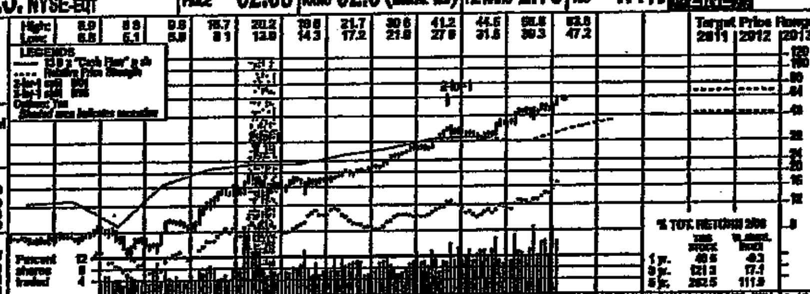
TIMELINESS 3 Raised 2/22/08
SAFETY 2 Raised 6/23/00
TECHNICAL 3 Lowered 3/7/08
BETA .80 (1.00 = Market)

High:	8.9	8.8	9.8	15.7	20.2	19.6	21.7	30.6	41.2	44.6	56.6	62.6			Target Price Range 2011 / 2012 / 2013
Low:	6.6	6.1	5.9	8.1	13.9	14.3	17.2	21.9	27.9	31.5	30.3	47.2			

2011-13 PROJECTIONS: Price, Gain, Ann'l Total Return — High 75 (+20%) 6%; Low 50 (-20%) -3%

Insider Decisions (A M J J A S O N D): to Buy, Options, to Sell

Institutional Decisions: to Buy 136 / 137 / 161; to Sell 141 / 133 / 121



1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	© VALUE LINE PUB., INC.	11-13
8.47	7.91	10.11	10.10	13.17	14.55	8.15	9.12	12.69	13.81	8.57	8.40	8.76	10.46	10.42	11.21	11.80	12.40	Revenues per sh	17.30
1.08	1.09	1.12	1.08	.97	1.01	.67	1.30	1.63	1.76	1.77	2.02	2.22	2.58	2.65	2.42	2.80	2.50	"Cash Flow" per sh	4.20
.48	.57	.44	.33	.89	.43	.28	.58	.86	1.16	1.18	1.27	1.50	1.75	1.85	1.45	2.00	2.25	Earnings per sh A	3.60
.29	.28	.29	.30	.30	.36	.30	.30	.30	.32	.34	.48	.72	.82	.87	.88	.88	1.00	Div'ds Decl'd per sh B ■	1.27
.78	2.40	1.95	.91	.78	1.71	.97	.78	.85	1.01	1.75	1.70	1.86	2.30	3.33	4.60	4.60	7.30	Cap'l Spending per sh	3.70
4.70	5.20	5.43	5.11	6.25	6.58	4.04	4.01	6.33	6.67	6.24	7.74	7.17	2.99	7.75	8.85	10.00	11.50	Book Value per sh	17.60
128.54	137.85	138.38	140.03	141.38	147.72	143.42	130.92	130.18	127.74	124.66	124.73	122.66	119.01	121.58	121.40	125.00	122.00	Common Shs Outst'g C	121.00
14.9	17.8	18.8	21.7	18.5	17.8	37.2	16.1	14.8	14.4	14.5	14.4	18.7	19.2	19.8	20.4	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	17.0
.90	1.00	1.23	1.45	1.16	1.03	1.94	.92	.94	.74	.79	.82	.99	1.02	1.07	1.75			Relative P/E Ratio	1.15
3.8%	2.9%	3.5%	4.1%	4.1%	3.0%	4.1%	3.7%	2.4%	1.9%	2.0%	2.5%	2.9%	2.4%	2.1%	1.8%			Avg Ann'l Div'd Yield	2.5%

CAPITAL STRUCTURE as of 9/30/07
Total Debt $1993.5 mill. Due in 5 Yrs $20.3 mill
LT Debt $753.5 mill. LT Interest $50.9 mill
(Total interest coverage: 7.0x) (44% of Cap'l)

Leases, Uncapitalized None

Pension Assets-12/06 $73 mill. Oblig. $92 mill.
Pfd Stock None

Common Stock 121,653,368 shares
as of 9/30/07
MARKET CAP: $7.6 billion (Large Cap)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009		11-13
882.6	1092.7	1652.2	1764.5	1059.1	1047.3	1191.6	1253.7	1267.9	1361.4	1470	1530	Revenues ($mill)	2090
17.3%	22.5%	18.6%	18.8%	33.0%	35.7%	34.2%	35.8%	37.3%	31.0%	35.0%	37.5%	Operating Margin	39.0%
90.1	100.7	97.4	73.2	69.4	71.1	83.1	85.5	100.1	108.8	120	135	Depreciation ($mill)	190
30.7	80.1	114.3	161.8	150.8	173.0	180.4	230.2	223.3	194.8	255	290	Net Profit ($mill)	440
37.0%	36.3%	36.8%	36.5%	34.0%	32.5%	32.7%	33.8%	31.4%	35.0%	33.0%	33.0%	Income Tax Rate	33.0%
3.3%	8.0%	6.9%	9.0%	14.1%	16.6%	15.0%	17.2%	17.5%	13.0%	17.4%	19.0%	Net Profit Margin	21.0%
8.8	d182.7	d251.8	1.1	d121.6	d162.7	d262.0	d865.3	d378.3	d500	d600	d720	Working Cap'l ($mill)	d470
409.4	423.4	412.8	605.6	672.8	632.1	617.8	763.4	763.5	753.5	1200	1400	Long-Term Debt ($mill)	800
708.4	642.0	823.7	846.2	778.5	965.3	874.7	354.5	945.3	1100	1250	1410	Shr. Equity ($mill)	2130
4.2%	8.1%	11.7%	12.4%	12.0%	11.7%	13.6%	21.3%	14.5%	11.0%	12.0%	12.0%	Return on Total Cap'l	16.0%
4.1%	10.8%	16.5%	17.8%	19.3%	18.0%	21.5%	61.0%	23.6%	16.5%	20.5%	20.5%	Return on Shr. Equity	20.5%
NMF	4.5%	10.8%	13.2%	14.0%	11.7%	11.3%	32.9%	12.6%	7.0%	11.6%	11.5%	Retained to Com Eq	13.5%
NMF	59%	34%	27%	28%	36%	47%	46%	47%	60%	42%	43%	All Div'ds to Net Prof	34%

CURRENT POSITION ($MILL.)	2005	2006	9/30/07
Cash Assets	75.9	--	181.8
Receivables	248.4	189.5	102.8
Inventory (Avg Cst)	209.9	259.1	295.6
Other	482.9	232.9	142.3
Current Assets	1007.2	701.5	724.7
Accts Payable	242.6	213.3	182.9
Debt Due	368.3	140.9	340.0
Other	1401.6	720.5	718.2
Current Liab.	2002.5	1070.8	1238.1

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '04-'06 to '11-'13
Revenues	-1.5%	-2.5%	7.0%
"Cash Flow"	8.0%	10.0%	10.5%
Earnings	16.0%	15.0%	10.5%
Dividends	10.5%	21.5%	8.5%
Book Value	1.5%	1.0%	18.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	401.3	230.2	229.3	392.9	1253.7
2006	430.1	251.2	232.5	353.8	1267.9
2007	456.5	293.2	226.5	384.8	1361.4
2008	480	310	260	420	1470
2009	495	325	275	435	1530

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	.80	.27	.33	.55	1.75
2006	.59	.35	.32	.59	1.85
2007	.48	.27	.27	.49	1.49
2008	.72	.38	.34	.58	2.00
2009	.80	.45	.45	.65	2.35

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.15	.19	.19	.19	.72
2005	.19	.21	.21	.21	.82
2006	.21	.22	.22	.22	.87
2007	.22	.22	.22	.22	.88
2008	.22				

BUSINESS: Equitable Resources, Inc. markets natural gas products and energy services. Distributes natural gas to 274,400 customers, mainly residential, in parts of PA, WV, and KY. Operates 8,500 miles of pipelines in WV, KY, VA, and PA. Produces natural gas in the Appalachian Basin with total proved reserves of 2,365 Bcfe. Operates approx. 12,000 wells in Appalachia. '06 net operating revenues by business segment: Utilities (36%), Supply (64%). Sold NORESCO, 12/05. '06 dep. rate: 2.8%. About 1,250 employees. Off./dir. own 3.0% of common stock; Capital Research and Mgmt., 8.9% (2007 proxy). Chairman, President & CEO: Murry S. Gerber. Inc.: PA. Address: 1 Oxford Centre, Pittsburgh, PA 15219. Tel.: 412-553-5700. Internet: www.eqt.com.

Equitable Resources is going through a major expansion. EQT's board of directors recently approved capital commitments worth approximately $1.2 billion for 2008. Roughly $635 million of this amount is earmarked for well development. In particular, management is speeding up the company's horizontal drilling initiative. Indeed, Equitable plans to drill approximately 200 in 2008, compared with 68 last year. Horizontal shale wells are generally three times more productive than vertical wells. This enhanced productivity (see below) has encouraged the energy producer to increase investments in midstream infrastructure, including gathering, transmission, and compression. The energy producer has plans to expend $570 million towards midstream infrastructure at Equitable Supply. All told, EQT plans to build 470 miles of pipe and add 82,000 HP of compression. The remainder is planned toward other midstream and infrastructure initiatives.

The elevated capital expenditure level will require additional financing. The company will likely raise $1 billion via the debt and equity markets. A secondary issuance is probable if management fails to secure debt at an attractive rate. Our projections assume that EQT will utilize both types of financing.

Equitable's total natural gas reserves increased considerably. As of the end of 2007, management estimates natural gas reserves, including proved, probable, and possible, of 7,227 billions of cubic feet equivalent. This represents a 26% increase over the previous year's mark.

Management has stopped its courting of Dominion's People and Hope natural gas utilities. The move, which was largely due to a lengthy regulatory process, coincides with management's decision to pursue growth opportunities in production and infrastructure.

These neutrally ranked shares have participated in the recent rally in natural gas-related stocks. We are confident that management's embrace of horizontal drilling will pay off in the long run. Investors seem to share this sentiment. Indeed, this good-quality stock has held up well despite weakness in the broader market indexes.

Dominic B. Silva *March 14, 2008*

(A) Based on diluted shares. Excludes net nonrecurring gains/(losses): '95, ($1.29); '96, 13¢; '97, 3¢; '98, ($1.77); '00, (12¢); '02, 4¢; '03, (84¢); '05, $0.34; '06, ($0.6). Excludes results of disc. ops.: '04, (24¢); '05, 1¢. Includes accelerated collection of prior years' gas costs: '95, 10¢; '96, 13¢; '97, 13¢; '98, 5¢. Next egs. rpt. due late April. (B) Dividends historically paid in early March, June, Sept., and Dec. ■ Div. reinvestment plan available. (C) In millions, adjusted for stock splits.

Company's Financial Strength	B++
Stock's Price Stability	95
Price Growth Persistence	100
Earnings Predictability	80

LACLEDE GROUP NYSE-LG

RECENT PRICE 35.50 | P/E RATIO 15.1 (Trailing: 14.8 / Median: 15.0) | RELATIVE P/E RATIO 0.97 | DIV'D YLD 4.3% | VALUE LINE

TIMELINESS 3 Raised 9/14/07
SAFETY 2 Raised 6/20/03
TECHNICAL 3 Lowered 2/29/08
BETA .90 (1.00 = Market)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
High:	28.6	27.8	27.0	24.8	25.6	25.0	30.0	32.5	34.3	37.5	36.0	36.5
Low:	20.3	22.4	20.0	17.5	21.3	19.0	21.8	26.0	25.9	29.1	28.8	31.9

Target Price Range 2011 | 2012 | 2013

2011-13 PROJECTIONS

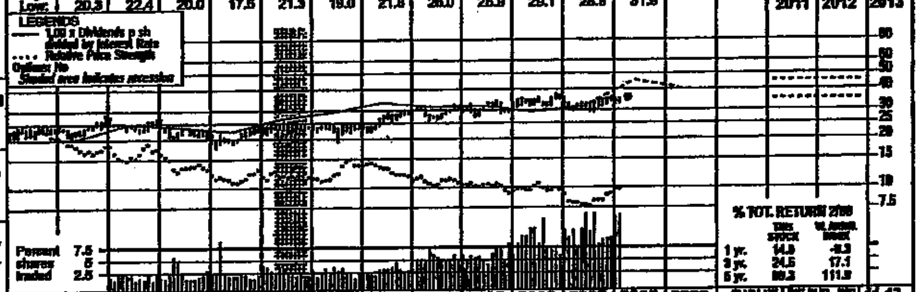
	Price	Gain	Ann'l Total Return
High	45	(+25%)	10%
Low	35	(Nil)	4%

Insider Decisions

	A	M	J	J	A	S	O	N	D
to Buy	0	1	0	0	0	0	0	0	1
Options	0	0	0	0	2	1	0	0	1
to Sell	0	0	0	0	2	1	0	0	1

Institutional Decisions

	2Q2007	3Q2007	4Q2007
to Buy	67	57	64
to Sell	50	57	51
Hld's(000)	9291	9337	8951



% TOT. RETURN 2/08

	THIS STOCK	VL ARITH. INDEX
1 yr.	14.8	-8.3
3 yr.	24.5	17.1
5 yr.	80.3	111.9

1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	© VALUE LINE PUB., INC.	11-13
26.83	32.33	33.43	24.79	31.03	34.33	31.04	26.94	29.80	53.08	38.84	54.95	60.50	75.43	93.51	93.40	92.75	91.55	Revenues per sh	107.85
2.32	2.81	2.65	2.55	3.29	3.32	3.02	2.56	2.68	3.00	2.66	3.15	2.79	2.98	3.81	3.87	4.10	4.30	"Cash Flow" per sh	5.10
1.17	1.61	1.42	1.27	1.87	1.84	1.58	1.47	1.37	1.81	1.10	1.82	1.82	1.99	2.37	2.31	2.35	2.35	Earnings per sh A B	2.70
1.20	1.22	1.22	1.24	1.26	1.30	1.32	1.34	1.34	1.34	1.34	1.34	1.35	1.37	1.40	1.45	1.49	1.53	Div'ds Decl'd per sh C■	1.65
2.87	2.62	2.50	2.83	2.36	2.44	2.68	2.58	2.77	2.51	2.80	2.67	2.45	2.84	2.97	2.72	2.85	2.85	Cap'l Spending per sh	3.70
11.70	12.19	12.44	13.05	13.72	14.26	14.57	14.98	14.89	15.26	15.07	15.85	16.96	17.31	18.85	19.79	20.65	21.15	Book Value per sh D	24.85
15.59	15.59	15.67	17.42	17.56	17.56	17.63	18.88	18.88	18.88	18.96	19.11	20.98	21.17	21.38	21.65	22.00	22.50	Common Shs Outst'g E	23.50
15.8	13.5	18.4	15.5	11.8	12.5	15.5	15.8	14.9	14.5	20.8	13.8	15.7	16.2	13.6	14.2	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	16.0
.96	.80	1.08	1.04	.76	.72	.81	.90	.97	.74	1.09	.78	.83	.86	.73	.75			Relative P/E Ratio	1.00
6.5%	5.8%	6.3%	6.3%	5.6%	5.6%	5.4%	5.8%	6.8%	5.7%	5.7%	5.4%	4.7%	4.4%	4.3%	4.4%			Avg Ann'l Div'd Yield	4.1%
						647.2	491.6	566.1	1002.1	755.2	1050.3	1250.3	1597.0	1997.8	2021.6	2040	2060	Revenues ($mill) A	2750
						27.9	28.9	26.0	30.6	22.4	34.6	38.1	40.1	50.5	49.8	51.5	53.0	Net Profit ($mill)	70.0
						35.6%	35.5%	35.2%	32.7%	35.4%	35.0%	34.8%	34.1%	32.5%	33.4%	33.5%	34.0%	Income Tax Rate	35.0%
						5.1%	5.6%	4.6%	3.0%	3.0%	3.3%	2.9%	2.5%	2.5%	2.5%	2.5%	2.6%	Net Profit Margin	2.5%
						40.9%	41.8%	45.2%	40.5%	47.5%	50.4%	51.0%	48.1%	49.5%	45.3%	45.0%	45.0%	Long-Term Debt Ratio	47.0%
						58.6%	57.8%	54.5%	50.2%	52.3%	49.4%	48.3%	51.0%	50.4%	54.0%	55.0%	55.0%	Common Equity Ratio	53.0%
						438.9	486.6	519.2	574.1	546.6	605.0	737.4	707.9	798.9	794.5	825	865	Total Capital ($mill)	1200
						490.6	519.4	575.4	602.5	594.4	621.2	646.9	679.5	763.8	783.8	820	850	Net Plant ($mill)	1150
						8.1%	7.1%	6.7%	6.9%	6.0%	7.4%	6.6%	7.8%	8.4%	8.5%	7.5%	7.5%	Return on Total Cap'l	7.0%
						10.8%	9.5%	9.1%	10.5%	7.8%	11.5%	10.1%	10.9%	12.5%	11.8%	11.5%	11.0%	Return on Shr. Equity	11.0%
						10.8%	9.5%	9.1%	10.5%	7.8%	11.6%	10.1%	10.9%	12.6%	11.6%	11.5%	11.0%	Return on Com Equity	11.0%
						1.5%	1.0%	.2%	1.8%	NMF	3.1%	2.7%	3.1%	5.1%	4.3%	4.0%	4.0%	Retained to Com Eq	4.5%
						83%	89%	98%	83%	113%	74%	73%	72%	59%	63%	64%	65%	All Div'ds to Net Prof	60%

CAPITAL STRUCTURE as of 12/31/07
Total Debt $650.1 mill. Due in 5 Yrs $276.0 mill.
LT Debt $356.5 mill. LT Interest $20.0 mill.
(Total interest coverage: 3.0x)

Leases, Uncapitalized Annual rentals $.9 mill.
Pension Assets-9/07 $260.3 mill. Oblig. $293.3 mill.

Pfd Stock $.6 mill. Pfd Div'd $.04 mill.
Common Stock 21,788,966 shs. as of 1/31/08

MARKET CAP: $775 million (Small Cap)

CURRENT POSITION ($MILL.)	2006	2007	12/31/07
Cash Assets	50.6	52.7	66.9
Other	409.0	414.6	495.5
Current Assets	459.6	467.3	562.4
Accts Payable	103.3	106.8	128.6
Debt Due	207.5	251.6	294.6
Other	120.1	115.3	129.0
Current Liab.	430.9	473.7	552.2
Fix. Chg. Cov.	285%	282%	280%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '05-'07 to '11-'13
Revenues	11.5%	16.5%	3.5%
"Cash Flow"	1.5%	5.5%	6.5%
Earnings	3.0%	9.5%	3.5%
Dividends	1.0%	1.0%	2.5%
Book Value	3.0%	4.5%	5.0%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2005	442.5	576.5	311.3	266.7	1597.0
2006	689.2	708.8	330.6	269.0	1997.8
2007	539.6	700.8	457.9	323.3	2021.6
2008	541.4	708	447	343.6	2040
2009	515	515	515	515	2060

Fiscal Year Ends	EARNINGS PER SHARE A B F Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2005	.79	1.06	.29	d.24	1.90
2006	1.23	1.05	.13	d.04	2.37
2007	.89	.97	.43	.03	2.31
2008	.87	.97	.38	.05	2.35
2009	.98	1.01	.33	.05	2.35

Cal-endar	QUARTERLY DIVIDENDS PAID C■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.335	.34	.34	.34	1.36
2005	.34	.345	.345	.345	1.38
2006	.345	.355	.355	.355	1.41
2007	.365	.365	.365	.365	1.46
2008	.375				

BUSINESS: Laclede Group, Inc., is a holding company for Laclede Gas, which distributes natural gas in eastern Missouri, including the city of St. Louis, St. Louis County, and parts of 10 other counties. Has roughly 632,000 customers. Purchased SM&P for approximately $43 million (1/02). Therms sold and transported in fiscal 2007: 1.12 mill. Revenue mix for regulated operations: residential, 60%; commercial and industrial, 24%; transportation, 1%; other, 15%. Has around 3,845 employees. Officers and directors own approximately 7.0% of common shares (1/08 proxy). Chairman, Chief Executive Officer, and President: Douglas H. Yaeger. Incorporated: Missouri. Address: 720 Olive Street, St. Louis, Missouri 63101. Telephone: 314-342-0500. Internet: www.thelacledegroup.com.

Laclede Group began fiscal 2008 (which ends September 30th) on a decent note. That can be attributed largely to Laclede Energy Resources, which enjoyed higher per-unit gas sales prices and increased volumes (held back a bit by a rise in operating expenses). Furthermore, results for Laclede Gas, the core subsidiary, benefited from a general rate hike that became effective on August 1st of last year, that, among other things, provides greater earnings stability and recovery of its distribution costs. But partial offsets here included a decline in margins within the service area (reflecting an unusually late start to the winter heating season) and increased maintenance costs.

At this juncture, we look for earnings per share to advance at a moderate rate, to $2.35, this fiscal year. The bottom line may be relatively flat in fiscal 2009, given the utility operation's limited growth prospects.

Management intends to sell SM&P Utility Resources, the unregulated unit specializing in locating and marking services for underground facilities, to Stripe Acquisition. A portion of the $85 million in proceeds (nearly double what Laclede paid for SM&P in 2002) would be used to bolster the balance sheet. We think SM&P was not central to present corporate strategy, as it accounted for just around 6% of fiscal 2007 share net. (Our presentation will exclude the divestiture when it is completed shortly, pending customary closing conditions.)

Unexciting results appear to be in store for the company over the next three to five years. The market in which the natural gas division operates has encountered sluggish customer growth for some time because it is in a mature phase. Too, we don't see any major acquisitions on the horizon. Consequently, annual share-net gains may be between 4% and 5% out to 2011-2013.

Total return potential is limited. That's because Laclede shares are currently trading within our 3- to 5-year Target Price Range, and we assume moderate hikes in the dividend (just increased 2.7%). What's more, the equity is ranked to perform only in line with the broader market averages.

Frederick L. Harris, III *March 14, 2008*

(A) Fiscal year ends Sept. 30th.
(B) Based on average shares outstanding thru. '97, then diluted. Excludes nonrecurring loss: '06, 7¢. Next earnings report due late April.
(C) Dividends historically paid in early January, April, July, and October. ■ Dividend reinvestment plan available.
(D) Incl. deferred charges. In '07: $289.7 mill., $13.30/sh.
(E) In millions.
(F) Qtly. egs. may not sum due to rounding or change in shares outstanding.

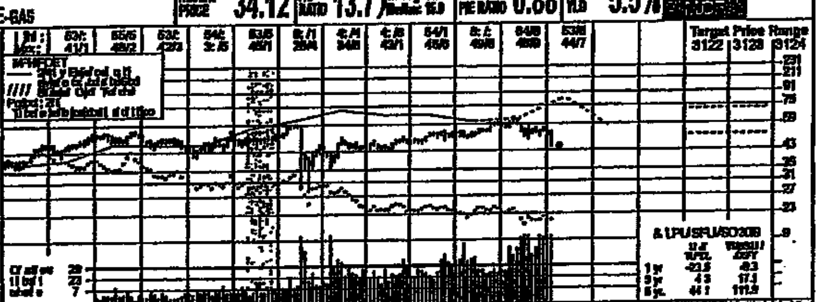
Company's Financial Strength	B+
Stock's Price Stability	95
Price Growth Persistence	55
Earnings Predictability	65

NICOR, INC. NYSE-GAS

RECENT PRICE 34.12 | P/E RATIO 13.7 | RELATIVE P/E RATIO 0.88 | DIV'D YLD 5.5%

TIMELINESS 4 | SAFETY 4 | TECHNICAL 4

Target Price Range 3122 | 3128 | 3124



2::3	2::4	2::5	2::6	2::7	2::8	2::9	2:::	3111	3112	3113	3114	3115	3116	3117	3118	3119	311;	VALUE LINE PUB., INC.	11-13
28.80	31.02	34.23	29.42	37.30	41.33	30.84	34.46	60.52	67.30	43.11	60.41	62.12	76.80	65.92	70.27	74.45	77.80	Revenues per sh	88.45
4.14	3.80	4.11	4.10	4.57	5.29	5.21	5.50	6.10	6.41	6.03	5.37	6.08	6.30	6.02	6.95	6.70	7.35	"Cash Flow" per sh	8.80
1.82	1.97	2.07	1.96	2.42	2.55	2.31	2.57	2.94	3.01	2.88	2.11	2.22	2.27	2.07	2.74	2.25	2.60	Earnings per sh [B]	3.25
1.14	1.22	1.25	1.25	1.32	1.40	1.40	1.54	1.66	1.76	1.84	1.86	1.86	1.86	1.86	1.86	1.86	1.89	Div'ds Decl'd per sh [C]	1.90
3.12	2.62	3.34	3.12	2.42	2.34	2.87	3.28	3.48	4.18	4.37	4.12	4.32	4.57	4.17	4.45	4.85	4.85	Cap'l Spending per sh	4.65
12.78	13.05	13.28	13.67	14.74	15.43	15.87	16.80	15.58	16.29	16.55	17.13	18.09	18.26	18.43	20.40	20.80	21.60	Book Value per sh	24.25
55.77	53.96	51.64	50.30	48.40	48.22	47.51	46.89	46.49	44.46	44.01	44.04	44.18	44.18	44.50	45.29	45.00	45.00	Common Shs Outst'g [D]	46.00
11.8	14.1	12.5	13.1	12.5	14.2	17.5	14.8	11.8	12.8	13.1	16.8	15.9	17.3	16.9	16.3	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	14.0
.70	.83	.82	.88	.78	.82	.92	.83	.77	.66	.72	.90	.84	.92	.91	.86			Relative P/E Ratio	1.05
5.3%	4.4%	4.8%	5.0%	4.4%	3.9%	3.8%	4.1%	4.7%	4.8%	4.9%	6.0%	5.3%	4.7%	4.3%	4.2%			Avg Ann'l Div'd Yield	4.5%
						1405.1	1615.2	2298.1	2644.1	1897.4	2662.7	2739.7	3357.0	2960.0	3176.3	3350	3500	Revenues ($mill)	3700
						111.1	121.9	136.4	139.3	128.0	93.1	98.1	101.1	128.3	135.2	100	115	Net Profit ($mill)	150
						34.4%	34.7%	34.0%	33.5%	31.0%	35.2%	31.0%	29.9%	25.3%	30.0%	31.5%	31.5%	Income Tax Rate	33.0%
						7.9%	7.5%	6.0%	5.4%	6.7%	3.5%	3.6%	3.0%	4.3%	4.3%	3.0%	3.3%	Net Profit Margin	4.0%
						42.1%	35.5%	32.7%	37.8%	35.1%	39.5%	38.8%	37.4%	36.3%	30.0%	27.3%	24.0%	Long-Term Debt Ratio	21.0%
						57.4%	64.0%	66.7%	61.7%	64.5%	60.2%	60.1%	62.5%	63.7%	70.0%	72.0%	76.0%	Common Equity Ratio	79.0%
						1322.8	1229.1	1081.2	1180.1	1128.0	1251.5	1246.6	1287.7	1376.7	1315	1295	1280	Total Capital ($mill)	1400
						1731.8	1735.2	1729.6	1760.0	1770.0	2614.2	2640.0	2658.1	2714.1	2850	3000	3050	Net Plant ($mill)	3400
						9.9%	10.9%	13.7%	12.3%	12.2%	8.3%	8.0%	9.4%	10.5%	11.0%	8.5%	11.0%	Return on Total Cap'l	12.0%
						14.6%	15.4%	19.1%	19.5%	17.5%	12.3%	13.1%	12.6%	14.7%	13.0%	11.0%	12.0%	Return on Shr. Equity	12.0%
						14.6%	15.4%	19.2%	19.7%	17.5%	12.3%	13.1%	12.6%	14.7%	13.0%	11.0%	12.0%	Return on Com Equity	11.5%
						6.4%	6.2%	8.9%	7.9%	6.5%	1.0%	2.1%	2.3%	6.2%	4.5%	2.0%	3.0%	Retained to Com Eq	5.5%
						57%	60%	56%	59%	63%	90%	84%	81%	59%	67%	82%	73%	All Div'ds to Net Prof	58%

CAPITAL STRUCTURE as of 12/31/07
Total Debt $867.4 mill. Due in 5 Yrs $422.7 mill.
LT Debt $423.3 mill. LT Interest $32.0 mill.
(Total interest coverage: 4.0x)

Pension Assets-12/06 $470.7 mill. Oblig. $262.2 mill.

Pfd Stock $.6 mill. Pfd Div'd None

Common Stock 45,135,079 shares as of 10/20/07
MARKET CAP: $1.5 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2005	2006	12/31/07
Cash Assets	125.9	67.6	81.1
Other	1218.8	843.1	932.7
Current Assets	1343.7	910.7	1023.8
Accts Payable	658.2	564.5	662.7
Debt Due	635.0	350.0	444.0
Other	329.7	227.9	169.7
Current Liab.	1622.9	1142.4	1276.4
Fix. Chg. Cov.	307%	645%	544%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '04-'06 to '11-'13
Revenues	7.5%	7.5%	2.0%
"Cash Flow"	3.5%	1.0%	3.5%
Earnings	1.5%	-3.0%	4.0%
Dividends	4.0%	2.5%	.5%
Book Value	3.0%	2.5%	4.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	1170.9	484.4	338.0	1357.5	3357.0
2006	1310.4	451.3	351.1	838.2	2960.0
2007	1334.7	555.9	365.2	919.5	3176.3
2008	1350	575	375	1050	3350
2009	1400	600	400	1100	3500

Cal-endar	EARNINGS PER SHARE [A] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	.98	.25	d.06	1.02	2.29
2006	.94	.41	.39	1.29	3.03
2007	.93	.40	.32	1.09	2.74
2008	.82	.33	.25	.85	2.25
2009	.90	.35	.30	1.05	2.60

Cal-endar	QUARTERLY DIVIDENDS PAID [C] ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.465	.465	.465	.465	1.86
2005	.465	.465	.465	.465	1.86
2006	.465	.465	.465	.465	1.86
2007	.465	.465	.465	.465	1.86
2008	.465				

BUSINESS: Nicor Inc. is a holding company with gas distribution as its primary business. Serves over 2.2 million customers in northern and western Illinois. 2007 gas delivered: 469.3 Bcf, incl. 212.1 Bcf from transportation. 2007 gas sales (258.2 bcf): residential, 79%; commercial, 19%; industrial, 2%. Principal supplying pipelines: Natural Gas Pipeline, Horizon Pipeline, and TGPC. Current operations include Tropical Shipping subsidiary and several energy related ventures. Divested inland barging, 7/00; contract drilling, 9/98; oil and gas E&P, 4/93. Has about 3,800 employees. Off./dir. own about 1.7% of common stock (2007 proxy). Chairman and CEO: Russ Strobel. Inc.: Illinois. Address: 1844 Ferry Road, Naperville, Illinois 60563. Telephone: 630-305-9500. Internet: www.nicor.com.

Nicor posted disappointing results in 2007. Earnings were down in all four quarters year over year, due to higher costs and a decline in utility earnings. Additionally, the gas distribution segment struggled, which also hurt profitability. However, the company managed to post an increase on the top line as a result of a solid performance in the shipping business.

Management revised its guidance for 2008. Indeed, Nicor now expects the bottom line to be between $2.20 and $2.40 a share. The new outlook is notably lower than our $2.90 earnings estimate from our last report. Upon news of the revised guidance, GAS shares declined slightly. In response, we have dropped our share-net estimate to $2.25 for 2008.

The company may seek rate relief. Management is evaluating the need for a filing with the Illinois Commerce Commission. The process usually takes about a year, and a positive ruling would help Nicor meet its allowed return. The company would also likely seek a rate mechanism that decouples gas revenues from gas sales, which would further help results. Until Nicor gains rate relief, these shares may not show any special strength.

We are introducing our 2009 estimates. The company should post earnings of roughly $2.60 a share on sales of about $3.5 billion. Management's focus on cost controls should help GAS rebound.

This stock offers an above-average dividend yield. Nicor offers a yield that is double the *Value Line* median despite not raising its payout in recent years. What's more, we believe the board will increase the distribution in the coming years once the regulatory environment improves.

This issue has below-average capital appreciation potential over the 3- to 5-year pull. However, if the company receives rate relief and continues to improve its cost controls, the long-term picture should improve. Moreover, Nicor's other energy-related ventures may also help drive growth over this time frame.

These shares are ranked to mirror the market in the year ahead. Despite the company's solid balance sheet and diversified business, this issue has limited appeal at this time.

Richard Gallagher *March 14, 2008*

(A) Based on primary earnings thru. '96, then diluted. Excl. nonrecurring gains/(losses): '97, 6¢; '98, 11¢; '00, 6¢; '00, (51.56); '01, 16¢; '03, (27¢); '04, (52¢); '05, 19¢; '06, (17¢); '07 (13¢). Excl. items from discontinued ops.: '03, 4¢; '00, 20¢. Next egs. report due late April. (B) Dividends historically paid mid February, May, August, November. ■ Dividend reinvestment plan available. (C) In millions.

Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	25
Earnings Predictability	75

Exhibit (PMA-28)__
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N.W. NAT'L GAS NYSE-NWN

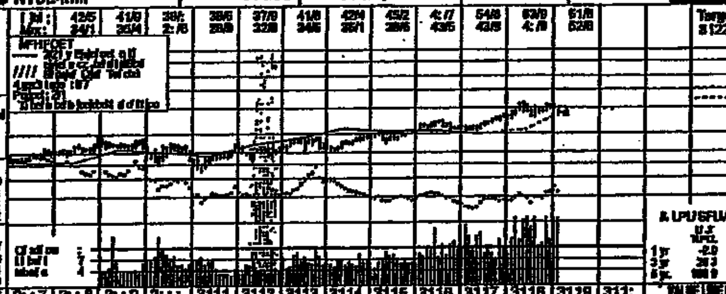
RECENT PRICE 43.28 | P/E RATIO 17.2 (Trailing: 15.7 Median: 15.0) | RELATIVE P/E RATIO 1.11 | DIV'D YLD 3.6% | VALUE LINE

TIMELINESS 5 Lowered 3/28/08
SAFETY 2 Raised 3/18/05
TECHNICAL 4 Lowered 3/28/08
BETA .80 (1.00 = Market)

2011-13 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	75	(+75%)	15%
Low	60	(+40%)	11%

Target Price Range 2011 2012 2013



2:3	2:4	2:5	2:6	2:7	2:8	2:9	2::	3111	3112	3113	3114	3115	3116	3117	3118	3119	311:	© VALUE LINE PUB., INC.	11-13
14.10	16.35	16.30	14.82	16.96	15.82	16.77	18.17	21.80	25.70	25.07	22.57	25.63	32.01	37.20	38.12	41.35	42.90	Revenues per sh	49.20
3.25	3.74	3.50	3.41	3.86	3.72	3.74	3.72	3.68	3.86	3.65	3.85	3.92	4.34	4.76	5.41	5.40	5.70	"Cash Flow" per sh	6.60
.74	1.74	1.83	1.61	1.87	1.76	1.02	1.79	1.79	1.88	1.62	1.76	1.86	2.11	2.35	2.76	2.90	2.75	Earnings per sh A	3.35
1.16	1.17	1.17	1.18	1.20	1.21	1.22	1.23	1.24	1.25	1.26	1.27	1.30	1.32	1.39	1.44	1.52	1.60	Div'ds Decl'd per sh B■	1.80
3.73	3.81	4.23	3.82	3.79	5.07	4.82	4.78	3.48	3.23	3.11	4.86	5.52	2.46	3.58	4.40	4.30	5.00	Cap'l Spending per sh	4.50
12.41	13.00	13.63	14.65	15.37	16.02	16.59	17.12	17.83	18.56	18.88	19.02	20.64	21.28	21.97	22.52	23.00	23.75	Book Value per sh	26.50
19.46	19.77	20.13	22.24	22.56	22.86	24.86	25.09	25.23	25.23	25.59	25.91	27.55	27.58	27.28	26.41	26.00	25.50	Common Shs Outst'g C	25.00
27.0	12.8	13.0	12.8	11.7	14.4	28.7	14.5	12.4	12.8	17.2	15.9	16.7	17.8	15.9	16.7	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	16.0
1.64	.76	.85	.86	.73	.83	1.30	.83	.81	.66	.94	.90	.88	.91	.86	.90			Relative P/E Ratio	1.20
5.7%	6.2%	6.6%	5.7%	5.2%	4.8%	4.5%	5.0%	5.6%	5.1%	4.5%	4.5%	4.2%	3.7%	3.7%	3.1%			Avg Ann'l Div'd Yield	3.1%
						416.7	455.6	532.1	650.3	641.4	611.3	707.6	910.5	1013.2	1033.2	1075	1115	Revenues ($mill)	1250
						27.3	44.9	47.5	60.2	43.8	46.0	50.6	58.1	65.2	74.5	69.0	71.5	Net Profit ($mill)	84.0
						31.8%	35.4%	35.8%	35.4%	34.9%	33.7%	34.4%	36.0%	36.3%	37.2%	37.0%	37.0%	Income Tax Rate	37.0%
						6.5%	9.9%	8.9%	7.7%	6.8%	7.5%	7.1%	6.4%	6.4%	7.2%	6.1%	6.4%	Net Profit Margin	6.7%
						45.6%	45.8%	45.1%	43.8%	47.6%	49.7%	45.6%	47.0%	46.3%	45.3%	46.5%	46.5%	Long-Term Debt Ratio	47.5%
						50.5%	49.9%	50.9%	53.2%	51.6%	50.3%	54.0%	53.0%	53.7%	53.7%	53.5%	53.5%	Common Equity Ratio	52.5%
						816.6	861.5	887.8	880.5	937.3	1008.8	1052.5	1100.4	1116.5	1105.1	1150	1200	Total Capital ($mill)	1300
						894.7	895.9	934.9	965.0	995.8	1205.9	1318.4	1373.4	1425.1	1455.9	1500	1550	Net Plant ($mill)	2000
						5.9%	8.0%	6.7%	8.0%	5.9%	5.7%	5.9%	6.5%	7.1%	8.0%	7.0%	7.0%	Return on Total Cap'l	7.5%
						6.1%	9.7%	9.8%	10.8%	8.9%	8.1%	8.9%	9.8%	10.9%	12.6%	11.5%	11.5%	Return on Shr. Equity	11.5%
						6.5%	9.9%	10.8%	10.2%	8.0%	8.9%	8.9%	9.8%	10.8%	12.5%	11.5%	11.5%	Return on Com Equity	11.5%
						NMF	2.6%	3.1%	3.5%	1.9%	2.6%	2.7%	3.7%	4.5%	6.0%	6.0%	6.0%	Retained to Com Eq	5.0%
						116%	74%	76%	67%	79%	72%	69%	63%	59%	52%	55%	58%	All Div'ds to Net Prof	56%

CAPITAL STRUCTURE as of 12/31/07
Total Debt $680.1 mill. Due in 5 Yrs $179.7 mill.
LT Debt $512.8 mill. LT Interest $31.0 mill.

(Total interest coverage: 3.6x)

Pension Assets-12/06 $236 mill.
Oblig. $289 mill.
Pfd Stock None

Common Stock 26,407,000 shs

MARKET CAP $1.1 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2005	2006	12/31/07
Cash Assets	7.1	6.8	6.1
Other	316.6	303.0	268.8
Current Assets	323.7	309.8	274.9
Accts Payable	135.3	113.6	119.7
Debt Due	134.7	129.8	148.1
Other	56.6	98.2	122.1
Current Liab.	326.6	341.6	389.9
Fix. Chg. Cov.	349%	349%	NMF

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '04-'06 to '11-'13
Revenues	6.5%	8.0%	4.5%
"Cash Flow"	2.0%	3.0%	6.0%
Earnings	2.0%	3.5%	7.0%
Dividends	1.0%	1.5%	5.5%
Book Value	4.0%	3.5%	3.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	308.7	153.7	106.7	341.4	910.5
2006	390.4	171.8	114.8	336.8	1013.2
2007	384.1	183.2	124.2	331.7	1033.2
2008	405	190	125	355	1075
2009	415	200	130	370	1115

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	1.44	.04	d.31	.94	2.11
2006	1.46	.07	d.35	1.16	2.35
2007	1.77	.10	d.22	1.11	2.76
2008	1.69	.10	d.30	1.20	2.69
2009	1.70	.10	d.30	1.25	2.75

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.325	.325	.325	.325	1.30
2005	.325	.325	.325	.345	1.32
2006	.345	.345	.345	.355	1.39
2007	.355	.355	.355	.375	1.44
2008	.375				

BUSINESS: Northwest Natural Gas Co. distributes natural gas to 98 communities, 652,000 customers, in Oregon (90% of customers) and in southwest Washington state. Principal cities served: Portland and Eugene, OR; Vancouver, WA. Service area population: 2.5 mill. (77% in OR). Company buys gas supply from Canadian and U.S. producers; has transportation rights on Northwest Pipeline system. Owns local underground storage. Rev. breakdown: residential, 55%; commercial, 28%; industrial, gas transportation, and other, 17%. Employs 1,100. Fidelity owns 14.8% of shares; Snyder Cap'l, 8.7%; off./dir., 2.0% (4/07 proxy). CEO: Mark S. Dodson. Inc.: Oregon. Address: 220 NW 2nd Ave., Portland, OR 97209. Telephone: 503-226-4211. Internet: www.nwnatural.com

Northwest Natural benefited from unusually high gas cost savings in 2007. The company retains one-third of the difference between forecasted and actual gas costs in Oregon, passing on two-thirds to its customers. Last year, it earned a record $0.27 a share through skillful gas buying, mostly in the first and third quarters. While Northwest has usually made a small profit on gas purchasing, it has shared a loss on the activity about a quarter of the time. Ignoring the commodity profits and some other unusual items, NWN would have earned about $2.45 a share in 2007, a respectable but not extraordinary performance.

We look for a roughly 6% earnings gain, from normalized 2007 results, this year. Northwest's customer growth, at over 3% per year for many years, slowed to 2.4% in 2007. Customer growth will likely continue to ease in 2008 as the Portland area suffers a bit from the widespread housing problems but should remain above the national average. The company is increasing its marketing efforts directed at persuading people to switch to gas heat, and that should bear fruit this year. Operating costs, which rose just 1% on a normalized basis last year, will likely grow slower than revenues.

Another mild earnings gain is likely in 2009. By then, customer growth will probably be heading back toward the recent 3% average. Northwest will have completed its work reorganization program, including outsourcing some functions and centralizing others. And the company could start to benefit from enhanced automated meter-reading capacity.

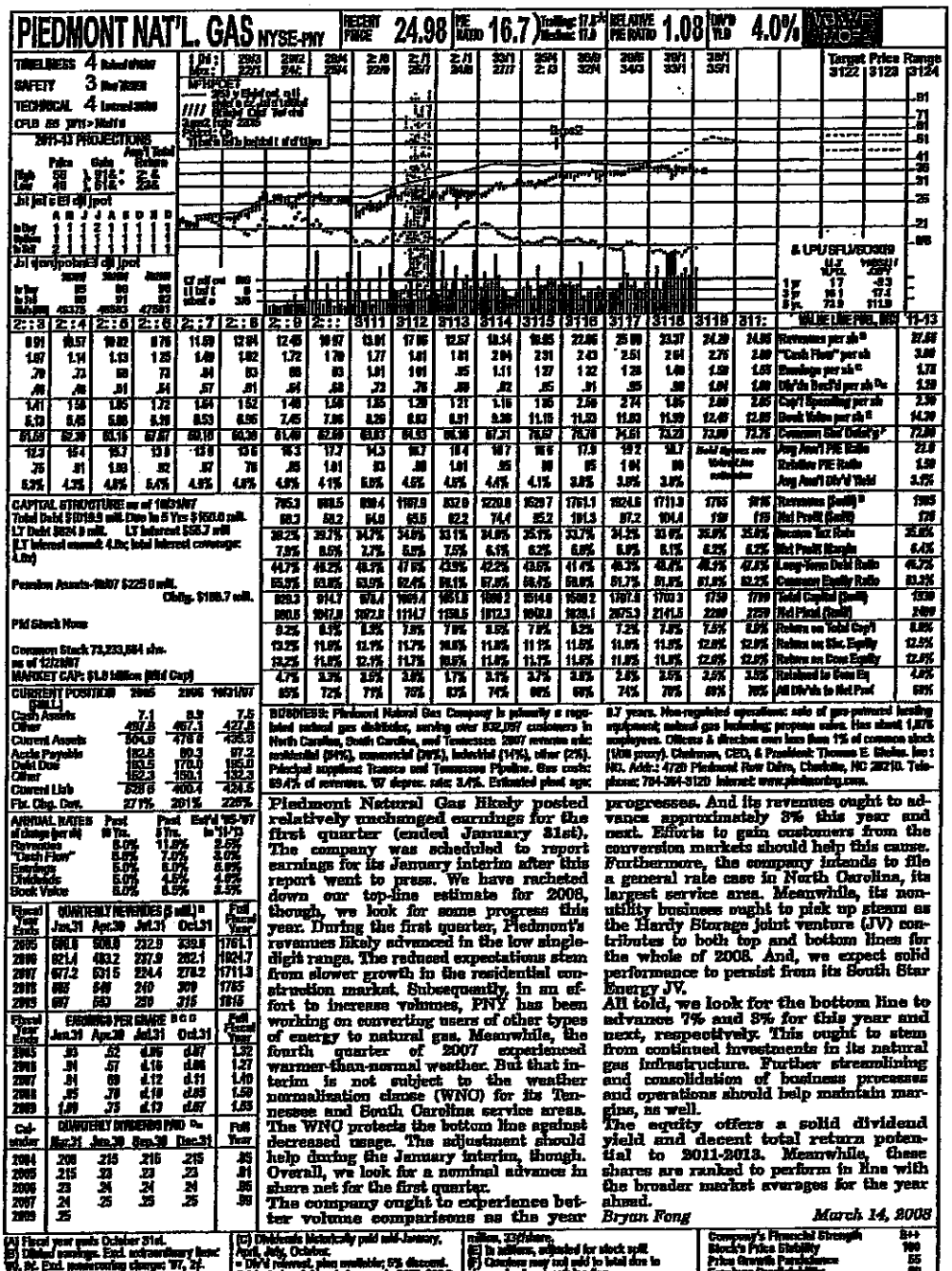
Continued customer growth and two large projects should help boost earnings toward the end of our time horizon. Portland's high-density zoning has been expanded many times over the last 30 years, making it profitable to lay gas mains. An expansion to the southeast of the city should add substantially to customer growth over the next 10 years. And by 2011, NWN will probably invest around $300 million in a gas storage project in California and a new pipeline in Oregon.

These top-quality shares, though untimely, have worthwhile risk-adjusted total-return potential.

Sigourney B. Romaine *March 14, 2008*

(A) Diluted earnings per share. Excludes nonrecurring items: '98, $0.15; '99, $0.11; '06, ($0.06). Next earnings report due late April.
(B) Dividends historically paid in mid-February, mid-May, mid-August, and mid-November
■ Dividend reinvestment plan available.
(C) In millions, adjusted for stock split.

Company's Financial Strength	A
Stock's Price Stability	100
Price Growth Persistence	65
Earnings Predictability	80



Piedmont Natural Gas likely posted relatively unchanged earnings for the first quarter (ended January 31st). The company was scheduled to report earnings for its January interim after this report went to press. We have ratcheted down our top-line estimate for 2008, though, we look for some progress this year. During the first quarter, Piedmont's revenues likely advanced in the low single-digit range. The reduced expectations stem from slower growth in the residential construction market. Subsequently, in an effort to increase volumes, PNY has been working on converting users of other types of energy to natural gas. Meanwhile, the fourth quarter of 2007 experienced warmer-than-normal weather. But that interim is not subject to the weather normalization clause (WNC) for its Tennessee and South Carolina service areas. The WNC protects the bottom line against decreased usage. The adjustment should help during the January interim, though. Overall, we look for a nominal advance in share net for the first quarter.

The company ought to experience better volume comparisons as the year progresses. And its revenues ought to advance approximately 3% this year and next. Efforts to gain customers from the conversion markets should help this cause. Furthermore, the company intends to file a general rate case in North Carolina, its largest service area. Meanwhile, its non-utility business ought to pick up steam as the Hardy Storage joint venture (JV) contributes to both top and bottom lines for the whole of 2008. And, we expect solid performance to persist from its South Star Energy JV.

All told, we look for the bottom line to advance 7% and 3% for this year and next, respectively. This ought to stem from continued investments in its natural gas infrastructure. Further streamlining and consolidation of business processes and operations should help maintain margins, as well.

The equity offers a solid dividend yield and decent total return potential to 2011-2013. Meanwhile, these shares are ranked to perform in line with the broader market averages for the year ahead.

Bryan Fong *March 14, 2008*

SOUTH JERSEY INDS. NYSE-SJI

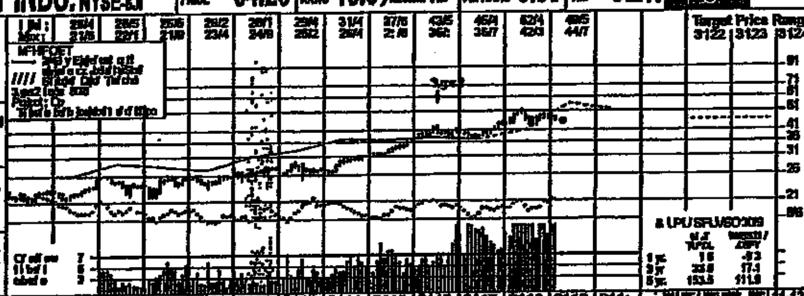
RECENT PRICE 34.23 | P/E RATIO 15.3 (Trailing: 17.5 Median: 14.0) | RELATIVE P/E RATIO 0.99 | DIV'D YLD 3.2% | VALUE LINE

TIMELINESS 5
SAFETY 3
TECHNICAL 3

2011-13 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	61	[illegible]	[illegible]
Low	45	[illegible]	[illegible]

Target Price Range 2011 | 2012 | 2013



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16.87	17.65	17.45	18.50	16.62	18.11	20.89	17.80	22.43	25.30	20.80	26.94	29.51	31.78	31.78	32.29	34.25	36.85	Revenues per sh	39.65
1.58	1.64	1.35	1.65	1.64	1.80	1.44	1.84	1.85	1.80	2.12	2.24	2.44	2.51	3.51	3.83	[illegible]	3.50	"Cash Flow" per sh	4.05
.81	.78	.81	.83	.85	.86	.84	1.01	1.06	1.16	1.22	1.37	1.58	1.71	2.49	2.09	2.25	2.45	Earnings per sh [A]	3.00
.71	.72	.72	.72	.72	.72	.72	.72	.73	.74	.75	.78	.82	.88	.92	1.01	1.10	1.18	Div'ds Decl'd per sh [C]	1.35
1.89	1.87	1.83	2.86	2.81	2.30	3.06	2.18	2.21	2.82	3.47	2.26	2.61	3.21	2.61	1.87	2.15	2.40	Cap'l Spending per sh	3.10
6.95	7.17	7.23	7.34	8.83	8.43	8.23	8.74	7.25	7.81	8.87	11.25	12.41	12.58	16.11	16.24	17.25	18.35	Book Value per sh [D]	20.30
19.80	19.81	21.49	21.44	21.51	21.54	21.58	22.39	23.80	23.72	24.41	26.46	27.75	28.98	29.33	29.62	30.00	30.50	Common Shs Outst'g [E]	32.00
17.2	15.8	16.1	12.2	13.3	13.8	21.2	13.3	13.8	12.6	13.6	13.3	14.3	18.8	11.9	17.2	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	14.0
.89	.83	1.06	.82	.83	.80	1.10	.78	.85	.70	.74	.76	.74	.88	.64	.80			Relative P/E Ratio	.95
6.6%	6.9%	7.4%	7.2%	6.4%	6.1%	6.3%	5.4%	5.2%	4.7%	4.9%	4.3%	3.7%	3.8%	3.2%	2.8%			Avg Ann'l Div'd Yield	3.2%

CAPITAL STRUCTURE as of 12/31/07
Total Debt $478.3 mill. Due in 5 Yrs $156.1 mill.
LT Debt $357.8 mill. LT Interest $21.0 mill.
(Total interest coverage: 4.0x)

Pension Assets-12/07 $129.4 mill.
Oblig. $133.8 mill.

Pfd Stock none

Common Stock 29,624,492 common shs. as of 2/23/08

MARKET CAP: $1.0 billion (Mid Cap)

2:9	2::	3111	3112	3113	3114	3115	3116	3117	3118	3119	311:		11-13
450.2	382.5	515.8	637.3	505.1	696.6	819.1	821.8	931.4	856.4	1030	1100	Revenues ($mill)	1250
13.8	22.8	24.7	26.6	29.4	34.5	43.0	48.6	72.8	61.8	67.5	75.0	Net Profit ($mill)	95.0
46.2%	42.8%	43.1%	42.2%	41.4%	40.5%	40.6%	41.5%	41.3%	40.7%	40.0%	40.0%	Income Tax Rate	40.0%
3.1%	5.8%	4.8%	3.2%	5.8%	5.0%	5.2%	5.8%	7.7%	8.6%	6.6%	6.8%	Net Profit Margin	7.6%
57.3%	63.8%	54.1%	57.0%	53.6%	50.8%	48.7%	44.8%	44.7%	42.7%	41.5%	40.5%	Long-Term Debt Ratio	41.0%
33.8%	37.8%	37.8%	35.9%	40.1%	40.8%	51.0%	55.1%	55.3%	57.3%	58.5%	59.5%	Common Equity Ratio	59.0%
401.1	405.5	443.5	516.2	612.5	668.4	675.0	710.3	811.1	839.0	890	945	Total Capital ($mill)	1100
504.3	533.3	562.2	607.9	668.6	740.3	799.9	877.3	920.0	949.9	990	1015	Net Plant ($mill)	1200
5.7%	7.4%	7.8%	6.9%	7.5%	7.3%	7.8%	8.3%	10.1%	8.5%	9.0%	9.0%	Return on Total Cap'l	10.0%
9.1%	11.7%	12.1%	12.1%	12.4%	11.5%	12.4%	12.4%	16.2%	12.9%	13.0%	13.5%	Return on Shr. Equity	14.5%
10.3%	14.6%	14.8%	12.8%	12.6%	11.8%	12.5%	12.4%	16.3%	12.9%	13.0%	13.5%	Return on Com Equity	14.5%
NMF	4.2%	4.8%	3.6%	4.7%	5.0%	5.8%	6.2%	10.2%	6.7%	6.5%	7.0%	Retained to Com Eq	8.5%
112%	72%	67%	76%	62%	57%	52%	50%	37%	48%	49%	47%	All Div'ds to Net Prof	43%

CURRENT POSITION ($MILL.)	2005	2006	12/31/07
Cash Assets	4.9	7.9	11.7
Other	352.6	363.8	316.6
Current Assets	357.5	371.7	328.3
Accts Payable	179.0	101.6	101.2
Debt Due	149.7	197.0	118.4
Other	74.4	124.2	108.7
Current Liab.	403.1	422.8	328.3
Fix. Chg. Cov.	496%	627%	476%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '05-'07 to '11-'13
Revenues	6.5%	4.5%	3.5%
"Cash Flow"	6.5%	8.5%	NMF
Earnings	9.5%	12.0%	NMF
Dividends	2.0%	3.5%	6.5%
Book Value	6.0%	13.5%	5.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	328.6	164.0	157.0	201.4	821.8
2006	372.6	163.0	154.7	250.3	931.4
2007	368.4	171.7	158.2	258.1	856.4
2008	390	190	170	280	1030
2009	405	205	190	300	1100

Cal-endar	EARNINGS PER SHARE [A] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	.98	.27	.09	.39	1.71
2006	1.05	.20	.51	.89	2.45
2007	1.30	.21	d.05	.63	2.09
2008	1.25	.25	.10	.65	2.25
2009	1.30	.30	.15	.70	2.45

Cal-endar	QUARTERLY DIVIDENDS PAID [C] ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	--	.202	.202	.415	.82
2005	--	.213	.213	.438	.86
2006	--	.225	.225	.470	.92
2007	--	.245	.245	.518	1.01
2008					

BUSINESS: South Jersey Industries, Inc. is a holding company. Its subsidiary, South Jersey Gas Co., distributes natural gas to 335,883 customers in New Jersey's southern counties, which covers 2,500 square miles and includes Atlantic City. Gas revenue mix '07: residential, 40%; commercial, 23%; cogeneration and electric generation, 8%; industrial, 23%. Non-utility operations include: South Jersey Energy, South Jersey Resources Group, Marina Energy, and South Jersey Energy Service Plus. Has 604 employees. Off./dir. own 1.2% of com. shares; Dimensional Fund Advisors, 8.3%; Barclays, 5.0% (2007 proxy). Chrmn. & CEO: Edward Graham. Incorp.: NJ. Address: 1 South Jersey Plaza, Folsom, NJ 08037. Tel.: 609-561-9000. Internet: www.sjindustries.com.

South Jersey Industries reported a modest advance in revenues for 2007, although economic earnings increased roughly 14%. Utility South Jersey Gas benefited from continued growth in the customer base and lower interest costs. The company's nonutility operations also posted a solid performance. Readers are advised that our earnings-per-share figures are now based on economic earnings, a non-GAAP measure that excludes unrealized gains and losses from commodity derivative transactions. Thus, the share-net figures from 2007 onward are not directly comparable with those from previous years.

The company has solid long-term prospects. Natural gas remains the fuel of choice in the markets served by South Jersey Gas, as it enjoys a considerable price advantage over alternatives. Indeed, the vast majority of new homes built have chosen natural gas as their main heating source. Moreover, the company expects economic development in the Atlantic City area will boost housing demand in the coming years. In addition, this business ought to continue to benefit from the Conservation Incentive Program (CIP). This initiative allows South Jersey to promote energy conservation and insulate itself from the negative impact of lower customer usage. The CIP protected $7.5 million of net income during 2007, offsetting reduced customer utilization. Elsewhere, the performance of the nonutility Commodity Marketing business should continue to have an important impact on earnings. This unit maintains 10 billion cubic feet of gas storage capacity, which allows it to take advantage of volatility in natural gas pricing and lock in attractive profit margins. Looking forward, we anticipate moderate share-earnings and dividend growth in the current year. This pattern seems likely to continue in 2009, as well.

These shares are ranked to lag the broader market for the coming six to 12 months. Looking further out, we project solid bottom-line growth at South Jersey over the pull to 2011-2013. Moreover, this issue scores high marks for Price Stability and Earnings Predictability. Thus, this stock offers worthwhile total return potential for a natural gas utility.

Michael Napoli, CPA *March 14, 2008*

(A) Based on GAAP EPS through 2006, economic earnings thereafter. GAAP EPS: '07, $2.19. Excl. nonrecur. gain: '01, $0.13. Excl. gain (losses) from discont. ops.: '06, $1.14; '97, ($0.24); '98, ($0.26); '99, ($0.02); '00, ($0.04); '01, ($0.02); '02, ($0.04); '03, ($0.09); '05, ($0.02); '06, ($0.02). Next egs. report due late April. (B) Div'ds paid early Apr., Jul., Oct., and late Dec. ■ Div. reinvest. plan avail. (C) Incl. regulatory assets. In 2007: $190.7 mill., $6.37 per shr. (D) In millions, adjusted for split.

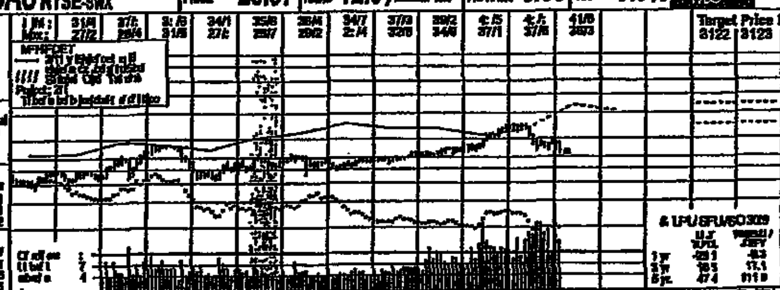
Company's Financial Strength	B++
Stock's Price Stability	100
Price Growth Persistence	95
Earnings Predictability	85

SOUTHWEST GAS NYSE-SWX

RECENT PRICE 25.87 | P/E RATIO 12.9 | RELATIVE P/E RATIO 0.83 | DIV'D YLD 3.5%

TIMELINESS 5
SAFETY 4
TECHNICAL 3

2011-13 PROJECTIONS



2::3	2::4	2::5	2::6	2::7	2::8	2::9	2::	3111	3112	3113	3114	3116	3116	3117	3118	3119	311:	VALUE LINE PUB., INC.	11-13
25.33	25.08	28.58	23.03	24.09	29.73	30.17	30.24	32.61	42.00	38.58	35.90	40.14	43.59	48.47	50.00	52.05	55.55	Revenues per sh	61.45
3.34	3.24	5.00	2.05	3.00	3.05	4.40	4.45	4.57	4.78	3.87	5.11	5.57	5.29	5.97	6.18	6.35	6.65	"Cash Flow" per sh	7.40
.81	.63	1.22	.38	.25	.77	1.05	1.27	1.21	1.15	1.18	1.13	1.66	1.15	1.95	1.95	2.05	2.20	Earnings per sh	2.65
.70	.74	.80	.82	.82	.82	.82	.82	.82	.82	.82	.82	.82	.82	.82	.86	.89	.94	Div'ds Decl'd per sh	1.00
5.02	5.43	3.81	5.78	6.19	6.19	6.40	7.41	7.84	8.17	8.50	7.83	8.25	7.48	8.27	7.82	6.40	6.85	Cap'l Spending per sh	8.50
15.35	15.96	15.20	14.85	14.20	14.00	15.07	15.31	16.02	17.27	17.91	18.42	19.18	19.10	21.50	22.85	23.30	23.35	Book Value per sh	26.65
20.90	21.09	21.26	24.47	26.75	27.30	30.41	30.89	31.71	32.45	33.29	34.23	36.79	39.33	41.77	43.04	44.80	45.40	Common Shs Outst'g	46.00
18.5	20.5	74.0	NMF	69.3	24.3	13.2	21.1	16.0	19.0	16.0	15.2	14.3	20.0	15.8	17.3	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	14.0
1.01	1.57	.92	NMF	4.34	1.30	.69	1.28	1.04	.97	1.09	1.00	.76	1.10	.85	.91			Relative P/E Ratio	1.20
5.2%	4.4%	4.7%	6.4%	4.7%	4.4%	3.8%	3.1%	4.2%	3.8%	3.9%	3.8%	3.8%	3.2%	2.8%	2.6%			Avg Ann'l Div'd Yield	2.2%
						917.3	836.0	1034.1	1306.7	1220.9	1231.0	1477.1	1714.3	2024.7	2152.1	2330	2500	Revenues ($mill)	2850
						47.5	38.3	38.3	37.2	38.5	38.5	58.9	48.1	88.5	83.3	90.0	100	Net Profit ($mill)	125
						43.4%	36.5%	28.2%	34.5%	32.8%	30.5%	34.1%	29.7%	37.3%	36.5%	35.0%	35.0%	Income Tax Rate	35.0%
						5.2%	4.2%	3.7%	2.7%	2.9%	3.1%	4.0%	2.8%	4.0%	3.9%	3.8%	4.0%	Net Profit Margin	4.4%
						60.2%	60.3%	60.2%	58.2%	62.5%	60.0%	64.2%	63.0%	60.6%	58.1%	57.0%	56.5%	Long-Term Debt Ratio	52.0%
						35.7%	35.5%	35.0%	38.0%	34.1%	34.0%	35.0%	38.2%	38.4%	41.0%	43.0%	43.5%	Common Equity Ratio	48.0%
						1340.3	1424.7	1489.9	1417.5	1746.3	1851.0	1968.5	2076.0	2287.0	2349.5	2375	2400	Total Capital ($mill)	2600
						1458.4	1591.1	1686.1	1825.9	1970.5	2176.7	2338.0	2489.1	2668.1	2845.3	3000	3150	Net Plant ($mill)	3600
						5.5%	4.8%	4.6%	5.1%	4.5%	4.2%	5.0%	4.3%	6.5%	5.5%	6.0%	6.0%	Return on Total Cap'l	6.5%
						8.5%	7.5%	6.5%	6.0%	5.9%	6.1%	6.3%	6.4%	8.5%	8.5%	8.5%	9.5%	Return on Shr. Equity	10.0%
						10.0%	7.5%	7.2%	8.3%	8.5%	6.1%	8.3%	6.4%	9.5%	8.5%	9.5%	9.5%	Return on Com Equity	10.0%
						5.0%	2.5%	2.4%	1.8%	1.8%	1.7%	4.3%	2.2%	5.2%	4.8%	5.0%	5.5%	Retained to Com Eq	6.0%
						58%	64%	67%	71%	70%	72%	49%	63%	42%	44%	44%	42%	All Div'ds to Net Prof	41%

CAPITAL STRUCTURE as of 12/31/07

Total Debt $1413.5 mill. Due in 5 Yrs $515.0 mill.
LT Debt $1266.0 mill. LT Interest $83.0 mill.
(Total interest coverage: 2.4x)

Pension Assets-12/07 $441.7 mill.
Oblig. $549.4 mill.

Pfd Stock None

Common Stock 43,044,824 shs.
as of 2/15/08

MARKET CAP: $1.1 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2005	2006	12/31/07
Cash Assets	29.6	18.8	32.0
Other	513.1	482.8	470.5
Current Assets	542.7	501.6	502.5
Accts Payable	259.5	265.7	229.7
Debt Due	107.2	27.5	47.1
Other	254.3	202.9	280.1
Current Liab.	621.0	496.1	527.9
Fix. Chg. Cov.	167%	220%	229%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '05-'07 to '11-'13
Revenues	6.0%	4.5%	4.6%
"Cash Flow"	4.5%	4.0%	4.0%
Earnings	12.0%	6.0%	7.5%
Dividends	--	--	4.0%
Book Value	3.0%	3.5%	3.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	542.9	361.1	313.3	497.0	1714.3
2006	676.9	430.9	351.6	565.1	2024.7
2007	793.7	426.6	371.5	560.3	2152.1
2008	869	459	409	620	2330
2009	890	510	450	650	2500

Cal-endar	EARNINGS PER SHARE Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	.90	d.07	d.43	.87	1.25
2006	1.11	.02	d.28	1.11	1.98
2007	1.17	d.01	d.22	1.00	1.95
2008	1.20	Nil	d.20	1.05	2.05
2009	1.20	.05	d.15	1.10	2.20

Cal-endar	QUARTERLY DIVIDENDS PAID Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.205	.205	.205	.205	.82
2005	.205	.205	.205	.205	.82
2006	.205	.205	.205	.205	.82
2007	.205	.215	.215	.215	.85
2008	.215	.225			

BUSINESS: Southwest Gas Corporation is a regulated gas distributor serving approximately 1.8 million customers in sections of Arizona, Nevada, and California. Comprised of two business segments: natural gas operations and construction services. 2007 margin mix: residential and small commercial, 86%; large commercial and industrial, 5%; transportation, 9%. Total throughput: 2.4 billion therms. Sold PriMerit Bank in July of 1996. Has 5,873 employees. Officers & Directors own roughly 1.4% of common stock (3/07 Proxy). Chairman: LeRoy C. Hanneman, Jr. Chief Executive Officer: Jeffrey W. Shaw. Incorporated: California. Address: 5241 Spring Mountain Road, Las Vegas, Nevada 89193. Telephone: 702-876-7237. Internet: www.swgas.com

Southwest Gas reported unimpressive performance for the fourth quarter. Share earnings fell roughly 10% from the prior year's period. The company experienced softness in heating demand, owing to warmer-than-usual temperatures during the period. This was partially offset by modest growth in the customer base. Overall, 2007 earnings came in slightly below the 2006 figure. Looking forward, conditions may remain somewhat challenging in the current year. We anticipate relatively slow customer growth, due partly to the downturn in the housing market. Thus, we have lowered our bottom-line estimate by $0.20 a share, to $2.05.

The company remains focused on procuring rate relief and improving rate design. In order to address weather-related volatility, Southwest has included several proposed rate design changes in its most recently filed Arizona rate case. The utility is seeking a rate hike of $50.2 million (nearly 5%). It has asked the commission to implement the new rates at the start of October. The company has also filed a rate case application with California, requesting a $9.1 million increase in operating revenues, beginning in January of 2009. Such approved revenue increases help Southwest Gas to cope with higher operating expenses, and provide the company with greater earnings stability. Indeed, a full year of rate relief in 2009 should produce healthy growth in earnings, to $2.20 per share.

The board of directors has increased the dividend. Starting with the June payout, the quarterly dividend is now $0.225 a share, an increase of 4.7%. This follows a similar increase last year. However, this issue's current dividend yield of roughly 3.5% is not a standout by utility standards.

Shares of Southwest Gas are ranked unfavorably in our momentum-based system. Looking further out, we anticipate solid share-earnings growth over the pull to 2011-2013. At the present quotation, this stock offers impressive total return potential for the coming years, and may appeal to patient investors. That said, conservative accounts are advised not to overweight this issue, considering the regulatory risks.

Michael Napoli, CPA *March 14, 2008*

(A) Incl. income for PriMerit Bank on the equity basis through 1994. (B) Based on avg. shares outstand. thru. '96, then diluted. Excl. nonrec. gains (losses): '93, 8¢; '97, 18¢; '02, (10¢); '05, (11¢); '06, 7¢. Incl. asset writedown '93, 44¢. Excl. loss from disc. ops.: '95, 75¢. Totals may not sum due to rounding. Next egs. report due late April. (C) Dividends historically paid early March, June, September, December. ■ Div'd reinvest. plan avail. (D) In millions.

Company's Financial Strength	B
Stock's Price Stability	100
Price Growth Persistence	50
Earnings Predictability	65

WGL HOLDINGS NYSE-WGL

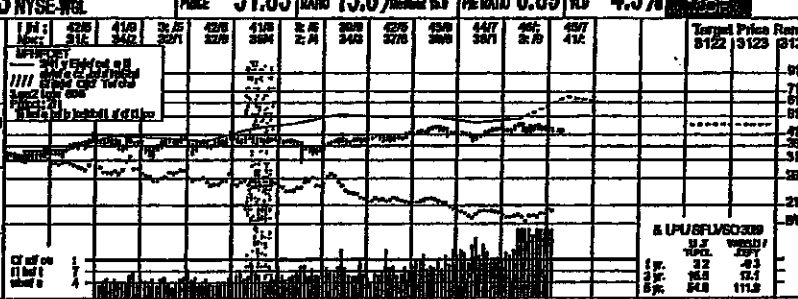
RECENT PRICE 31.83 | P/E RATIO 13.8 | RELATIVE P/E RATIO 0.89 | DIV'D YLD 4.3%

TIMELINESS 4
SAFETY 2
TECHNICAL 4

2011-13 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	51	(+60%)	21%
Low	45	(+40%)	8%

Target Price Range 2011 2012 2013



2::3	2::4	2::5	2::6	2::7	2::8	2::9	2:::	3111	3112	3113	3114	3115	3116	3117	3118	3119	311:	VALUE LINE PUB., INC.	11-13
18.37	21.66	21.69	19.30	23.19	24.19	23.74	29.92	22.10	28.88	32.63	42.45	42.63	44.94	53.86	53.51	54.55	55.65	Revenues per sh	60.70
2.17	2.25	2.43	2.51	2.93	3.02	2.78	2.74	3.20	3.24	2.63	4.09	3.87	3.97	3.93	3.89	4.15	4.25	"Cash Flow" per sh	4.50
1.27	1.31	1.42	1.45	1.85	1.85	1.51	1.47	1.79	1.00	1.14	2.30	1.90	2.11	1.94	2.10	2.30	2.35	Earnings per sh	2.90
1.07	1.09	1.11	1.12	1.14	1.17	1.20	1.22	1.24	1.26	1.27	1.28	1.30	1.32	1.34	1.37	1.40	1.44	Div'ds Decl'd per sh	1.56
2.17	2.43	2.84	2.53	2.65	3.29	3.02	3.42	2.87	2.88	3.34	2.65	2.23	2.32	3.27	3.30	3.35	3.00	Cap'l Spending per sh	2.50
10.88	11.04	11.51	11.65	12.79	13.40	13.86	14.72	15.31	16.24	15.70	16.25	16.95	17.00	18.28	19.03	21.15	22.00	Book Value per sh	24.65
40.62	41.50	42.19	42.83	43.70	43.76	43.84	46.47	46.47	48.54	48.58	48.63	48.87	48.88	49.00	49.45	49.80	49.00	Common Shs Outst'g	50.00
13.6	16.0	14.8	12.7	11.5	12.7	17.2	17.3	14.0	14.7	22.1	11.1	14.2	14.7	15.5	16.6	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	16.0
.82	.82	.92	.85	.72	.73	.89	.89	.85	.75	1.26	.83	.75	.79	.84	.82			Relative P/E Ratio	1.00
6.2%	5.3%	5.0%	6.7%	5.4%	5.0%	4.6%	4.8%	4.8%	4.6%	4.8%	5.0%	4.6%	4.2%	4.5%	4.2%			Avg Ann'l Div'd Yield	4.2%

CAPITAL STRUCTURE as of 12/31/07
Total Debt $941.0 mill. Due in 5 Yrs $369.5 mill.
LT Debt $593.5 mill. LT Interest $40.1 mill.
(LT interest earned: 6.7x; total interest coverage: 5.7x)
Pension Assets-9/07 $740.7 mill. Oblig. $660.3 mill.
Preferred Stock $28.2 mill Pfd. Div'd $1.3 mill.

Common Stock 49,464,657 shs. as of 1/31/08

MARKET CAP: $1.6 billion (Mid Cap)

	2::9	2:::	3111	3112	3113	3114	3115	3116	3117	3118	3119	311:		11-13
	1040.0	872.1	1031.1	1440.5	1504.8	2064.2	2000.6	2100.3	2637.9	2646.0	2700	2700	Revenues ($mill)	3035
	68.5	68.0	84.6	88.8	56.7	112.3	98.0	104.8	95.1	102.9	114	117	Net Profit ($mill)	125
	35.5%	36.0%	38.1%	38.1%	34.0%	38.0%	38.2%	37.4%	39.0%	38.1%	38.0%	38.0%	Income Tax Rate	38.0%
	6.6%	7.1%	8.2%	6.2%	3.5%	5.4%	4.7%	4.8%	3.6%	3.8%	3.9%	4.0%	Net Profit Margin	4.2%
	40.3%	41.5%	43.1%	41.7%	45.7%	43.6%	40.9%	35.5%	35.5%	37.8%	36.8%	35.0%	Long-Term Debt Ratio	32.0%
	57.1%	56.1%	54.9%	56.3%	52.4%	54.3%	57.2%	58.0%	61.5%	60.3%	62.0%	63.0%	Common Equity Ratio	65.5%
	1164.8	1218.5	1288.2	1408.0	1462.5	1454.0	1443.6	1478.1	1487.0	1525.4	1675	1720	Total Capital ($mill)	1975
	1318.5	1402.7	1469.3	1518.7	1585.8	1874.0	1915.6	1983.7	2067.0	2150.4	2220	2325	Net Plant ($mill)	2615
	8.0%	7.1%	7.9%	7.8%	5.3%	9.1%	8.2%	8.5%	7.7%	7.6%	8.0%	8.0%	Return on Total Cap'l	8.0%
	10.0%	9.7%	11.4%	11.0%	7.0%	13.7%	11.6%	11.7%	10.3%	10.2%	11.0%	10.5%	Return on Shr. Equity	10.0%
	11.1%	8.8%	11.7%	11.2%	7.2%	14.0%	11.7%	12.0%	10.2%	10.4%	11.5%	11.0%	Return on Com Equity	10.5%
	2.5%	1.0%	3.7%	3.0%	NMF	6.2%	4.1%	4.5%	3.1%	3.5%	4.0%	4.0%	Retained to Com Eq	4.0%
	78%	92%	69%	67%	112%	58%	65%	62%	70%	66%	61%	61%	All Div'ds to Net Prof	62%

CURRENT POSITION ($MILL.)	2006	2007	12/31/07
Cash Assets	4.4	4.9	19.0
Other	656.9	568.8	878.3
Current Assets	661.3	573.7	897.3
Accts Payable	208.5	216.9	331.4
Debt Due	238.4	205.4	347.5
Other	113.9	124.8	237.5
Current Liab.	560.8	557.1	916.4
Fix. Chg. Cov.	465%	480%	460%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '05-'07 to '11-'13
Revenues	9.0%	12.5%	2.0%
"Cash Flow"	3.5%	6.0%	2.5%
Earnings	2.8%	6.0%	3.5%
Dividends	1.5%	1.5%	2.5%
Book Value	4.0%	3.5%	5.0%

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2005	623.4	929.0	349.0	264.1	2165.3
2006	902.8	1064.5	346.9	323.8	2637.9
2007	732.9	1119.9	467.5	325.7	2646.0
2008	751.6	1140	438.4	370	2700
2009	770	1150	400	370	2700

Fiscal Year Ends	EARNINGS PER SHARE Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2005	.88	1.63	d.17	d.23	2.11
2006	.83	1.17	d.01	d.15	1.94
2007	.82	1.27	.22	d.31	2.10
2008	.89	1.30	.20	d.15	2.30
2009	.97	1.33	.25	d.20	2.35

Cal-endar	QUARTERLY DIVIDENDS PAID Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.32	.325	.325	.325	1.30
2005	.325	.333	.333	.333	1.32
2006	.333	.338	.338	.338	1.34
2007	.34	.34	.34	.34	1.36
2008	.34				

BUSINESS: WGL Holdings, Inc. is the parent of Washington Gas Light, a natural gas distributor in Washington, D.C. and adjacent areas of VA and MD to resident'l and comm'l users (1,046,201 meters). Hampshire Gas, a federally regulated sub., operates an underground gas-storage facility in WV. Non-regulated subs.: Wash. Gas Energy Svcs. sells and delivers natural gas and provides energy related products in the D.C. metro area; Wash. Gas Energy Sys. designs/installs comm'l heating, ventilating, and air cond. systems. American Century Inv. own 8.2% of common stock; Off./dir. less than 1% (1/08 proxy). Chrmn. & CEO: J.H. DeGraffenreidt, Inc.: D.C. and VA. Addr.: 1100 H St., N.W., Washington, D.C. 20080. Tel.: 202-624-6410. Internet: www.wglholdings.com.

WGL Holdings has been experiencing progress with its rate cases. The company recently received approval for a rate hike in the District of Columbia (DOC). The incremental cash flow from the rate hike, which was not expected to be approved until March, added approximately $0.05 per share to the bottom line in the first quarter (ended December 31st). Furthermore, the earlier-than-expected rate increase has prompted us to raise our annual estimate by 5%, to $2.30 per share.

The company's earnings will likely get a 2%-3% lift for the March interim. WGL's gas and light utility division has been experiencing higher usage volumes and system charges as a result of 12,310 new customers. And it is expected to add about 5,200 more accounts by the end of fiscal 2008. Furthermore, the asset management business likely continued to enjoy strong off-system sales as excess reserves are released in order to meet the heightened demand during the colder winter months. These results ought to be partially offset by increased operation and maintenence costs.

We look for the share net to advance approximately 10% this year. Lifts in the top-line volumes ought to stem from the heightened rates in the DOC, additional customer growth, and expansion of the company's asset management program. Meanwhile, gas sales at the Washington Gas Energy Services unit have been down as a result of warmer-than-normal weather patterns. However, this unit's margins have been widening on a per-therm basis, offsetting the lower volumes and boosting the bottom line.

In 2009, the bottom-line increase ought to moderate. The majority of benefits from efficiency initiatives and the effects of the recent DOC rate hike will have cycled through by next year. Therefore, we look for earnings advances to slow to a low-single-digit rate.

These neutrally ranked shares may appeal to income-oriented accounts. The equity offers a solid dividend yield. Meanwhile, the stock garners our Highest Safety rank (1), and our best mark for Price Stability (100), indicating suitability for conservative accounts with an eye on capital preservation.

Bryan Fong *March 14, 2008*

(A) Fiscal years end Sept. 30th
(B) Based on diluted shares. Excludes nonrecurring losses: '01, (13¢); '02, (24¢); '07, (9¢) discontinued operations: '06, (16¢). Next earnings report due late April. (C) Dividends historically paid early February, May, August, and November. ■ Dividend reinvestment plan available.
(D) Includes deferred charges and intangibles '07: $322.2 million, $6.51/sh.
(E) In millions, adjusted for stock split.

Company's Financial Strength	A
Stock's Price Stability	100
Price Growth Persistence	50
Earnings Predictability	65