Exhibit No.:	
Issues:	Return on Equity
Witness:	Pauline M. Ahern
Exhibit Type:	Rebuttal
Sponsoring Party:	Missouri-American Water Company
Case No.:	WR-2008-0311
Date:	September 30, 2008

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2008-0311

REBUTTAL TESTIMONY

OF

PAULINE M. AHERN, CRRA

ON BEHALF OF

MISSOURI AMERICAN WATER COMPANY

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

IN THE MATTER OF MISSOURI-AMERICAN WATER COMPANY FOR AUTHORITY TO FILE TARIFFS REFLECTING INCREASED RATES FOR WATER AND SEWER SERVICE	)))))	**CASE NO. WR-2008-0311** **CASE NO. SR-2008-0312**

AFFIDAVIT OF PAULINE M. AHERN

Pauline M. Ahern, being first duly sworn, deposes and says that she is the witness who sponsors the accompanying testimony entitled "Rebuttal Testimony of Pauline M. Ahern"; that said testimony and schedules were prepared by her and/or under her direction and supervision; that if inquires were made as to the facts in said testimony and schedules, she would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of her knowledge.

Pauline M. Ahern

State of New Jersey
County of Burlington
SUBSCRIBED and sworn to
Before me this 24th day of September 2008.

Notary Public

My commission expires:

SHARON M. KEEFE
NOTARY PUBLIC OF NEW JERSEY
MY COMMISSION EXPIRES JULY 9, 2011

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 prepared direct testimony in this proceeding?

A. Yes, I am.

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

A. Yes, I have. They have been marked for identification as Schedules PMA-14 through PMA- 23.

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 Matthew J. Barnes, witness for the Missouri Public Service Commission Staff (Staff) and Brian A. Janous, witness for the Missouri Industrial Energy Consumers (MIEC) concerning common equity cost rate. Specifically, I will address Mr. Barnes' application of the Discounted Cash Flow (DCF) Model, Capital Asset Pricing Model (CAPM), and the inadequacy of his recommended overall rate of return, including common equity cost rate. I will also address Mr. Janous' applications of the DCF, Risk Premium Model (RPM) and CAPM.

III. SUMMARY

Q. Please briefly summarize your rebuttal testimony.

A. My rebuttal testimony describes the error of Mr. Barnes' recommendation of a

range of common equity cost rate well below any reasonable range for MAWC because:

- Mr. Barnes erroneously relies solely upon the DCF to arrive at his recommended common equity cost rate despite the Commission's consideration of the results of other cost of common equity models and the results of recently awarded ROEs to utilities by various regulatory commissions around the country as noted in Case No. GR-2006-0422. He uses, albeit incorrectly, the CAPM model but only as a check on his flawed and understated recommendation. The Efficient Market Hypothesis (EMH), upon which all the cost of common equity models are premised, confirms that investors rely upon multiple cost of common equity models in formulating their required rates of return.
- Mr. Barnes' test of reasonableness, i.e., his CAPM analysis, is flawed, as are the lower required equity risk premia.
- My rebuttal testimony will also demonstrate that Mr. Janous' recommended return rate on common equity of 10.03% for MAWC is inadequate given the allowed ROEs authorized by other regulatory commissions around the country in litigated cases which average about 10.5% relative to an average common equity ratio of 49.5%. I also show that properly applied RPM and CAPM analyses yield results of approximately 11.96%/11.80% (RPM) and 11.90%/11.40% (CAPM), respectively, for his two proxy groups. Neither result corroborates his recommended cost rate of common equity of 10.03% for MAWC.

IV. COMMON EQUITY COST RATE

A. Testimony of MoPSC Staff Witness Matthew J. Barnes

1. Discounted Cash Flow Model

Q. Mr. Barnes' range of recommended common equity cost rate, 9.60% - 10.60%, with a midpoint of 10.10% is based exclusively upon a Discounted Cash Flow (DCF) analysis, notwithstanding his use of the CAPM as a check. Please comment.

A. The DCF model utilized by Mr. Barnes is market-based since recent as well as current market prices are employed in its application. Therefore, it is based upon the EMH which is the foundation of modern investment theory, first pioneered by Eugene F. Fama[1] in 1970. As discussed in my direct testimony, pages 20 through 22, an efficient market is one in which security prices reflect all relevant information all the time. This implies that prices adjust instantaneously to new information, thus reflecting the intrinsic fundamental economic value of a security.[2]

The semistrong form of the EMH, which asserts that all publicly available information is fully reflected in securities prices, i.e., fundamental analysis cannot "outperform the market", is generally held to be true because the use of insider information often enables investors to "outperform the market" and earn excessive returns. This means that all perceived risks are taken into account

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1 Fama, Eugene F., "Efficient Capital Markets: A Review of Theory and Empirical Work". Journal of Finance, May 1970, pp. 383-417.

2 Eugene F. Brigham, Fundamentals of Financial Management, 5th Edition, The Dryden Press, 1989, p. 225.

by investors in the prices they pay for securities. Investors are thus aware of all publicly-available information, including bond ratings; discussions about companies by bond rating agencies and investment analysts; as well as the various cost of common equity methodologies (models) discussed in the financial literature. Hence, no single common equity cost rate model should be relied upon in determining a cost rate of common equity and that the results of multiple cost of common equity models should be taken into account.

Q. Your direct testimony provides academic support for the need to rely upon more than one cost of common equity model in arriving at a recommended common equity cost rate. Would you please revisit the concept?

A. Yes. For example, Phillips[3] states:

> Since regulation establishes a level of authorized earnings which, in turn, implicitly influences dividends per share, estimation of the growth rate from such data is an inherently circular process. For these reasons, the DCF model "suggests a degree of precision which is in fact not present" and leaves "wide room for controversy and argument about the level of k". (italics added) (p. 396)
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> * * *
>
> Despite the difficulty of measuring relative risk, the comparable earnings standard is no harder to apply than is the market-determined standard. The DCF method, to illustrate, requires a subjective determination of the growth rate the market is contemplating. Moreover, as Leventhal has argued: 'Unless the utility is permitted to earn a return comparable to that available elsewhere on similar risk, it will not be able in the long run to attract capital.' (italics added) (p. 398)

[3] Charles F. Phillips, Jr., The Regulation of Public Utilities-Theory and Practice, 1993, Public Utility Reports, Inc., Arlington, VA, p. 396, 398.

Also, Morin[4] states:

> Each methodology requires the exercise of considerable judgment on the reasonableness of the assumptions underlying the methodology and on the reasonableness of the proxies used to validate a theory. *The inability of the DCF model to account for changes in relative market valuation, discussed below, is a vivid example of the potential shortcomings of the DCF model when applied to a given company.* Similarly, the inability of the CAPM to account for variables that affect security returns other than beta tarnishes its use. (italics added)
>
> No one individual method provides the necessary level of precision for determining a fair return, but each method provides useful evidence to facilitate the exercise of an informed judgment. Reliance on any single method or preset formula is inappropriate when dealing with investor expectations because of possible measurement difficulties and vagaries in individual companies' market data. (Morin, p. 428)

* * *

The financial literature supports the use of multiple methods. Professor Eugene Brigham, a widely respected scholar and finance academician, asserts:[1](footnote omitted)

> Three methods typically are used: (1) the Capital Asset Pricing Model (CAPM), (2) the discounted cash flow (DCF) method, and (3) the bond-yield-plus-risk-premium approach. These methods are not mutually exclusive – no method dominates the others, and all are subject to error when used in practice. Therefore, when faced with the task of estimating a company's cost of equity, we generally use all three methods and then choose among them on the basis of our confidence in the data used for each in the specific case at hand.

Another prominent finance scholar, Professor Stewart Myers, in an early pioneering article on regulatory finance, stated:[2](footnote omitted)

> Use more than one model when you can. Because estimating

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[4] Roger A. Morin, New Regulatory Finance, 2006, Public Utilities Reports, Inc., Arlington, VA, pp. 428-431.

> the opportunity cost of capital is difficult, only a fool throws away useful information. That means you should not use any one model or measure mechanically and exclusively. Beta is helpful as one tool in a kit, to be used in parallel with DCF models or other techniques for interpreting capital market data.
>
> Reliance on multiple tests recognizes that no single methodology produces a precise definitive estimate of the cost of equity. As stated in Bonbright, Danielsen, and Kamerschen (1988), '*no single or group test or technique is conclusive.*' Only a fool discards relevant evidence. (italics in original) (Morin, p. 430)
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> * * *
>
> While it is certainly appropriate to use the DCF methodology to estimate the cost of equity, there is no proof that the DCF produces a more accurate estimate of the cost of equity than other methodologies. Sole reliance on the DCF model ignores the capital market evidence and financial theory formalized in the CAPM and other risk premium methods. The DCF model is one of many tools to be employed in conjunction with other methods to estimate the cost of equity. *It is not a superior methodology that supplants other financial theory and market evidence. The broad usage of the DCF methodology in regulatory proceedings in contrast to its virtual disappearance in academic textbooks does not make it superior to other methods. The same is true of the Risk Premium and CAPM methodologies.* (italics added) (Morin, p. 431)

In view of the foregoing, it is clear that investors are aware of all of the models available for use in determining common equity cost rate. The EMH requires the assumption that, collectively, investors use them all. Therefore, Mr. Barnes' exclusive reliance upon the DCF model, notwithstanding his use of the CAPM as a check, is at odds with the very foundation, i.e., the EMH, upon which the DCF is predicated.

2. Capital Asset Pricing Model

Q. Do you have any comment regarding Mr. Barnes' application of the CAPM?

A. Yes. Mr. Barnes' application is flawed in three respects; 1) his use of an

historical market equity risk premium which is incorrectly derived; 2) his choice of the historical yield on 30-year U.S. Treasury bond as the risk-free rate; and 3) his failure to also apply the empirical CAPM to account for the fact that Security Market Line (SML) as described by the traditional CAPM is not as steeply sloped as the predicted SML.

Q. You have stated that Mr. Barnes erred in exclusively relying upon an historical market equity risk premium which was incorrectly derived. Please explain.

A. Mr. Barnes' market equity risk premium of 6.5% is derived by Ibbotson SBBI – 2008 Valuation Yearbook – Market Results for Stocks, Bonds, Bills and Inflation – 1926-2007 (SBBI) as the difference between the arithmetic mean 1926-2007 total return on large company stocks of 12.3% and the arithmetic mean 1926-2007 total return on long-term government bonds of 5.8%. (6.5% = 12.3% - 5.8%).[5] The correct derivation of the historical market equity risk premium is the difference between the total return on large company stocks of 12.3% and the arithmetic mean 1926-2007 income return on long-term government bonds of 5.2% which results in a market equity risk premium of 7.1% (7.1% = 12.3% - 5.2%). Regarding the use of the income return and not the total return for Treasury securities in deriving an equity risk premium, SBBI states[6] :

> Another point to keep in mind when calculating the equity risk premium is that the income return on the appropriate-horizon Treasury security, rather than the total return, is used in the calculation. The total return is comprised of three return components: the income return, the capital appreciation return,

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5 Ibbotson SBBI – 2008 Valuation Yearbook – Market Results for Stocks, Bonds, Bills and Inflation – 1926-2007, Morningstar, Inc., Chicago, 2008, p. 28.

6 Id., at pp. 75-76.

> and the reinvestment return. The income return is defined as the portion of the total return that results from a periodic cash flow or, in this case, the bond coupon payment. The capital appreciation return results from the price change of a bond over a specific period. Bond prices generally change in reaction to unexpected fluctuations in yields. Reinvestment return is the return on a given month's investment income when reinvested into the same asset class in the subsequent months of the year. The income return is thus used in the estimation of the equity risk premium because it represents the truly riskless portion of the return.[2] (footnote omitted) (emphasis added)

Hence, the correct historical market equity risk premium to use is 7.1% and not 6.5%. Page 1 of Schedule PMA-14 corrects Mr. Barnes' CAPM analysis to reflect a properly calculated historical market equity risk premium of 7.1%, resulting in a CAPM derived common equity cost rate of 11.88%, in contrast to his improperly derived arithmetic CAPM result of 11.27%.

In addition, Mr. Barnes relied exclusively upon an historical market equity risk premium which is in direct contrast to his use of both historical and projected growth rates in his application of the DCF model. As stated previously, the cost of capital is prospective and while the arithmetic mean of long-term historical stock market returns can provide insight into investors' expectations of stock market returns because the arithmetic mean of historical returns provides investors with the valuable insight needed to estimate future risk, it is also appropriate to use an estimate of the forecasted or projected stock market return. One indication of the forecasted stock market return can be derived using Value Line Investment Survey's (Value Line) 3-5 year median total market price appreciation projections and dividend yield projections as explained in detail on pages 52 and 53 of my direct testimony and summarized

in note 1 on page 3 of Schedule PMA-23. Based upon Value Line a forecasted total market return of 18.15% is indicated. However, as also discussed in my direct testimony, at lines 3 through 7 on page 46, the then current and recent decline in the stock market was extraordinary and not representative of the expected long-term. Therefore, I relied exclusively upon the historical long-term arithmetic mean equity risk premium. Since the stock market has remained and continues to be extremely volatile, it continues to be unrepresentative of the expected long-term. Hence, it remains appropriate to rely exclusively upon the long-term arithmetic market equity risk premium.

Q. Please comment upon Mr. Barnes' use of the historical yield on 30-year U.S. Treasury bonds as the risk-free rate.

A. Both the cost of capital and ratemaking are prospective. Therefore, it is inappropriate to use an historical yield as the risk-free rate in a CAPM analysis. Rather, the prospective yield on the 30-year U.S. Treasury bonds should be used. As shown in note 1 on page 2 of Schedule PMA-14, the current forecasted consensus yield on long-term U. S. Treasury bonds by the nearly 50 economists reported in Blue Chip Financial Forecasts dated September 1, 2008 is 4.78% for the six quarters ending with the fourth quarter 2009. Clearly, Mr. Barnes' recommended 4.69% historical yield (June 2008) on 30-year U.S. Treasury bonds understates the prospective yield.

In the top half of page 2 of Schedule PMA-14, I have derived the traditional CAPM, the one applied by Mr. Barnes, using the correct forecasted risk-free rate of 4.78% and a market equity risk premium based upon the

arithmetic mean historical market equity risk premium correctly calculated as described above. This results in a CAPM derived common equity cost rate of 11.97%, which is 70 basis points (0.70%) higher than Mr. Barnes' derived arithmetic CAPM cost rate of 11.27%, based upon an historical risk-free rate and an incorrectly derived arithmetic mean equity risk premium for the years 1926-2007. A CAPM cost rate of 11.97% or even Mr. Barnes' 11.27% corroborates neither Mr. Barnes' range of DCF results of 9.22% to 10.22% or his recommended range of common equity cost rate of 9.60% to 10.60%.

Q. You have stated that Mr. Barnes also failed to apply the empirical CAPM to account for the fact that Security Market Line (SML) as described by the traditional CAPM is not as steeply sloped as the predicted SML. Please comment.

A. As discussed in my direct testimony at lines 13 through 36 on page 49 of my direct testimony, while numerous tests of the CAPM have confirmed its validity, these tests have determined that "the implied intercept term exceeds the risk-free rate and the slope term is less than predicted by the CAPM."[7] These tests have also indicated that the expected return on a security is related to its risk by the following formula:

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

Applying this formula using the corrected risk-free rate and market equity risk premium described previously, yields an empirical CAPM derived common equity cost rate of 11.95% for Mr. Barnes' comparable water companies as

[7] Roger A. Morin, New Regulatory Finance, 2006, Public Utilities Reports, Inc., Arlington, VA, p. 175.

shown in the bottom half of page 2 of Schedule PMA-14. Averaging this 11.95% empirical CAPM result with the corrected traditional CAPM result of 11.97% results in an average CAPM result of 11.96%, which also does not corroborate either Mr. Barnes' range of DCF results of 9.22% to 10.22% or his range of recommended common equity cost rate of 9.60% to 10.60%.

Q. Please discuss Mr. Barnes' use of geometric average market risk premium for the years 1926-2006 and 1996-2007

A. In addition to calculating a CAPM derived common equity cost rate based upon the historical arithmetic mean equity risk premium, albeit, incorrectly derived, Mr. Barnes also calculated a CAPM derived common equity cost rate using the long-term historical geometric mean equity risk premium.

As discussed in my direct testimony at page 43, line 22 through page 45, line 13, it is the arithmetic mean return and not the geometric mean return which is appropriate for cost of capital purposes. Because historical total returns and equity risk premia differ in size and direction over time, the arithmetic mean provides insight into the variance and standard deviation of returns, i.e., risk. Thus 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. Without such insight, investors cannot meaningfully evaluate prospective risk. Because the geometric mean relates the change over many periods to a constant rate of change, the variance, i.e., year-to-year fluctuations, and hence, risk, which is critical to rate of return analysis, is not

reflected in geometric mean returns / premia.

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.[8] Pages 77 through 83 of SBBI (see Schedule PMA-15) explain in detail why the arithmetic mean is the correct mean to use when estimating the cost of capital.

In addition, Weston and Brigham[9] 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 states[10]:

> 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)

In addition, Brealey and Myers[11] note:

> 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)

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8 Eugene F. Brigham, Fundamentals of Financial Management, 5th Ed., The Dryden Press, 1989, p. 639.

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

10 Id., at p. 133.

11 Brealey, R.A. and Myers, S.C., Principles of Corporate Finance, 5th Ed., McGraw-Hill Publications, Inc., 1996, pp. 146-147.

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. Only the arithmetic mean 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 in contrast to the geometric mean?

Q. Yes. Schedule PMA-16, 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.

Shown on page 2 is the distribution of each and every one of those returns for the entire period from 1926 through 2007. There is a clear bell-shaped pattern to the probability distribution of returns, an indication that they are randomly generated. The arithmetic mean of this distribution of returns considers all of the returns in the distribution. In doing so, the arithmetic mean takes into account the standard deviation or likely variance which may be experienced in the future when estimating the rate of return based upon such historical returns. In contrast, page 3 of Schedule PMA-16 demonstrates that when the geometric mean is calculated, only two of the returns are considered,

namely the initial and terminal years, which, in this case, are 1926 and 2007. Based upon only those two years, a constant rate of return is calculated by the geometric average. That constant return, graphically, represents a flat line over the entire 1926 to 2007 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 only the arithmetic mean 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.

B. Recommended Common Equity Cost Rate

Q. Please discuss Mr. Barnes' recommended common equity cost rate range of 9.60% - 10.60%, with a midpoint of 10.10%.

A. Mr. Barnes' recommended common equity cost rate range of 9.60% - 10.60% is inadequate for two reasons; 1) such a cost rate range provides an insufficient achieved return on the book common equity of MAWC; and 2) such a cost rate is not consistent with the recently authorized ROEs throughout the country for other utilities.

Q. How does Mr. Barnes' recommended range of common equity cost rate of 9.60% - 10.60% with a midpoint of 10.10% compare with the expected ROEs of his four comparable water utility companies.

A. It is far below the level of earnings expected by Value Line for the three

companies in his group of four comparable water utility companies for which they publish a projected ROE for the years 2011-2013. The latest Value Line Ratings & Reports (Standard Edition) for American States Water Company, Aqua America, Inc. and California Water Service Group, (there is no projection for Middlesex Water Company) indicate that Value Line expects them to earn 13.5%, 12.0% and 11.0% on year-end book common equity (see Schedule PMA-17) over the next 3-5 years averaging 12.17%. While these forecasts are for earnings on book common equity, it must be remembered that the return on common equity authorized in this proceeding will be applied to the book value of the common equity financed portion of MAWC's and will therefore become MAWC's opportunity for earnings on book value. An opportunity to earn a range of return on book common equity of either Mr. Barnes' recommended range of 9.60% - 10.60% is woefully inadequate in comparison with these expected returns on book common equity of comparable water companies.

Such a common equity cost rate range is also inconsistent with the comparability of returns standard enunciated in the Hope decision which states:

> The return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks.

Therefore, Mr. Barnes' recommended common equity cost rate range should be rejected by the MoPSC in setting rates for MAWC in this proceeding.

Q. How does Mr. Barnes' recommended range of common equity cost rate compare with recently authorized ROEs by other regulatory jurisdictions

throughout the country.

A. Schedule PMA-18 is a summary of regulatory awards made to electric and gas distribution companies during the period January 1, 2008 through June 30, 2008 derived from Regulatory Research Associates (an SNL Energy Company). Although Regulatory Research Associates does not report authorized ROEs for water companies, the authorized ROEs for electric and gas distribution companies are relevant to the instant proceeding as MAWC, indeed, all water utilities, compete in the same marketplace for capital as do electric and gas distribution utilities. As shown, the average authorized ROE was 10.50% relative to an average common equity ratio of 49.53% in litigated cases. An average awarded ROE of 10.50% is near the top of Mr. Barnes' range of common equity cost rate of 9.60% - 10.60%. Also, as shown, the average awarded ROE of 10.50% represented an average equity risk premium of 4.40% over the yield on Moody's A rated utility bonds in the months prior to the awards. The average yield on A rated utility bonds for those litigated cases was 6.10%. The projected yield on A rated utility bonds is 6.59%, as derived on page 1 of Schedule PMA-22. The 6.59% yield plus an equity risk premium of 4.40% equals an ROE of 10.99% which verifies that Mr. Barnes' recommended common equity cost rate range understates the common equity cost rate applicable to MAWC.

VI. RESPONSE TO DIRECT TESTIMONY OF MIEC WITNESS BRIAN A. JANOUS

Q. At line 4 on page 4 through line 13 on page 5 of his direct testimony, Mr. Janous discusses his belief that the MoPSC should primarily rely upon

"observable and verifiable actual current market costs", because "[t]he accuracy of projected changes to interest rates is highly problematic." (lines 5-7, page 4). Please comment.

A. As with Mr. Barnes' rejection of a projected risk-free rate, Mr. Janous comments regarding the accuracy of projected interest rates are misleading. As stated previously, both ratemaking and the cost of capital are prospective. Events that affect the future impact market activity and volatility. Therefore, investors are interested in the future, including analysts' expectations and the MoPSC should rely upon forecasted interest rates in a CAPM analysis.

For example, typically one prepares for forecasted severe weather, i.e., snowstorms, and / or hurricanes, regardless of the historical accuracy of weather forecasting. When severe weather is forecasted, those expected to be affected generally begin preparing by laying in supplies of food, batteries, candles, etc. If the severe weather does not materialize, apparently that does not stop them from making the same preparations the next time severe weather is predicted.

Under the Efficient Market Hypothesis (EMH) as discussed in my direct testimony at page 20, line 5 through page 22, line 10, investors are aware of the accuracy of analysts' forecasts and reflect their awareness in the market prices they are willing to pay.

Q. At line 3 on page 12 through line 1, page 13 of his direct testimony, Mr. Janous expresses his concerns with the comparable water group's 9.7% average projected five-year growth rate in EPS. Please comment.

A. Mr. Janous' statements are contradicted by his earlier testimony at page 10, line 20 through page 11, line 5 where he states the following:

> The growth rate used for the DCF model should be based upon the likely growth estimate that is built into stock prices. Although an individual investor may use a number of methods to estimate the expected growth in dividends, one must determine the consensus of investor expectations with respect to growth rates. Security analyst growth estimates have been shown to be more accurate predictors of future growth than historical growth rates. Assuming that markets are generally rational, one can reasonably assume that investors are using security analyst estimates in determining how to correctly value a stock. In other words, security analyst growth estimates are the most likely growth estimates that are built into stock prices.

There is a wealth of empirical and academic literature which support the superiority of analysts' forecasts of EPS as measures of investor expectations. For example, Cragg and Malkiel[12] state"

> Efficient market hypotheses suggest that valuation should reflect the information available to investors. Insofar as analysts' forecasts are more precise than other types we should therefore expect their differences from other measures to be reflected in the market. It is therefore noteworthy that our regression results do support the hypothesis that analysts' forecasts are needed even when calculated growth rates are available. As we noted when we described the data, security analysts do not use simple mechanical methods to obtain their evaluations of companies. The growth-rate figures we obtained were distilled from careful examination of all aspects of the companies' records, evaluation of contingencies to which they might be subject, and whatever information about their prospects the analysts could glean from the companies themselves of from other sources. It is therefore notable that the results of their efforts are found to be so much more relevant to the valuation than the various simpler and more "objective" alternatives that we tried.

[12] Expectations and the Structure of Share Prices, John G. Cragg and Burton G. Malkiel, The University of Chicago Press, 1982, Chapter 4.

In addition, Vander Weide and Carleton[13] note:

> . . . our studies affirm the superiority of analyst's forecasts over simple historical growth extrapolations in the stock price formation process. Indirectly, this finding lends support to the use of valuation models whose input includes expected growth rates.

Finally, it should be noted that Myron Gordon, who first introduced the standard DCF model adopted for utility ratemaking, which both Mr. Janous and I use, came to recognize that his original "Gordon Model" had a serious limitation. In a presentation on March 27, 1990, before the Institute for Quantitative Research In Finance held in Palm Beach, Florida, entitled, "The Pricing of Common Stocks", Dr. Gordon stated:

> The most serious limitation of the Gordon Model is the assumption that the dividend expectation can be represented with just two parameters, D and br ... We have seen that earnings and growth estimates by security analysts were found by Malkiel and Cragg to be superior to data obtained from financial statements for the explanation of variation in price among common stocks. That is, better estimates are obtained for the coefficient of the various explanatory variables. ...*estimates by security analysts available from sources such as IBES are far superior to the data available to Malkiel and Cragg. Secondly, the estimates by security analysts must be superior to the estimates derived solely from financial statements.* (italics added)

In all of these studies, the referenced analyst's growth forecasts were forecasts of growth in EPS. As the recent dramatic rise of the stock market has shown, EPS is a prime, but not the sole, driver of market price movements Therefore, analyst's forecasts of EPS growth are extremely relevant to investors in making their investments decisions. It is the goal of rate of return

[13] "Investor Growth expectations: Analysts vs. History", James H. Vander Weide and Willard T. Carleton, The Journal of Portfolio Management, Spring 1988, pp. 78-82.

analysts, such as Mr. Janous and myself, to emulate investor behavior. Therefore, consistent with the EMH, the foundation of modern investment theory, the market prices of securities reflect all relevant information at all times. This implies that prices adjust instantaneously to new information, such as analysts' forecasts of EPS growth.

In view of the foregoing, the use of analysts' forecasts of EPS growth should be used to estimate today's market cost of capital. At lines 16-21 on page 5 of his direct testimony, Mr. Janous states:

> The ratemaking process in itself provides utility protection against increased cost of capital. Indeed, If Missouri-American's [sic] utility subsidiaries' rates of return are set based on today's market cost of capital, and capital costs increase in the future, then the utilities are free to file for a rate change to reflect those higher capital costs. Hence, the regulatory mechanism itself provides utilities a hedge against increasing capital costs.

Mr. Janous' statements are equally true should capital costs decrease in the future. Should the market cost of capital change because analysts' forecasts of EPS growth change, parties to the regulatory process can petition for a change in a regulated utility's rates based upon changing capital costs. Hence, the regulatory process itself provides a hedge against both increasing and decreasing capital costs. Thus, there is no need to reject the empirical evidence of the proven reliability of analysts' forecasts of EPS by turning to a two- and three-stage DCF model which will be discussed subsequently.

Q. Why do you disagree with Mr. Janous' rejection of constant growth DCF cost rates of 12.96% and 10.51% for his water and gas distribution proxy groups, respectively?

A. Mr. Barnes rejects the constant growth DCF result based upon his belief that the three- to five-year growth rate represented by analysts' forecasts is not sustainable and that the projected growth in GDP represents the maximum sustainable growth rate as discussed on page 12, line 3-19 of his direct testimony. Those reasons, however, are not persuasive. Therefore, there is no basis for rejecting the constant growth DCF cost rates of 12.96% and 10.51%.

Q. Why are the three- to five-year growth rate projections made by analysts in earnings per share sustainable over the longer term?

A. Mr. Janous states on page 14, lines 5-8 of his direct testimony that

> [r]eplacement of infrastructure and the improvements to water treatment plants to meet more stringent environmental requirements results in strong growth to utilities' rate base, and growth in earnings. This growth in earnings will be realized over the next five years or so, but will eventually return to more sustainable long-term levels. It is simply not reasonable to expect that the earnings projections over the next three to five years will be sustainable indefinitely."

This assertion is simply not true. While growth in earnings may be tied to growth in authorized rate base, it is not true, as Mr. Janous implies, that current level of growth in water utility rate base will subside within the next five years or so.

As discussed in my direct testimony at page 7, line 1 through page 11, line 15, the water utility industry faces significant and continuing risks related to replacing aging infrastructure, i.e., rate base. Value Line[14] observes the following about the water utility industry:

The cost of maintaining current water systems in the United States

[14] Value Line Investment Survey, July 25, 2008.

> are growing at exorbitant rates. Many of them are more than 100 years in age and in need of refurbishing, and in some cases, complete overhauls. Meanwhile, EPA requirements are becoming more stringent, a trend that will likely only intensify as the threat of bioterrorism continues to mount. In all, infrastructure costs are expected to climb into the hundreds of millions of dollars in the coming decade. However, not everyone in this space can foot the bill. Many of the smaller operators are light on cash and covered in debt.
>
> * * *
>
> We recommend that investors contemplating entry into the Water Utilities Industry, perhaps reconsider. None of the stocks here stand out for the coming six to twelve months or the 3- to 5-year time frame either. Rising infrastructure costs, coupled with the financial constraints that most water companies are facing, are expected to wipe out most of the benefits of a better regulatory climate, thus limiting shareholder gains. Meanwhile, the current dividend yields do not exactly whet our appetite either, with many better income bearing instruments on the market for investors to consider.

Water utility investment in infrastructure, both for replacement of aging infrastructure and new additions to infrastructure due to growth, are not expected to decline in the near future, i.e., five years, as expected by Mr. Janous. S&P states[15]:

> Standard & Poor's expects the already capital-intensive water utility industry to become even more so over the next several years. Due to the aging pipeline infrastructure and more stringent quality standards, the U.S. Environmental Protection Agency's (EPA) foresees a need for $277 billion to upgrade and maintain U.S. water utilities through 2022, with about $185 billion going toward infrastructure improvements. In addition, about $200 billion will be needed for wastewater applications, which suggests increased capital spending to be a long-term trend in this industry.
>
> In line with these trends, many companies have announced aggressive capital spending programs. Forecast capital spending

[15] Standard & Poor's, Credit Outlook For U.S. Investor-Owned Water Utilities Should Remain Stable in 2008, January 31, 2008, pp. 2 and 4.

> primarily focuses on infrastructure replacements and growth initiatives. Over the past five years, capital spending has been equivalent to about three times its depreciation expense. However, companies are now forecasting spending to be at or above four times depreciation expense over the intermediate term. For companies in regulatory jurisdictions that provide timely cost recovery for capital expenditures, the increased spending is likely to have a minimal effect on financial metrics and ratings. However, companies in areas without these mechanisms, earnings, and cash flow could be negatively affected by the increased spending levels, which over the longer term could harm a company's overall credit profile.
>
> Due to the high level of capital spending, U.S. investor-owned water utilities do not generate positive free cash flow. This, coupled with the forecast increase in capital spending over the intermediate term, will require additional access to capital markets. We expect rated water companies to have enough financial flexibility to gain that access. Ratings actions shouldn't result from this increased market activity because we expect companies to use a balanced financing approach, which should maintain debt near existing levels.

In addition, both the Congressional Budgeting Office (CBO) and the Environmental Protection Agency (EPA) have addressed the necessary future growth in water and wastewater utility infrastructure. In November 2002, the CBO published a study entitled, "Future Investment in Drinking Water and Wastewater Infrastructure" in which it concluded that[16]:

> CBO estimates that for the years 2000 to 2019, annual costs for investment will average between $11.6 billion and $20.1 billion for drinking water systems and between $13.00 billion and $20.9 billion for wastewater systems.

These estimates, over the ten years ending 2019, total from $116.0 - $201.0 billion for drinking water systems and between $130.0 - $209.0 billion for wastewater systems, totaling $246.0 - $410.0 billion for the water and

[16] "Future Investment in Drinking Water and Wastewater Infrastructure", The Congress of the United

wastewater industry combined.

Similarly, the EPA states the following[17]:

> EPA found that the total infrastructure need nationwide is $276.8 billion for the 20-year period of January 2003 through December 2022. With $183.6 billion in needs over the next 20 years, transmission and distribution projects represent the largest category of need. This result is consistent with the fact that transmission and distribution mains account for most of the nation's water infrastructure. The other categories, in descending order of need, are: treatment, storage, source, and a miscellaneous category of needs called "other" that includes such items as security needs.

Clearly, then, with water and wastewater utility infrastructure growing anywhere from approximately $250 - $400 billion into and throughout the next decade and beyond, nearly 15 years from today, the growth in water utility rate base will not subside in the next five years or soon thereafter. In view of the foregoing, Mr. Janous' implication that the growth in water utility earnings will subside after the "next five years or so" is simply not substantiated.

Hence, there is no valid rationale for undertaking a two- or three-stage DCF analysis. There is no empirical evidence that in the second or even third stage any company, especially the relatively stable utility companies, would grow at the average of the U.S. economy. The average growth in the U.S. economy is just that, an average. Some companies will grow faster and some will grow slower. That the growth in nominal GDP is an average is demonstrated on Schedule PMA-19 which shows the nominal GDP for the years 1998-2007 as a whole and by industry. From 2006-2007, nominal GDP grew 4.90% and 5.23% on average for the ten years ending 2007. In contrast,

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[17] "Fact Sheet: "EPA's 2003 Drinking Water Infrastructure Needs Survey and Assessment", United States - Congressional Budget Office, November 2002, p. ix.

the manufacturing component of nominal GDP declined 10.70% from 2006 to 2007 and grew 4.63% on average for the ten years ending 2007. Likewise, the utilities component of nominal GDP grew 8.24% from 2006 to 2007 and an average 5.63% for the ten years ending 2007. In addition, it is a mismatch to use five- to ten-years growth in GDP as a proxy either for the years six or ten through perpetuity. There is no evidence that a five- to ten-years growth rate in GDP accurately represents the in perpetuity growth rate in GDP. Moreover, the results of his two- and three-stage DCF analysis fail a common sense test as they are inconsistent with the average litigated authorized ROEs shown on Schedule PMA-18. His average two- and three-stage DCF result of 8.73% and 9.02%, respectively for the water group and 9.20% and 9.30% for the gas distribution group, respectively are very near or below the low end of the range of authorized ROEs shown on Schedule PMA-18 of 9.10% and 12.12%.

In view of the foregoing, Mr. Janous' two- and three-stage DCF analyses should be rejected because the results fail a common sense test as they are woefully inadequate relative to recently authorized ROEs for electric and gas utilities against which MAWC must compete for capital in the capital markets.

In addition, all of Mr. Janous' DCF results for his gas distribution proxy group – 10.51% (single-stage), 9.20% (two-stage), and 9.30% (three-stage), understate the cost rate applicable to MAWC. While Mr. Janous selected a gas utility group comparable to MAWC in several other respects, the average market capitalization of the gas distribution proxy group is significantly greater than that of MAWC. As discussed in my direct testimony, at page 12, line 1

States Environmental Protection Agency, Office of Water, May 2005, p. 1.

through page 14, line 19, size has a bearing on risk. And consistent with the basic financial concept of risk and return, investors demand greater returns to compensate them for the greater business risk inherent in a small company.

On Schedule PMA-20 I have estimated the market capitalization of MAWC for the 13-weeks ending July 29, 2008 based upon the average market-to-book ratio of Mr. Janous' gas group for the same time period, of 185.3%. Hence, MAWC's market capitalization is estimated at $561.730 million and the average gas company's is estimated at $1,645.486 million, as shown on page 1 of Schedule PMA-20. As also discussed in my direct testimony, a business risk adjustment can be quantified by looking to Chapter 7 entitled "Firm Size and Return" from SBBI. The determinations are based upon the size premia for decile portfolios of the New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and NASDAQ listed companies for the 1926-2007 time period as shown on Schedule PMA-20. The average size premium for the decile in which the gas distribution proxy group falls, i.e., the 6th decile, has been compared to the average size premia for the 8th and 9th deciles between which MAWC falls. As shown on page 1 of Schedule PMA-20, the size premium spread between MAWC and Mr. Janous' gas group is 0.78%. Adding this premium, 0.78% to the 10.51% single-stage, 9.20% two-stage and 9.30% three-stage DCF result for his gas distribution proxy group, indicates that risk-adjusted gas group DCFs are in the range of 9.98% - 11.29% (11.29% = 10.51% + 0.78%), (9.98% = 9.20% + 0.78%), and (10.08% = 9.30% + 0.78%) which are more appropriately applicable to MAWC. However, for reasons

previously discussed relative to Mr. Janous' two- and three-stage DCF analysis, even adjusted for MAWC's smaller size relative to the gas distribution proxy group, these results should be rejected.

C. Risk Premium Model

Q. Do you have any comments regarding Mr. Janous' risk premium analysis?

A. Yes. My comments center on the time period over which he estimates the equity risk premium and his use of authorized returns to do so.

Q. Do you agree with Mr. Janous' use of the years 1986 – 2008 to determine an equity risk premium?

A. No. It is especially inappropriate in view of his use of a two- and three-stage growth DCF model and his emphasis upon long-term sustainable growth. As discussed previously in this rebuttal testimony and my direct testimony, SBBI makes it clear that the arbitrary selection of short historical periods is highly suspect and unlikely to be representative of long-term trends in market data. Page 7 of Schedule PMA-15 clearly shows that it is inappropriate to estimate a market equity risk premium over a short period of time. For example on page 7 SBBI states:

> The estimate of the equity risk premium depends on the length of the data series studied. . . requires a data series long enough to give a reliable average. . . 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. . .

As discussed in my direct testimony on page 28, line 16 through page 29, line 8, Phillips and Bonbright, *et al* make it very clear that the market prices of the

common stocks of public utilities are influenced by factors which are beyond the direct influence of the regulatory process. Schedule PMA-21 demonstrates that there is no relationship between the market-to-book ratios and the earned rates of return on book common equity for the S&P Industrial Index and its successor, the S&P 500 Composite Index over a long period of time. Shown are the market-to-book ratios, rates of return on book common equity (earnings/book ratios), annual inflation rates, and the earnings/book ratios net of inflation (real rates of earnings) annually for the years 1947 through 2007. In each and every year, the market-to-book ratios equaled or exceeded 1.00 times. In only one year, 1949, did the market-to-book ratio actually equal 1.00 time, but never was it below 1.00 time. In 1961, when the S&P Industrial Index experienced a market-to-book ratio of 2.01 times, the real rate of earnings on book equity for the Index was only 9.1%. In 2007, the preliminary market-to-book ratio for the Index was 2.77 times, while the average real rate of earnings on book equity was 8.7%. Schedule PMA-20 demonstrates that competitive, non-price regulated companies have never sold below book value, on average, and have sold at book value in only one year since 1947. In addition, it is shown that there is no relationship between earnings/book ratios and market-to-book ratios.

Because this lack of relationship between earnings/book ratios and market-to-book ratios covers a period in excess of 60 years, it is not reasonable to assume that a direct relationship will exist between rates of earnings on book common equity and market-to-book ratio into the future. Schedule PMA-20 confirms that while regulation is a substitute for marketplace competition, it has

but a limited effect on, but no direct control over the market prices and hence market-to-book ratios of regulated utilities. Thus, no valid conclusion of equity risk premia can be drawn for the 1986 to first quarter 2008 because of market-to-book ratios in excess of one.

Q. Have you applied an appropriate risk premium model to Mr. Janous' water and gas distribution proxy groups?

A. Yes. That information is shown on Schedule PMA-22. Using the same risk premium methodology described in my direct testimony on page 38, line 11 through page 48, line 9, a risk premium indicated common equity cost rate is 11.96% for Mr. Janous' group of water companies and 11.80% for his group of gas companies based upon current market conditions as summarized on page 1, Schedule PMA-22.

D. Capital Asset Pricing Model

Q. Please comment upon Mr. Janous' application of the CAPM.

A. Mr. Janous' application of the CAPM is flawed for three reasons. First, his derivation of the market equity risk premium is incorrect. Second, his "forward-looking" equity risk premium is not truly a prospective equity risk premium. Third, Mr. Janous failed to utilize the Empirical Capital Asset Pricing Model (ECAPM) in addition to the traditional CAPM.

Q. How is Mr. Janous' historical market equity risk premium incorrectly derived?

A. Mr. Janous' used as his market equity risk premium the same SBBI arithmetic mean historical market equity risk premium as did Mr. Barnes. Namely, he utilized the difference between the arithmetic mean 1926-2007 total return on large

company stocks of 12.3% and the arithmetic mean 1926-2007 total return on long-term government bonds of 5.8% which results in a 6.5% market equity risk premium. As discussed previously, the correct derivation of the historical market equity risk premium is the difference between the total return on large company stocks of 12.3% and the arithmetic mean 1926-2007 income return on long-term government bonds of 5.2%, resulting in a market equity risk premium of 7.1%. The income return on long-term government bonds is the appropriate return to use in the estimation of the market equity risk premium because it represents the riskless portion of the return as discussed previously and note by SBBI on page 76.

Q. Why is Mr. Janous' "forward-looking" equity risk premium not truly forward-looking?

A. Mr. Janous derived his "forward-looking" equity risk premium by merely adding a current consensus analysts' inflation projection to SBBI's long-term historical arithmetic mean real market return for the years 1926-2007. Mr. Janous' calculation is mathematically incorrect. Mr. Janous states that the arithmetic average real market return over the period 1926-2007 was 9.0%. It is not. It is 9.2%, i.e., total return of 12.3% less an average inflation rate of 3.1% as shown on page 28 (Table 2-1) of SBBI. This would result in a "forward-looking" total return of 11.82% ([(1 + 0.092) * (1 + 0.024)]) in contrast to Mr. Janous' 11.60%. In addition, it is not appropriate to try and match a one-quarter forecast of inflation (2.4% forecasted for the fourth quarter of 2009) with an average real market return over a period of 82 years. In my opinion, investors would not attempt to do

such a thing. Rather, they would be influenced by a forecast such as that published by Value Line which is widely subscribed to and is available in the business reference section of most libraries. A more appropriate method of deriving the prospective equity market return is based upon Value Line's projected 3-5 year market appreciation potential, which when converted to an annual rate plus the market's median expected dividend yield results in a forecasted total annual market return of 18.15% as explained in note 1 on page 3 of Schedule PMA-23. This methodology yields a truly prospective market return which is based upon an important investor-influencing publication. However, as discussed previously in this rebuttal testimony and in my direct testimony, the stock market remains and continues to be extremely volatile. Therefore, the current Value Line-based forecasted total annual return on the market is unrepresentative of the expected long-term.

Q. Why should Mr. Janous have included an ECAPM analysis in deriving his CAPM-based common equity cost rate?

A. As discussed previously in this rebuttal testimony and in my direct testimony at page 49, lines 13-36, the empirical Security Market Line (SML) described by the traditional CAPM is not as steeply sloped as the predicted SML. As Morin[18] notes:

> . . .low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.

[18] Id., at p. 175.

Hence, both the traditional CAPM and ECAPM should be used in deriving a CAPM-based common equity cost rate. I have shown the results of applying both the traditional CAPM and ECAPM to Mr. Janous' water and gas distribution companies using the correctly derived historical market equity risk premium. As shown on page 1 of Schedule PMA-23, the traditional CAPM result is 11.85% for the water proxy group and 11.28% for the gas proxy group while the ECAPM result is 11.94% for the water proxy group and 11.51% for the gas proxy group. The average of both cost rates is 11.90% for the water proxy group and 11.40% for the gas proxy group.

Q. On page 24, lines 5-14 of his direct testimony, Mr. Janous asserts that the results of his CAPM analysis for his water proxy group represents an unreasonably high estimate of the return on common equity for MAWC due to the level of the water company betas. Please comment.

A. Mr. Janous asserts that the current level of betas for the water proxy group are high "as result of the current period of relatively high growth due to the significant investment in rate base." This statement is incorrect on two counts. First, as previously discussed, the water utility industry is and has been for quite some time facing significant capital expenditures necessary to replace aging infrastructure and to add additional rate base due to growth. As demonstrated previously, the CBO and EPA are estimating that the water utility industry will face significantly high capital expenditures well into the future. Therefore, Mr. Janous' assertion that the currently "high" level of betas for the water utility industry is due to the "current period of relative high growth due to the significant investment in

rate base" is unfounded. Second, beta is a measure of systematic, market or non-diversifiable risk. While beta does contain a modicum of business or company-specific risk, CAPM theory assumes that overwhelming majority business or company-specific risk can be diversified away by investors. Therefore, it is inconsistent with CAPM theory to attribute the current level of water utility betas to the industry's "significant investment in rate base", a company or industry specific risk.

Q. Does that conclude your rebuttal testimony?

A. Yes.

Exhibit No.:	
Issues:	Return on Equity
Witness:	Pauline M. Ahern
Exhibit Type:	Rebuttal
Sponsoring Party:	Missouri-American Water Company
Case No.:	WR-2008-0311
Date:	September 30, 2008

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2008-0311

EXHIBIT

TO ACCOMPANY THE

REBUTTAL TESTIMONY

OF

PAULINE M. AHERN, CRRA

ON BEHALF OF

MISSOURI AMERICAN WATER COMPANY

Missouri-American Water Company
Capital Asset Pricing Model (CAPM) Cost-of-Common-Equity Estimates
for MoPSC Staff Witness Barnes' Four Comparable Water Utility Companies Corrected
to Reflect a Prospective Risk-Free Rate and
Historical Market Equity Risk Premium

	1	2	3	4	5
	Traditional Capital Asset Pricing Model				
MoPSC Staff Witness Barnes' Four Comparable Water Utility Companies	Risk-Free Rate (1)	Company's Beta (2)	Market Risk Premium (3)	Beta Adjusted Market Risk Premium (4)	Cost of Common Equity (5)
American States Water Company	4.69%	1.05	7.10%	7.46%	12.15%
Aqua America, Inc.	4.69%	0.95	7.10%	6.75%	11.44%
California Water Services Group	4.69%	1.15	7.10%	8.17%	12.86%
Middlesex Water Company	4.69%	0.90	7.10%	6.39%	11.08%
Average	4.69%	1.01	7.10%	7.19%	11.88%

Notes:
(1) From Column 1 of MoPSC Staff Witness Barnes' Schedule 17.
(2) From Column 1 of MoPSC Witness Barnes's Schedule 17.
(3) Derived in note 1 on page 3 of Schedule PMA-23.
(4) Column 2 * Column 3.
(5) Column 1 + Column 4.
(6) The empirical CAPM is applied using the formula found in note 4 on page 3 of Schedule PMA-23.

Missouri-American Water Company
Capital Asset Pricing Model (CAPM) Cost-of-Common-Equity Estimates
for MoPSC Staff Witness Barnes' Four Comparable Water Utility Companies Corrected
to Reflect a Prospective Risk-Free Rate and
Historical Market Equity Risk Premium

	1	2	3	4	5
	Traditional Capital Asset Pricing Model				
MoPSC Staff Witness Barnes' Four Comparable Water Utility Companies	Risk-Free Rate (1)	Company's Beta (2)	Market Risk Premium (3)	Beta Adjusted Market Risk Premium (4)	Cost of Common Equity (5)
American States Water Company	4.78%	1.05	7.10%	7.46%	12.24%
Aqua America, Inc.	4.78%	0.95	7.10%	6.75%	11.53%
California Water Services Group	4.78%	1.15	7.10%	8.17%	12.95%
Middlesex Water Company	4.78%	0.90	7.10%	6.39%	11.17%
Average	4.78%	1.01	7.10%	7.19%	11.97%

	Empirical Capital Asset Pricing Model				
MoPSC Staff Witness Barnes' Four Comparable Water Utility Companies	Risk-Free Rate (1)	Company's Beta (2)	Market Risk Premium (3)	Beta Adjusted Market Risk Premium (6)	Cost of Common Equity (5)
American States Water Company	4.78%	1.05	7.10%	7.37%	12.15%
California Water Services Group	4.78%	0.95	7.10%	6.83%	11.61%
Middlesex Water Company	4.78%	1.15	7.10%	7.90%	12.68%
Philadelphia Suburban Corporation	4.78%	0.90	7.10%	6.57%	11.35%
Average	4.78%	1.01	7.10%	7.17%	11.95%

Average of Traditional and Empirical CAPM	11.96%

Notes: (1) 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 3 of this Schedule The estimates are detailed below:

Third Quarter 2008	4.60 %
Fourth Quarter 2008	4.60
First Quarter 2009	4.70
Second Quarter 2009	4.80
Third Quarter 2009	4.90
Fourth Quarter 2009	5.10
Average	4.78 %

(2) From MoPSC Witness Mr. Barnes's Schedule 17.
(3) Derived in note 1 on page 3 of Schedule PMA-23.
(4) Column 2 * Column 3.
(5) Column 1 + Column 4.
(6) The empirical CAPM is applied using the formula found in note 4 on page 3 of Schedule PMA-23.

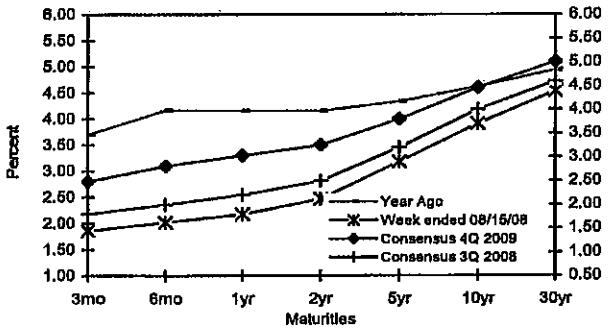
Consensus Forecasts Of U.S. Interest Rates And Key Assumptions[1]

	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).

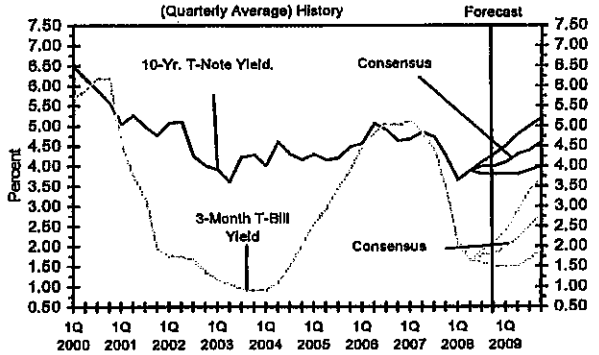
U.S. Treasury Yield Curve

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



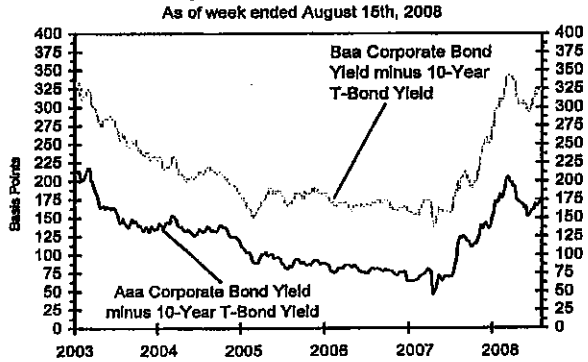
U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield

(Quarterly Average) History — Forecast



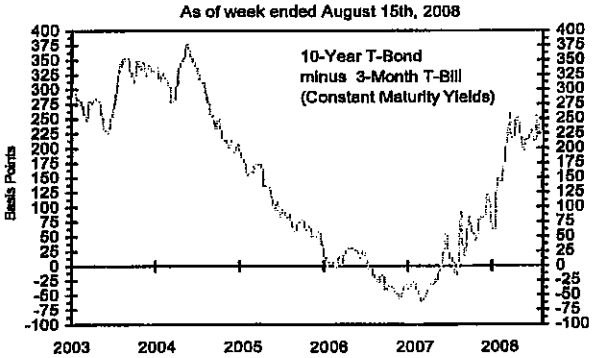
Corporate Bond Spreads

As of week ended August 15th, 2008



U.S. Treasury Yield Curve

As of week ended August 15th, 2008



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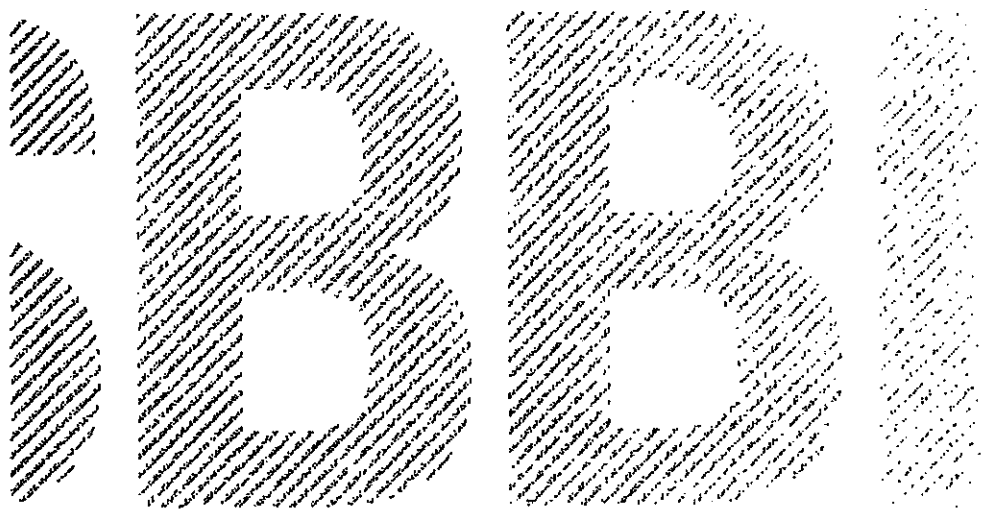
2008 Valuation Yearbook

Market Results for
Stocks, Bonds, Bills, and Inflation
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.

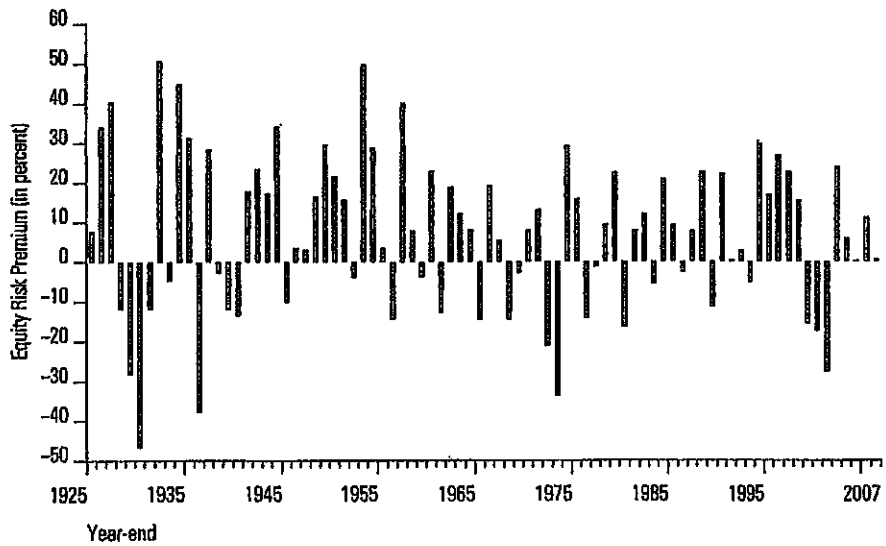
Anticipated changes in yields are assessed by the market and figured into the price of a bond. Future changes in yields that are not anticipated will cause the price of the bond to adjust accordingly. Price changes in bonds due to unanticipated changes in yields introduce price risk into the total return. 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.

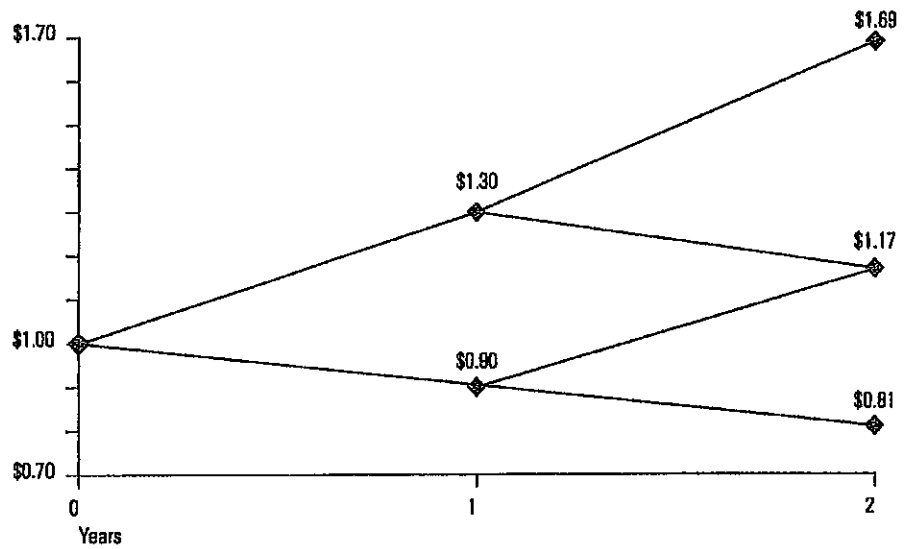
The argument for using the arithmetic average is quite straightforward. In looking at projected cash flows, the equity risk premium that should be employed is the equity risk premium that is expected to actually be incurred over the future time periods. Graph 5-3 shows the realized equity risk premium 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:

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

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

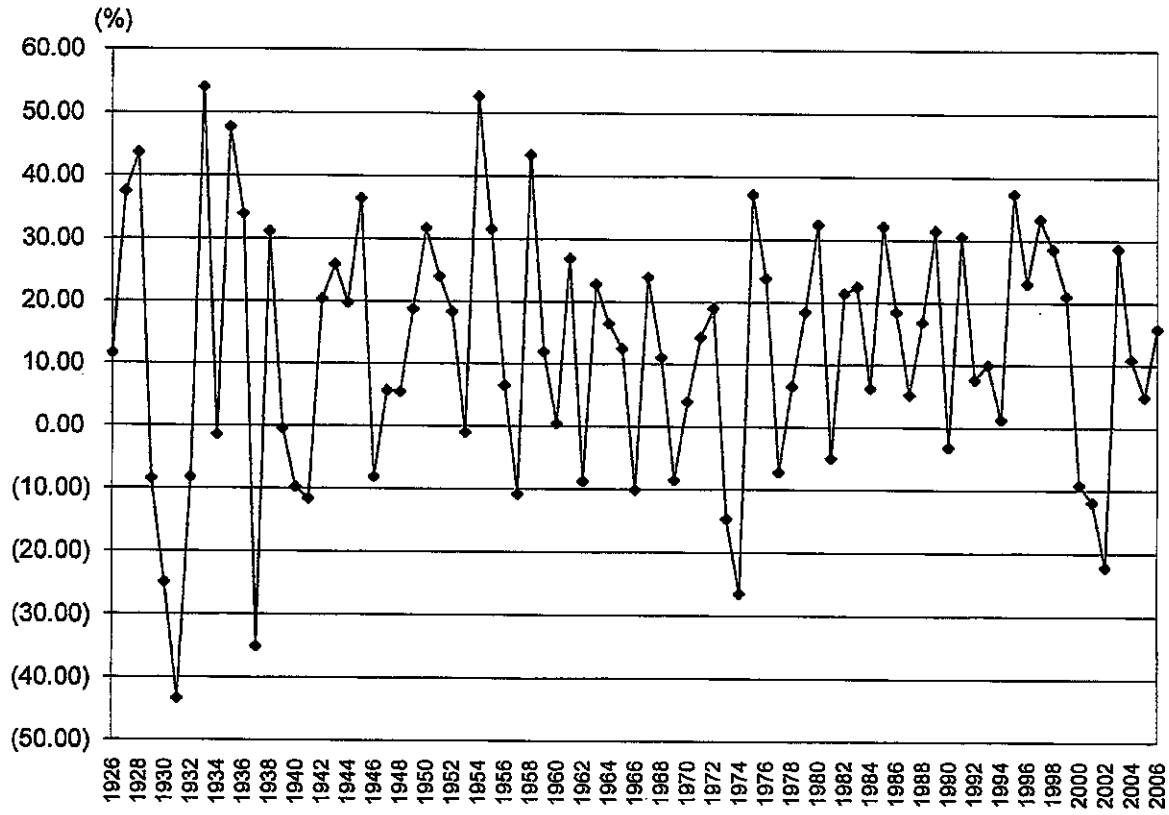
It is interesting to take a look at the realized returns and realized equity risk premium in the context of the above discussion. Table 5-5 shows the average stock market return and the average (arithmetic mean) realized long-horizon equity risk premium over various historical time periods. Similarly, 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%	6.5%
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.

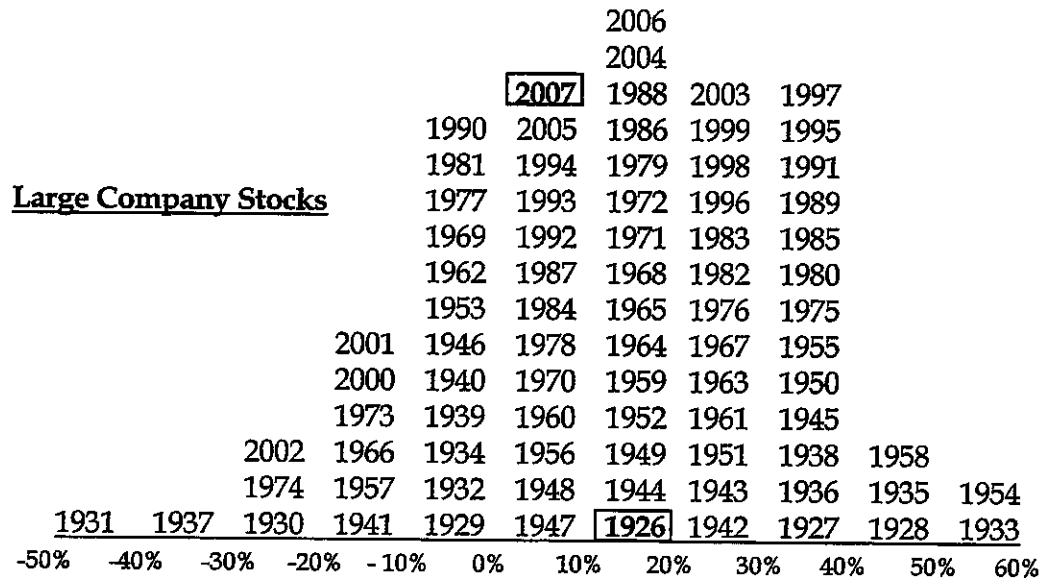
Missouri American Water Company
Large Company Stock Returns
From 1926 to 2007



Source of Information:

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

Missouri American Water Company
Total Returns on Large Company Stocks
1926 to 2007



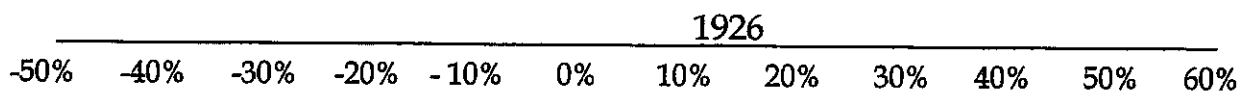
Arithmetic Mean: $r_A = \sum_{t=1}^{n} r_t / n$

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

Missouri American Water Company
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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RECENT PRICE 33.80 | P/E RATIO 20.5 (22.1 / 26.0) | RELATIVE P/E RATIO 1.39 | DIV'D YLD 3.0% | VALUE LINE

TIMELINESS 4 Lowered 2/15/08
SAFETY 3 New 2/4/00
TECHNICAL 4 Lowered 5/30/08
BETA 1.05 (1.00 = Market)

2011-13 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	65	(+90%)	20%
Low	40	(+20%)	7%

Insider Decisions

	S	O	N	D	J	F	M	A	M
to Buy	1	0	0	1	0	0	0	0	0
Options	2	0	4	0	0	0	0	0	1
to Sell	2	0	4	0	0	0	0	0	1

Institutional Decisions

	3Q2007	4Q2007	1Q2008
to Buy	63	63	63
to Sell	53	62	59
Hld's(000)	10424	9617	9753

High: 17.1 19.5 26.5 25.3 26.4 29.0 29.0 26.8 34.6 43.8 46.1 40.3
Low: 13.6 14.1 14.8 16.7 19.0 20.3 21.6 20.8 24.3 30.3 33.6 31.6

LEGENDS
1.25 x Dividends p sh divided by Interest Rate
Relative Price Strength
3-for-2 split 6/02
Options: No
Shaded area indicates recession

Target Price Range 2011 | 2012 | 2013

% TOT. RETURN 6/08

	THIS STOCK	VL ARITH. INDEX
1 yr.	0.8	-18.0
3 yr.	26.7	11.3
5 yr.	47.5	83.2

1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	©VALUE LINE PUB., INC	11-13
10.10	9.27	10.43	11.03	11.37	11.44	11.02	12.91	12.17	13.06	13.78	13.98	13.61	14.08	15.76	17.49	17.00	18.05	Revenues per sh	21.85
1.81	1.67	1.68	1.75	1.75	1.85	2.04	2.26	2.20	2.53	2.54	2.08	2.23	2.64	2.89	3.31	3.40	3.80	"Cash Flow" per sh	4.70
1.15	1.11	.95	1.03	1.13	1.04	1.08	1.19	1.28	1.35	1.34	.78	1.05	1.32	1.33	1.62	1.65	1.85	Earnings per sh A	2.50
.77	.79	.80	.81	.82	.83	.84	.86	.88	.87	.87	.88	.89	.90	.91	.96	1.00	1.08	Div'd Decl'd per sh B=	1.20
2.31	1.90	2.43	2.19	2.40	2.68	3.11	4.30	3.03	3.18	2.66	3.78	5.03	4.24	3.91	2.89	3.80	3.75	Cap'l Spending per sh	4.00
8.85	9.05	10.07	10.29	11.01	11.24	11.48	11.82	12.74	13.22	14.05	13.97	15.01	15.72	16.64	17.53	17.75	18.05	Book Value per sh	19.20
8.96	11.71	11.77	11.77	13.33	13.44	13.44	13.44	15.12	15.12	15.18	16.21	16.75	16.80	17.05	17.23	17.75	18.00	Common Shs Outst'g C	19.00
10.6	13.4	12.8	11.6	12.6	14.5	16.5	17.1	15.9	18.7	18.3	31.8	23.2	21.8	27.7	24.0	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	21.0
.64	.79	.84	.78	.79	.84	.81	.97	1.03	.86	1.00	1.82	1.23	1.17	1.50	1.26			Relative P/E Ratio	1.40
6.3%	5.3%	5.6%	6.7%	5.8%	5.5%	5.0%	4.2%	4.2%	3.9%	3.6%	3.5%	3.6%	3.1%	2.6%	2.5%			Avg Ann'l Div'd Yield	2.4%
148.1	173.4	184.0	197.5	209.2	212.7	228.0	238.2	268.6	301.4	302	325	Revenues ($mill)	415
14.6	16.1	16.0	20.4	20.3	11.9	16.5	22.5	23.1	28.0	30.0	35.0	Net Profit ($mill)	50.0
40.9%	46.0%	46.7%	43.0%	38.9%	43.5%	37.4%	47.0%	40.5%	42.6%	43.0%	42.5%	Income Tax Rate	42.0%
--	--	--	--	--	--	--	--	12.2%	8.5%	5.0%	6.0%	AFUDC % to Net Profit	Nil
43.6%	51.0%	47.5%	54.9%	52.0%	52.0%	47.7%	50.4%	48.6%	46.9%	47.5%	48.0%	Long-Term Debt Ratio	50.0%
55.7%	48.4%	51.9%	44.7%	48.0%	48.0%	52.3%	49.6%	51.4%	53.1%	52.5%	52.0%	Common Equity Ratio	50.0%
277.1	328.2	371.1	447.6	444.4	442.3	480.4	532.5	551.8	569.4	600	625	Total Capital ($mill)	730
414.8	449.6	509.1	539.6	583.3	602.3	664.2	713.2	750.8	776.4	810	845	Net Plant ($mill)	950
7.0%	6.6%	6.4%	6.1%	6.5%	4.5%	5.2%	5.4%	6.0%	6.7%	6.5%	7.5%	Return on Total Cap'l	9.0%
9.4%	10.6%	9.2%	10.1%	9.5%	5.5%	6.6%	8.5%	8.1%	9.3%	9.5%	11.0%	Return on Shr. Equity	13.5%
9.4%	10.1%	9.3%	10.1%	9.5%	5.5%	6.6%	8.5%	8.1%	9.3%	9.5%	11.0%	Return on Com Equity	13.5%
2.1%	2.9%	3.0%	3.6%	3.3%	NMF	1.0%	2.8%	2.7%	3.9%	4.0%	5.5%	Retained to Com Eq	7.0%
78%	72%	68%	65%	65%	113%	84%	67%	67%	58%	59%	56%	All Div'ds to Net Prof	46%

CAPITAL STRUCTURE as of 3/31/08
Total Debt $316.4 mill. Due in 5 Yrs $41.1 mill.
LT Debt $267.2 mill. LT Interest $22.5 mill.
(LT interest earned: 3.0x; total interest coverage: 2.8x) (47% of Cap'l)

Leases, Uncapitalized: None
Pension Assets-12/07 $70.9 mill.
Oblig. $83.4 mill.
Pfd Stock None.

Common Stock 17,245,224 shs.
MARKET CAP: $575 million (Small Cap)

CURRENT POSITION ($MILL.)

	2006	2007	3/31/08
Cash Assets	3.2	1.7	.8
Receivables	14.6	16.1	14.5
Inventory (Avg Cst)	1.6	1.5	1.6
Other	44.8	43.7	42.9
Current Assets	64.4	63.1	59.8
Accts Payable	24.0	29.1	27.8
Debt Due	32.6	37.8	46.6
Other	29.3	27.4	28.1
Current Liab.	85.9	94.3	102.6
Fix. Chg. Cov.	268%	314%	300%

ANNUAL RATES of change (per sh)

	Past 10 Yrs.	Past 5 Yrs.	Est'd '05-'07 to '11-'13
Revenues	3.5%	4.0%	6.0%
"Cash Flow"	5.0%	4.0%	6.0%
Earnings	3.0%	1.5%	10.0%
Dividends	1.0%	1.5%	5.0%
Book Value	4.5%	4.5%	3.0%

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2005	48.8	60.5	68.1	57.8	236.2
2006	64.3	63.0	75.0	66.3	268.6
2007	72.3	79.3	75.8	74.0	301.4
2008	68.9	79.1	78.0	78.0	302
2009	74.0	84.0	85.0	82.0	325

Calendar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2005	.22	.34	.47	.29	1.32
2006	.35	.36	.32	.30	1.33
2007	.40	.42	.44	.35	1.62
2008	.30	.43	.47	.45	1.65
2009	.35	.50	.55	.45	1.85

Calendar	QUARTERLY DIVIDENDS PAID B= Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2004	.221	.221	.221	.225	.89
2005	.225	.225	.226	.226	.90
2006	.225	.225	.225	.235	.91
2007	.235	.235	.235	.250	.98
2008	.250	.250			

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 572 employees. Officers & directors own 4.4% of common stock (4/08 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.

American States Water got off to an inauspicious start. The company posted earnings of $0.30 a share in the first quarter, 25% off last year's figure and $0.08 below our estimate. Sales decreased 4%, to $68.9 million, due mainly to a reduction in fees from military bases. Water consumption would have declined even further if not for continued improvements in the regulatory process, namely the recent rate hike, effective January 1st, implemented by the California Public Utilities Commission (CPUC).

The outlook for the remainder of the year has dried up, too. Extremely arid weather (the driest on record in roughly 70 years) in California has prompted Governor Schwarzenegger to declare a drought and urge citizens to be more conservative with water usage. This is obviously not a favorable development for American, and we have therefore reduced our share-net estimate by $0.15, to $1.65, and our revenues figure by $10 million, to reflect minimal revenue growth.

We expect that earnings growth ought to improve next year, though. Weather conditions ought to improve, replenishing reserves and sparking higher usage. Plus, the CPUC will likely continue handing down favorable general rate case decisions, a trend that began when the Governor took the reins. In all, we look for double-digit earnings growth in 2009.

Nevertheless, these shares do not whet our appetite. They've tumbled roughly 10% since our last review in April, and are ranked 4 (Below Average) for Timeliness. Growth will probably remain under wraps for the coming six to 12 months due to concerns regarding inventory levels and escalating operating costs. Longer term, we are concerned about the effects of growing infrastructure needs and the company's ability to fund such endeavors. American has a feeble cash position and will have to look to outside financiers to fund future capital expenditures. Not only will such activity result in higher interest costs and share count, thus diluting shareholder gains, but it will also limit the company's ability to make acquisitions and expand its customer base. Meanwhile, the issue does not stand out as an income producer versus other utilities.

Andre J. Costanza *July 25, 2008*

(A) Primary earnings. Excludes nonrecurring gains: '91, 73¢; '92, 13¢; '04, 14¢; '05, 25¢; '08, 5¢. Next earnings report due early August. May not add due to rounding.
(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	65
Earnings Predictability	60

AQUA AMERICA NYSE-WTR

RECENT PRICE 14.66 | P/E RATIO 17.2 (21.2 / 24.9) | RELATIVE P/E RATIO 1.17 | DIV'D YLD 3.4% | VALUE LINE

TIMELINESS 5 Lowered 6/16/06
SAFETY 3 Lowered 8/1/03
TECHNICAL 4 Lowered 6/13/08
BETA .95 (1.00 = Market)

2011-13 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	36	(+145%)	29%
Low	28	(+70%)	16%

Insider Decisions

	S	O	N	D	J	F	M	A	M
to Buy	0	0	0	0	0	0	0	0	0
Options	2	1	1	0	0	1	0	0	1
to Sell	3	1	1	0	0	0	0	0	1

Institutional Decisions

	3Q2007	4Q2007	1Q2008
to Buy	84	115	89
to Sell	114	89	111
Hld(000)	556922	559091	624485

High:	8.5	11.5	11.5	12.0	14.6	16.0	16.8	18.6	29.2	29.6	26.6	22.0		
Low:	4.4	7.2	7.6	8.3	9.4	9.6	11.8	14.2	17.5	20.1	16.9	14.5		

Target Price Range 2011 2012 2013

% TOT. RETURN 6/08

	THIS STOCK	VL ARITH. INDEX
1 yr.	-27.2	-18.0
3 yr.	-24.1	11.3
5 yr.	21.2	83.2

1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	© VALUE LINE PUB., INC	11-13
1.82	1.70	1.82	1.84	1.88	2.02	2.09	2.41	2.46	2.70	2.85	2.97	3.48	3.85	4.03	4.52	4.80	5.00	Revenues per sh	5.60
.39	.42	.42	.47	.50	.58	.61	.72	.76	.88	.94	.96	1.09	1.21	1.28	1.37	1.65	1.85	"Cash Flow" per sh	2.35
.24	.24	.26	.29	.30	.34	.40	.42	.47	.51	.54	.57	.64	.71	.70	.71	.85	.95	Earnings per sh A	1.20
.20	.21	.21	.22	.23	.24	.26	.27	.28	.30	.32	.35	.37	.40	.44	.48	.50	.58	Div'd Decl'd per sh B=	.68
.50	.47	.48	.52	.48	.58	.82	.90	1.16	1.09	1.20	1.32	1.54	1.84	2.05	1.79	1.85	1.90	Cap'l Spending per sh	2.75
2.09	2.29	2.41	2.48	2.69	2.84	3.21	3.42	3.85	4.15	4.38	5.34	5.69	6.30	6.96	7.32	7.70	8.20	Book Value per sh	10.10
51.26	55.40	59.77	63.74	65.75	67.47	72.20	106.80	111.82	113.97	113.19	123.45	127.18	128.97	132.33	133.40	134.60	135.60	Common Shs Outst'g C	139.00
12.5	14.4	13.6	12.0	15.6	17.8	22.5	21.2	18.2	23.6	23.6	24.5	25.1	31.8	34.7	32.0	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	25.0
.76	.85	.89	.80	.93	1.03	1.17	1.21	1.18	1.21	1.29	1.40	1.33	1.59	1.67	1.70			Relative P/E Ratio	1.65
6.5%	5.9%	6.0%	6.2%	4.9%	3.9%	2.8%	3.0%	3.3%	2.5%	2.6%	2.5%	2.3%	1.8%	1.8%	2.1%			Avg Ann'l Div'd Yield	2.7%
151.0	257.3	275.6	307.3	322.0	367.2	442.0	466.8	533.5	602.5	649	675	Revenues ($mill)	775
28.8	45.0	50.7	58.5	62.7	67.3	80.0	91.2	92.0	95.0	115	130	Net Profit ($mill)	165
40.5%	38.4%	38.8%	39.3%	38.5%	39.3%	39.4%	38.4%	38.6%	38.9%	39.0%	39.0%	Income Tax Rate	38.0%
--	--	--	--	--	--	--	--	2.9%	3.1%	2.5%	2.5%	AFUDC % to Net Profit	2.0%
52.7%	52.0%	52.0%	52.2%	54.2%	51.4%	50.0%	52.0%	51.5%	55.4%	54.5%	54.0%	Long-Term Debt Ratio	51.5%
46.6%	48.7%	47.8%	47.7%	45.8%	48.6%	50.0%	48.0%	48.4%	44.6%	45.5%	46.0%	Common Equity Ratio	49.0%
496.8	762.7	901.1	990.4	1076.2	1355.7	1497.3	1690.4	1904.4	2191.4	2288	2410	Total Capital ($mill)	2855
509.8	1135.4	1251.4	1368.1	1490.6	1824.3	2069.8	2280.0	2508.0	2792.8	2850	3000	Net Plant ($mill)	3600
7.6%	7.5%	7.4%	7.5%	7.6%	6.4%	6.7%	6.9%	6.4%	5.9%	6.5%	6.5%	Return on Total Cap'l	7.0%
12.3%	12.2%	11.7%	12.3%	12.7%	10.2%	10.7%	11.2%	10.0%	9.7%	11.0%	11.5%	Return on Shr. Equity	12.0%
12.4%	12.3%	11.7%	12.4%	12.7%	10.2%	10.7%	11.2%	10.0%	9.7%	11.0%	11.5%	Return on Com Equity	12.0%
4.5%	4.3%	4.7%	5.1%	5.2%	4.2%	4.6%	4.0%	3.7%	3.2%	4.5%	5.0%	Retained to Com Eq	5.5%
64%	65%	60%	59%	59%	59%	57%	56%	63%	67%	61%	59%	All Div'ds to Net Prof	57%

CAPITAL STRUCTURE as of 3/31/08
Total Debt $1239.0 mill. Due in 5 Yrs $207.9 mill.
LT Debt $1215.0 mill. LT Interest $65.0 mill.
(LT Interest earned: 3.3x; total interest coverage: 3.1x)
(55% of Cap'l)

Pension Assets-12/07 $147.8 mill. Oblig. $194.6 mill.

Pfd Stock None
Common Stock 133,630,229 shares as of 4/22/08

MARKET CAP: $2.0 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2006	2007	3/31/08
Cash Assets	44.0	14.5	16.5
Receivables	72.1	82.9	73.7
Inventory (AvgCst)	10.2	8.8	10.2
Other	8.4	9.3	9.7
Current Assets	134.7	115.5	110.1
Accts Payable	49.4	45.8	23.4
Debt Due	160.4	80.8	24.0
Other	55.8	56.6	127.1
Current Liab.	265.6	183.2	174.5
Fix. Chg. Cov.	352%	323%	305%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '05-'07 to '11-'13
Revenues	8.0%	9.0%	5.0%
"Cash Flow"	9.5%	8.5%	10.5%
Earnings	8.5%	7.0%	9.0%
Dividends	7.0%	7.5%	7.5%
Book Value	10.0%	10.5%	8.5%

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	114.0	123.1	136.8	122.9	496.8
2006	117.9	131.7	147.0	136.9	533.5
2007	137.3	150.6	165.5	148.1	602.5
2008	139.3	165	185	155.7	645
2009	145	175	195	160	675

Calendar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	.15	.17	.22	.17	.71
2006	.13	.17	.21	.19	.70
2007	.13	.17	.22	.19	.71
2008	.11	.22	.28	.24	.85
2009	.15	.25	.26	.28	.95

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	.125	.125			

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 '81; telemarketing group in '93; and others. Acquired AquaSource, 7/03; Consumers Water, 4/99; and others. Water supply revenues '07: residential, 60%; commercial, 14%; industrial & other, 26%. Officers and directors own 1.4% of the common stock (4/08 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.

Aqua America Inc. began the year on a weak note. Even though revenues grew slightly year over year, the bottom line dropped about 15%. A reduction in housing starts dampened the rate of customer growth, increased foreclosures have lowered revenue contributions from these consumers, and higher fuel costs hurt margins during the March interim. Also, the recent loss of customers from the land seized by the government of Fort Wayne, Indiana (under the eminent domain doctrine) has already begun to cut into profits, and will likely hinder growth until late 2009.

The company may be able to gain some momentum in the latter half of the year. A factor that will probably benefit the top and bottom lines are the 17 rate cases that are in varied stages of regulatory processes. These price increase requests should be decided by the end of the year, and can add upwards of $65 million per annum to revenues. It should also be noted that some of these cases are for "rate-relief", which would yield higher price increases to offset the capital investments and rising costs that have been accrued during the integration period. Also, Aqua will likely sell an undisclosed franchise for approximately $10 million late in the third or fourth quarter.

Aqua America has acquired a wastewater and irrigation system in Florida. This will expand the company's customer base with the 4,000 residents of the Fountain Lakes development in Lee County serviced by these systems. The waste-water assets will be run as a regulated utility, subject to rate-increase petitions. Over the next few years, about $400,000 in capital expenditures will be spent to improve and integrate these systems. Further acquisitions are likely to be made during the year, but management has stated that its focus will shift towards making larger, fewer purchases.

These untimely shares may be best suited for patient investors. Although the recent difficulties have hampered its short term appeal, Aqua is establishing and improving facilities in strong locations, which should bolster earnings growth and enhance its appreciation potential over the coming 3 to 5 years.

John D. Burke *July 25, 2008*

(A) Primary shares outstanding through '96; diluted thereafter. Excl. nonrec. gains (losses): '92, (36¢); '99, (11¢); '00, 2¢; '01, 2¢; '02, 5¢; '03, 4¢. Excl. gain from disc. operations: '96, 2¢. May not sum due to rounding. Next earnings report due early August.
(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 33.21 | P/E RATIO 20.8 (23.1 / 22.0) | RELATIVE P/E RATIO 1.41 | DIV'D YLD 3.5% | VALUE LINE

TIMELINESS 3 Raised 3/7/08
SAFETY 3 Lowered 7/27/07
TECHNICAL 3 Raised 6/20/08
BETA 1.15 (1.00 = Market)

2011-13 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	60	(+80%)	16%
Low	40	(+20%)	8%

Insider Decisions

	S	O	N	D	J	F	M	A	M
to Buy	0	0	0	0	0	0	1	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

	3Q2007	4Q2007	1Q2008
to Buy	45	62	60
to Sell	46	48	40
Hld'(000)	9581	9554	10255

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	© VALUE LINE PUB., INC	11-13
	12.29	13.34	12.59	13.17	14.48	15.48	14.78	15.86	16.16	16.26	17.33	16.37	17.18	17.44	16.20	17.76	17.80	18.55	Revenues per sh	21.25
	1.92	2.25	2.02	2.07	2.50	2.92	2.60	2.75	2.52	2.20	2.65	2.51	2.83	3.09	2.71	3.12	3.30	3.65	"Cash Flow" per sh	4.25
	1.09	1.35	1.22	1.17	1.51	1.83	1.45	1.53	1.31	.84	1.25	1.21	1.46	1.47	1.34	1.50	1.60	1.85	Earnings per sh A	2.35
	.93	.98	.99	1.02	1.04	1.06	1.07	1.09	1.10	1.12	1.12	1.12	1.13	1.14	1.16	1.16	1.17	1.18	Div'd Decl'd per sh B ■	1.21
	3.09	2.63	2.28	2.17	2.83	2.81	2.74	3.44	2.45	4.09	5.82	4.39	3.73	4.01	4.28	3.68	4.90	4.60	Cap'l Spending per sh	4.25
	10.61	10.90	11.58	11.72	12.22	13.00	13.38	13.43	12.60	12.95	13.12	14.44	15.56	15.79	16.16	16.50	19.05	19.75	Book Value per sh C	21.80
	11.38	11.38	12.49	12.54	12.62	12.62	12.62	12.84	15.15	15.18	15.18	16.83	16.37	16.38	20.66	20.67	21.25	21.75	Common Shs Outst'g D	25.00
	14.1	13.6	14.1	13.7	11.8	12.6	17.6	17.8	19.6	27.1	19.8	22.1	20.1	24.9	29.2	28.1	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	21.0
	.66	.80	.92	.92	.75	.73	.93	1.01	1.27	1.39	1.08	1.26	1.06	1.33	1.58	1.37			Relative P/E Ratio	1.40
	6.1%	5.2%	5.8%	6.4%	6.8%	4.6%	4.2%	4.0%	4.3%	4.4%	4.5%	4.2%	3.9%	3.1%	2.8%	3.0%			Avg Ann'l Div'd Yield	2.4%
							186.3	208.4	244.6	246.8	263.2	277.1	315.6	320.7	334.7	367.1	380	425	Revenues ($mill)	500
							18.4	19.9	20.0	14.4	19.1	19.4	26.0	27.2	25.6	31.2	34.0	40.0	Net Profit ($mill)	60.0
							36.4%	37.9%	42.3%	39.4%	39.7%	39.9%	39.6%	42.4%	37.4%	39.9%	41.0%	41.0%	Income Tax Rate	41.0%
							--	--	--	--	--	10.3%	3.2%	3.3%	10.6%	8.3%	6.0%	6.0%	AFUDC % to Net Profit	5.0%
							44.2%	46.9%	48.9%	50.3%	55.3%	50.2%	48.6%	48.3%	43.6%	42.9%	44.0%	45.5%	Long-Term Debt Ratio	47.5%
							54.7%	52.0%	50.2%	49.8%	44.0%	49.1%	50.8%	51.1%	55.9%	56.5%	55.5%	54.0%	Common Equity Ratio	52.0%
							308.8	333.8	388.8	402.7	453.1	498.4	565.9	568.1	870.1	974.9	730	800	Total Capital ($mill)	1050
							478.3	515.4	582.0	624.3	697.0	759.6	900.3	862.7	941.6	1010.2	1080	1140	Net Plant ($mill)	1300
							7.8%	7.8%	6.8%	6.3%	5.9%	5.6%	6.1%	6.3%	5.2%	5.5%	6.0%	6.5%	Return on Total Cap'l	7.0%
							10.7%	11.2%	10.0%	7.2%	9.4%	7.8%	8.9%	9.3%	8.8%	8.1%	8.5%	9.5%	Return on Shr. Equity	11.0%
							10.8%	11.4%	10.1%	7.2%	9.5%	7.9%	9.0%	9.3%	8.8%	8.1%	8.5%	9.5%	Return on Com Equity	11.0%
							2.8%	3.5%	1.8%	NMF	1.0%	.7%	2.1%	2.1%	1.0%	1.8%	2.0%	3.5%	Retained to Com Eq	5.5%
							74%	70%	82%	119%	90%	91%	77%	78%	88%	77%	73%	64%	All Div'ds to Net Prof	50%

CAPITAL STRUCTURE as of 3/31/08
Total Debt $306.2 mill. Due in 5 Yrs $18.2 mill.
LT Debt $288.5 mill. LT Interest $20.0 mill.

(LT Interest earned: 3.8x; total int. cov.: 3.6x)

Pension Assets-12/07 $65.3 mill.
Oblig. $105.8 mill.
Pfd Stock $3.6 mill. Pfd Div'd $.15 mill.
139,000 shares, 4.4% cumulative ($25 par).

Common Stock 20,716,702 shs.
as of 5/1/08
MARKET CAP: $700 million (Small Cap)

CURRENT POSITION ($MILL.)	2006	2007	3/31/08
Cash Assets	60.3	6.7	3.0
Other	49.3	53.3	48.0
Current Assets	109.6	60.0	51.0
Accts Payable	33.1	36.7	26.7
Debt Due	1.8	2.7	16.7
Other	36.3	30.3	35.3
Current Liab.	70.2	69.7	78.7
Fix. Chg. Cov.	317%	385%	375%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '05-'07 to '11-'13
Revenues	2.0%	0.5%	3.5%
"Cash Flow"	1.5%	4.0%	6.0%
Earnings	-0.5%	4.5%	8.5%
Dividends	1.0%	0.5%	1.0%
Book Value	3.5%	6.0%	4.0%

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	60.3	81.5	101.1	77.8	320.7
2006	65.2	81.1	107.6	80.6	334.7
2007	71.6	95.8	113.8	85.9	367.1
2008	72.9	95.1	120	92.0	380
2009	80.0	110	135	100	425

Calendar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2005	.03	.41	.71	.32	1.47
2006	.04	.31	.68	.31	1.34
2007	.07	.37	.67	.39	1.50
2008	.01	.40	.77	.42	1.60
2009	.10	.45	.85	.45	1.85

Calendar	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	.293	.293			

% TOT. RETURN 6/08

	THIS STOCK	VL ARITH. INDEX
1 yr.	-10.5	-18.0
3 yr.	-5.1	11.3
5 yr.	36.7	63.2

Target Price Range 2011 | 2012 | 2013

BUSINESS: California Water Service Group provides regulated and nonregulated water service to roughly 463,600 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 (6/04); Rio Grande Corp. (11/00). Revenue breakdown, '07: residential, 69%; business, 18%; public authorities, 5%; industrial, 5%; other, 3%. '07 reported depreciation rate: 2.2%. Has roughly 890 employees. Chairman: Robert W. Foy. President & CEO: Peter C. Nelson (4/08 Proxy). Inc.: Delaware. Address: 1720 North First Street, San Jose, California 95112-4598. Telephone: 408-367-8200. Internet: www.calwatergroup.com.

California Water Service Group barely eked out a gain in the first quarter. The water utility provider posted a profit of $0.01, a stark contrast to the $0.07 gain reported last year, and roughly a dime below our expectation. Revenue growth came in at a disappointing 2%, as the benefits of ongoing regulatory improvements were offset by unusually wet weather conditions. Higher administration costs were also a problem, cutting into operating margins.

Ironically, dryer weather conditions are threatening profitability over the next few quarters. California, where the company does most of its business, saw extremely hot temperatures in the second quarter, which evaporated most water supplies and caused a drought. That said, the company, at Governor Schwarzenegger's urging to be more conservative, has instituted the first stage of its plan aimed at reducing water usage by 10% for the roughly two million people it serves in its 24 operating districts. Although this does not seem to be in the company's best interest at first blush, we believe that it must play ball in order to continue receiving the backing of the current administration with general rate cases. As a result, we've lowered our full-year earnings outlook by 9%, to $1.60 a share.

An improved operating environment ought to clear the way for 16% share-net growth in 2009. It appears as though some of the regulatory agendas in the 2005 Water Action Plan will come to fruition, streamlining the regulatory process.

We recommend taking a pass on this issue. CWT shares have tumbled 18% since our April review and are ranked 3 (Average) for Timeliness. Meanwhile, the capital-intensive nature of the business will likely underpin the stock going forward, making it a below-average selection for the next 3 to 5 years. There are better income vehicles out there too.

We endorse the company's effort to expand its presence in other areas, though. Although regulatory backing in the Golden State has been much improved, diversification of the business model into other states could well improve the stock's appeal. This will be a difficult task, however, given CWT's financial constraints.

Andre J. Costanza *July 25, 2008*

(A) Basic EPS. Excl. nonrecurring gain (loss): '00, (7¢); '01, 4¢; 02, 8¢. Next earnings report due early Aug.

(B) Dividends historically paid in mid-Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.

(C) Incl. deferred charges. In '07: $69.7 mill., $3.37/sh.

(D) In millions, adjusted for split.

Company's Financial Strength	B++
Stock's Price Stability	65
Price Growth Persistence	75
Earnings Predictability	75

Missouri American Water Company
Authorized Returns on Common Equity and
Common Equity Ratios for Electric and Gas Distribution Companies
from January 2008 through June 2008

Date	Company	Type of Utility	State	Authorized Return on Common	Authorized Common Equity Ratio	Yield on Moody's A Rated Public Utility Bonds (1)	Spread
8-Jan-08	Northern States Power-Wisconsin	Electric	WI	10.75	52.51	5.97	4.78
8-Jan-08	Northern States Power- Wisconsin	Gas	WI	10.75	52.51	5.97	4.78
17-Jan-08	Wisconsin Electric Power	Electric	WI	10.75 (4)	54.36	5.97	4.78
17-Jan-08	Wisconsin Electric Power	Gas	WI	10.75	54.36	5.97	4.78
17-Jan-08	Wisconsin Gas	Gas	WI	10.75	46.64	5.97	4.78
28-Jan-08	Connecticut Light & Power	Electric	CT	9.40 (4,5)	48.99	6.16	3.24
30-Jan-08	Potomac Electric Power	Electric	DC	10.00 (5,7)	46.55	6.16	3.84
31-Jan-08	Central Vermont Public Service	Electric	VT	10.71 (2)	50.02	6.16	4.55
5-Feb-08	North Shore Gas	Gas	IL	9.99	56.00	6.16	3.83
5-Feb-08	Peoples Gas Light and Coke	Gas	IL	10.19	56.00	6.16	4.03
6-Feb-08	Interstate Power and Light	Electric	IA	11.70	NA	6.16	5.54
13-Feb-08	Indiana Gas	Gas	IN	10.20 (2)	48.99	6.16	4.04
29-Feb-08	Fitchburg Gas & Electric	Electric	MA	10.25 (5)	42.80	6.02	4.23
12-Mar-08	PacifiCorp	Electric	WY	10.25 (2,6)	50.80	6.02	4.23
25-Mar-08	Consolidated Edison of New York	Electric	NY	9.10 (5)	47.98	6.21	2.89
31-Mar-08	Virginia Electric Power	Electric	VA	12.12	NA	6.21	5.91
31-Mar-08	Avista Corp.	Gas	OR	10.00 (2,4)	50.00	6.21	3.79
23-Apr-08	MDU Resources	Electric	MT	10.25 (2,4)	50.67	6.21	4.04
24-Apr-08	Public Service Company of New Mexico	Electric	NM	10.10	51.37	6.21	3.89
1-May-08	Hawaiian Electric Company	Electric	HI	10.70 (2,3)	55.79	6.21	4.49
27-May-08	UNS Electric	Electric	AZ	10.00	48.85	6.29	3.71
28-May-08	Duke Energy	Gas	OH	10.50 (2)	55.76	6.29	4.21
10-Jun-08	Consumers Energy	Electric	MI	10.70 (3)	41.75	6.29	4.41
16-Jun-08	MidAmerican Energy	Electric	IA	11.70	NA	6.29	5.41
24-Jun-08	Almos Energy	Gas	TX	10.00	48.27	6.27	3.73
26-Jun-08	Appalachian Power	Electric	WV	10.50 (2)	41.54	6.27	4.23
27-Jun-08	Sierra Pacific Power	Electric	NV	10.60	43.49	6.27	4.33
	Average - All Cases			10.47 %	49.83 %	6.16 %	4.31 %
	Average - Litigated Cases			10.50 %	49.53 %	6.10 %	4.40 %

Prospective Yield on A Rated Public Utility Bonds (8) 6.59 %

Average Spread between Authorized Returns on Common Equity and the Yields on Moody's A-rated Public Utility Bonds for Litigated Cases 4.40

Indicated Common Equity Cost Rate 10.99 %

NA = Not Available

Notes:
(1) Actual A rated yield represents the yield of the previous month if the order was issued on or after the 21st of each month, or the yield of two months prior if the order was issued on or before the 20th of each month. For example, the yield for 1/17/08 is the A rated Public Utility yield for November 2007 and the yield for 1/28/08 is the A rated Public Utility yield for December 2007.
(2) Order followed full or partial stipulation settlement by the parties. Decision particulars not necessarily precedent- setting or specifically adopted by the regulatory body.
(3) Interim rate implemented prior to the issuance of final order, normally under bond and subject to refund.
(4) Rate change to be implemented in multiple steps.
(5) Rate change applicable to electric delivery only.
(6) Indicated rate increase to be phased-in over four years, with a 6.88% ROR authorized for 2006, 6.89% for 2007, 7.09% for 2008, and 7.48% for 2009.
(7) Rate increase effective 2/20/08.
(8) From page 1 of Schedule PMA-22.

Source of Information:
Major Rate Case Decisions - January 2008 - June 2008, Published by Regulatory Research Associates, Inc., An SNL Energy Company, July 2, 2008
Mergent Bond Record Monthly Update, September 2008, Vol. 75, No. 9

Missouri American Water Company
Percent Change in Gross Domestic Product for the Years 1998 - 2007

Code	Industry Title	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	'06-'07 % chg	'98-'07 % chg
Value added (Millions of dollars)													
VA	Gross domestic product	8746997	9268410	9816969	10127976	10469601	10950770	11685901	12433908	13194589	13841339	4.90%	5.23%
VA	Private industries	7652501	8127193	8614288	8869852	9131169	9542338	10194273	10861451	11556044	12103781	4.74%	5.23%
VA	Agriculture, forestry, fishing, and hunting	102395	93778	98019	97895	95444	114383	142160	128752	125398	161385	28.70%	5.19%
VA	Farms	78901	68774	71526	73134	70819	88267	114673	100856	95678	...		
VA	Forestry, fishing, and related activities	23494	25005	26494	24761	24625	26116	27487	27866	29720	...		
VA	Mining	74785	85397	121334	118737	106534	143345	171341	225674	262383	275764	5.10%	15.80%
VA	Oil and gas extraction	35173	47217	80990	72515	62753	93817	114315	149827	159440	...		
VA	Mining, except oil and gas	27031	27492	25992	27082	26834	27238	30333	37661	43492	...		
VA	Support activities for mining	12581	10688	13353	19140	16946	22290	26693	38386	59452	...		
VA	Utilities	180806	185417	189291	202285	207326	219876	240271	249498	273397	295920	8.24%	5.63%
VA	Construction	374387	405602	435914	469535	482277	466212	539216	607879	630031	562625	-10.70%	4.63%
VA	Manufacturing	1343850	1373112	1426218	1341330	1352840	1359327	1427887	1483900	1549725	1615777	4.26%	2.07%
VA	Durable goods	806865	820392	865268	778871	774784	771784	807475	840869	882845	926689	4.97%	1.55%
VA	Wood products	29358	31930	31437	31313	30421	32103	37477	37089	37448	...		
VA	Nonmetallic mineral products	42327	45103	45743	44862	45941	45134	49335	50733	54690	...		
VA	Primary metals	49422	47303	48193	41072	41943	38352	54533	57823	63390	...		
VA	Fabricated metal products	112705	116350	121886	112040	107403	106304	115193	123273	131083	...		
VA	Machinery	111472	105629	109296	103157	96525	94277	103446	114781	123204	...		
VA	Computer and electronic products	165573	162777	185583	138931	124152	124001	125461	132715	139708	...		
VA	Electrical equipment, appliances, and components	44735	48196	50580	49194	48785	48804	45659	43877	44986	...		
VA	Motor vehicles, bodies and trailers, and parts	108827	115397	118105	103684	118882	124093	106942	99093	96859	...		
VA	Other transportation equipment	63344	64253	64439	69175	69842	62352	70877	81959	90404	...		
VA	Furniture and related products	29101	30965	32712	30200	31061	33447	31196	30803	31385	...		
VA	Miscellaneous manufacturing	49902	52480	57515	57234	60029	62928	67357	68620	69590	...		
VA	Nondurable goods	536985	552720	560950	562459	577855	587533	620413	643031	666879	689087	3.33%	2.81%
VA	Food and beverage and tobacco products	137539	153557	154809	167129	172880	167940	181045	163701	160660	...		
VA	Textile mills and textile product mills	27127	28440	26453	22713	21948	23107	23119	21249	19457	...		
VA	Apparel and leather and allied products	26049	24739	25052	22796	20913	18259	17325	16549	16413	...		
VA	Paper products	52154	54150	55594	48948	50311	50310	50687	52628	52460	...		
VA	Printing and related support activities	46508	48183	49009	48868	45662	45249	45554	45226	46188	...		
VA	Petroleum and coal products	30643	22399	26248	33376	26245	39148	58621	77759	86341	...		
VA	Chemical products	153362	157142	157057	157227	174363	179485	198746	199751	213956	...		
VA	Plastics and rubber products	63603	66100	66728	63405	65534	64034	67314	66270	71404	...		
VA	Wholesale trade	542939	577698	591688	607078	615365	637005	686857	723740	762206	799053	4.83%	4.39%
VA	Retail trade	598633	635456	662430	691578	719578	751483	776919	812739	847985	886538	4.55%	4.46%
VA	Transportation and warehousing	273704	287410	301622	296948	304557	316576	344625	358527	385444	403480	4.68%	4.41%
VA	Air transportation	52501	54888	57678	48960	48336	51729	49142	45494	49985	...		
VA	Rail transportation	24531	24668	25530	25559	26191	28079	29835	33268	37496	...		
VA	Water transportation	6516	6413	7222	7417	6958	8739	9510	9228	9936	...		
VA	Truck transportation	86196	89836	92821	93315	95651	98360	111395	118640	124702	...		
VA	Transit and ground passenger transportation	13777	14400	14457	15083	15684	16066	17580	17371	18056	...		
VA	Pipeline transportation	9245	9243	8718	9166	11519	9858	10671	9121	11285	...		
VA	Other transportation and support activities	59852	64750	70225	71359	73378	75425	85337	90555	96863	...		
VA	Warehousing and storage	21085	23209	24971	25084	26841	28320	31155	34849	37123	...		
VA	Information	351573	439313	458304	476934	482981	489083	530619	570546	598770	645310	7.77%	6.01%
VA	Publishing industries (includes software)	96656	118664	116733	118671	118993	123546	130830	142237	150282	...		
VA	Motion picture and sound recording industries	25288	30107	32525	33568	38884	38282	40243	41955	43071	...		
VA	Broadcasting and telecommunications	229782	253834	271301	283196	278949	277937	302218	324154	336938	...		
VA	Information and data processing services	29847	36709	37746	41499	46156	49318	57328	62199	68481	...		
VA	Finance, insurance, real estate, rental, and leasing	1684608	1798398	1930952	2059197	2141869	2244618	2378770	2548952	2756560	2860733	3.78%	6.06%

Schedule PMA-19
Page 1 of 2

http://www.bea.gov/industry/gdpbyind_data.htm

Missouri American Water Company
Percent Change in Gross Domestic Product for the Years 1998 - 2007

Code	Industry Title	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	'06-'07 % chg	'98-'07 % chg
Value added (Millions of dollars)													
VA	Finance and insurance	641118	679842	740489	782627	822728	864623	907883	982497	1093733	1113599	1.82%	6.33%
VA	Federal Reserve banks, credit intermediation, and related activities	277742	308007	319025	360055	417443	445015	457792	506097	569742	...		
VA	Securities, commodity contracts, and investments	134070	139930	167713	170223	148390	145887	158266	183797	217772	...		
VA	Insurance carriers and related activities	217437	216867	238264	234393	237439	254999	267747	284457	280882	...		
VA	Funds, trusts, and other financial vehicles	11889	15038	15487	17956	19456	18723	24077	28146	25357	...		
VA	Real estate and rental and leasing	1043490	1118556	1190463	1276571	1319162	1379995	1470887	1568455	1662826	1747134	5.07%	5.89%
VA	Real estate	950295	1017949	1082118	1169699	1215893	1274230	1355737	1451295	1557072	...		
VA	Rental and leasing services and lessors of intangible assets	93192	100608	108345	106872	103269	105765	104149	105160	105754	...		
VA	Professional and business services	976166	1064543	1140848	1165880	1188985	1248930	1338190	1453237	1560905	1684211	7.90%	6.25%
VA	Professional, scientific, and technical services	565310	613936	675121	698825	705227	733125	792709	851918	925333	1003077	8.40%	6.58%
VA	Legal services	120893	127345	138126	145563	145752	154213	168743	176420	186785	...		
VA	Computer systems design and related services	92862	107792	125744	127084	127323	124333	125870	132959	146493	...		
VA	Miscellaneous professional, scientific, and technical services	351555	378798	413251	426198	432152	454580	497096	542540	592054	...		
VA	Management of companies and enterprises	156810	170458	183354	177636	183799	195502	210148	234882	242085	261705	8.10%	5.86%
VA	Administrative and waste management services	254047	280150	282373	289419	299958	320303	335335	366435	393477	419429	6.60%	5.73%
VA	Administrative and support services	231877	255407	257207	264073	273252	290899	304336	334397	359294	...		
VA	Waste management and remediation services	22170	24742	25166	25346	26705	29403	30999	32039	34183	...		
VA	Educational services, health care, and social assistance	601537	634488	678436	738327	799566	857265	916268	961534	1022312	1090737	6.69%	6.84%
VA	Educational services	67634	72774	79239	85094	93265	100096	108296	113940	120946	129411	7.00%	7.48%
VA	Health care and social assistance	533904	561713	599197	654233	706300	757169	807972	847594	901366	961326	6.65%	6.75%
VA	Ambulatory health care services	276083	288565	307624	338120	361803	385573	406661	433554	464519	...		
VA	Hospitals and nursing and residential care facilities	214539	225568	238552	258044	281113	303854	330483	340015	358319	...		
VA	Social assistance	43282	47583	53022	58069	63384	67841	70828	74026	78528	...		
VA	Arts, entertainment, recreation, accommodation, and food services	305973	327774	350119	361469	381505	398862	427462	448420	479826	505676	5.39%	5.74%
VA	Arts, entertainment, and recreation	76824	83801	88676	95654	102390	107188	113744	117448	126182	131132	3.92%	6.12%
VA	Performing arts, spectator sports, museums, and related activities	34634	37757	40012	42695	46731	49577	52713	55013	60390	...		
VA	Amusements, gambling, and recreation industries	42191	46044	48664	52959	55659	57611	61031	62434	65792	...		
VA	Accommodation and food services	229148	243973	261443	265805	279115	291674	313718	330972	353643	374545	5.91%	5.61%
VA	Accommodation	78072	84297	90672	87467	89100	90692	98428	105123	112358	...		
VA	Food services and drinking places	151077	159677	170771	178318	190015	200982	215290	225849	241285	...		
VA	Other services, except government	211145	217806	229112	241458	252521	265274	273890	288054	301103	316573	5.14%	4.60%
VA	Government	1094496	1141217	1202681	1258325	1338432	1418433	1491628	1568716	1649362	1740999	5.56%	5.29%
VA	Federal	352911	361880	378749	385701	417325	448589	479354	502637	526427	547052	3.92%	4.99%
VA	General government	293058	300904	315362	325665	352873	383934	412592	438912	458598	...		
VA	Government enterprises	59853	60956	63387	60036	64452	64655	66762	63725	67829	...		
VA	State and local	741585	779357	823932	872623	921107	969844	1012274	1066079	1122935	1193947	6.32%	5.43%
VA	General government	677223	711795	754226	800768	848938	896175	935844	987012	1042915	...		
VA	Government enterprises	64363	67562	69706	71854	72169	73668	76430	79068	80020	...		
VA	NIPA reconciliation item /1/	...	...	...	...	...	...	...	3741	-10717	-3441		
	Addenda:												
VA	Gross domestic product, NIPAs	...	...	...	...	...	...	...	12433908	13194689	13841339	4.90%	
VA	Less: Value added, all industries	...	...	...	...	...	...	...	12430167	13205406	13844780	4.84%	
VA	Equals: NIPA reconciliation item /1/	...	...	...	...	...	...	...	3741	-10717	-3441	-67.89%	
VA	Private goods-producing industries /3/	1895417	1958889	2081485	2027496	2036893	2113266	2280603	2446205	2567536	2615550	1.87%	3.64%
VA	Private services-producing industries /4/	5757084	6168304	6532802	6842155	7094276	7429072	7913670	8415246	8988508	9488231	5.56%	5.71%
VA	Information-communications-technology-producing industries /5/	385038	425942	465786	424164	416624	421198	440488	470110	504964	541732	7.28%	3.87%

Schedule PMA-19
Page 2 of 2

http://www.bea.gov/industry/gdpbyind_data.htm

Missouri American Water Company
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 (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.	Missouri American Water Company							
	a. Based Upon MoPSC Staff Witness Barnes' Four Comparable Water Utility Companies	$ 629.331		8 - 9	(3)	2.38%	(4)	
	b. Based Upon the MIEC Witness Janous' Water Proxy Group	$ 617.772		8 - 9	(3)	2.38%	(4)	
	c. Based Upon the MIEC Witness Janous' Gas Distribution Proxy Group	$ 561.730		8 - 9	(3)	2.38%	(4)	
2.	MoPSC Staff Witness Barnes' Four Comparable Water Utility Companies	$ 1,009.827	1.6 x	7 - 8	(5)	1.85%	(6)	0.53%
3.	MIEC Witness Janous' Water Proxy Group	$ 620.245	1.0 x	8 - 9	(7)	2.38%	(4)	0.00%
4.	MIEC Witness Janous' Gas Distribution Proxy Group	$ 1,645.486	2.9 x	6	(8)	1.60%	(9)	0.78%

Decile	Number of Companies	Recent Total Market Capitalization (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.

Missouri American Water Company
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 Schedule.

(2) Line No. 1a Column 4 – Line No. 2 Column 4 and Line No. 1b – Line No. 3 of Column 4 etc. For example, the 0.53% in Column 5, Line No. 2 is derived as follows 0.53% = 2.38% - 1.85%.

(3) With an estimated market capitalization of $629.331 million based upon MoPSC Witness Barnes' four comparable water utility companies, $617.772 million based upon MIEC Witness Janous' water proxy group, and $561.730 based upon MIEC Witness Janous' gas distribution proxy group, Missouri American Water Company falls between the 8th and 9th deciles of the NYSE/AMEX/NASDAQ which have an average market capitalization of $605.084 as shown in the table on the bottom half of page 1 of this Schedule.

(4) Average size premium applicable to the 8th and 9th deciles of the NYSE/AMEX/NASDAQ as shown in the table on the bottom half of page 1 of this Schedule.

(5) With an estimated market capitalization of $1,009.827 million, the based upon MoPSC Witness Barnes' four comparable water utility companies falls between the 7th and 8th deciles of the NYSE/AMEX/NASDAQ which have an average capitalization of $1,073.072 million as can be gleaned from the information shown in the table on the bottom half of page 1 of this Schedule.

(6) Average size premium applicable to the 7th and 8th 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 Schedule.

(7) With an estimated market capitalization of $620.245 million, MIEC Witness Janous' water proxy group falls between the 8th and 9th deciles of the NYSE/AMEX/NASDAQ which have an average market capitalization of $605.084 million as can be gleaned from the information shown in the table on the bottom half of page 1 of this Schedule.

(8) With an estimated market capitalization of $1,645.486 million, MIEC Witness Janous' gas distribution proxy group falls in the 6th decile of the NYSE/AMEX/NASDAQ which has an average market capitalization of $1,637.608 million as shown in the table on the bottom half of page 1 of this Schedule.

(9) Size premium applicable to the of the 6th and 7th deciles of the NYSE/AMEX/NASDAQ as can be gleaned from the information shown on page 3 of this Schedule.

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

Missouri American Water Company
Market Capitalization of Missouri American Water Company,
MoPSC Staff Witness Barnes' Four Comparable Water Utility Companies,
MIEC Witness Janous' Water Proxy Group,
and MIEC Witness Janous' Gas Distribution Proxy Group

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 (2)	5 Market-to-Book Ratio (3)	6 Market Capitalization (4) (millions)
Missouri American Water Company	NA	NA	$ 303.146 (5)	NA		
Based Upon MoPSC Staff Witness Barnes' Four Comparable Water Utility Companies					207.6 % (6)	$ 629.331 (7)
Based Upon the MIEC Witness Janous' Water Proxy Group					203.8 % (8)	$ 617.772 (9)
Based Upon the MIEC Witness Janous' Gas Distribution Proxy Group					185.3 % (10)	$ 561.730 (11)
Based Upon MoPSC Staff Witness Barnes' Four Comparable Water Utility Companies						
American States Water Co.	17.231	$ 17.534	$ 302.129	$ 35.283	201.2 %	$ 607.961
Aqua America, Inc.	133.400	7.319	976.298	18.119	247.5	2,417.075
California Water Service Group	20.685	18.664	385.709	37.398	200.4	772.826
Middlesex Water Company	13.246	10.054	133.178	18.228	181.3	241.448
Average	46.136	$ 13.393	$ 449.329	$ 27.257	207.6 %	$ 1,009.827
MIEC Witness Janous' Water Proxy Group						
American States Water Co.	17.231	$ 17.534	$ 302.129	$ 34.630	197.5 %	$ 596.710
Aqua America, Inc.	133.400	7.319	976.298	16.830	229.9	2,245.122
California Water Service Group	20.685	18.664	385.709	35.260	188.9	728.663
Connecticut Water Services, Inc.	8.377	11.849	100.096	24.260	203.0	203.222
Middlesex Water Company	13.246	10.054	133.178	18.060	179.6	239.223
S.J.W Corp.	18.982	12.903	236.934	29.030	225.0	533.049
Southwest Water Company	23.802	8.589	158.736	10.400	155.9	247.541
York Water Company	11.265	5.972	67.272	14.950	250.3	168.411
Average	30.764	$ 11.383	$ 295.044	$ 22.926	203.8 %	$ 620.245
MIEC Witness Janous' Gas Distribution Proxy Group						
AGL Resources, Inc.	76.400	$ 21.741	$ 1,661.000	$ 34.740	159.8 %	$ 2,654.136
Atmos Energy Corp.	89.997	22.607	2,032.463	27.190	120.3	2,444.671
Laclede Group, Inc.	21.646	19.788	428.325	39.920	201.7	864.108
New Jersey Resources Corp.	41.611	15.496	644.797	33.090	213.5	1,376.908
NICOR Inc.	45.130	20.944	945.200	40.500	193.4	1,827.785
Northwest Natural Gas Company	26.407	22.522	594.751	45.620	202.6	1,204.887
Piedmont Natural Gas Co., Inc.	74.208	11.837	878.374	26.500	223.9	1,966.512
South Jersey Industries, Inc.	29.607	16.249	481.080	37.870	233.1	1,121.217
Southwest Gas Corporation	42.806	22.980	983.673	30.000	130.5	1,284.180
WGL Holdings, Inc.	49.315	19.557	980.767	34.690	174.4	1,710.772
Average	49.704	$ 19.405	$ 983.045	$ 35.012	185.3 %	$ 1,845.488

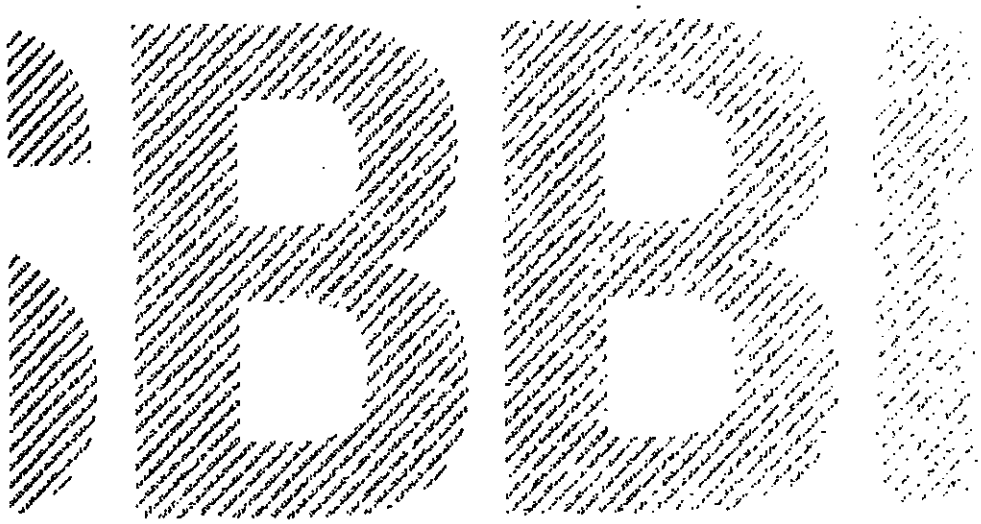
NA = Not Available

Notes:
(1) Column 3 / Column 1.
(2) The closing market prices for the proxy groups are the same as the average closing prices in Messrs. Barnes' Schedule 15 and Janous' Schedule BAJ-5.
(3) Column 4 / Column 2.
(4) Column 5 * Column 3.
(5) Company Provided.
(6) The market-to-book ratio of Missouri American Water Company is assumed to be equal to the average market-to-book ratio of the MoPSC Staff Witness Barnes' four comparable water utility companies.
(7) Missouri American Water Company's common stock, if traded, would trade at a market-to-book ratio equal to the average market-to-book ratio of the MoPSC Staff Witness Barnes' of four comparable water utility companies, 207.6%, and Missouri American Water Company's market capitalization would therefore have been $629.331 million. ($629.331 = $303.146 * 207.6%).
(8) The market-to-book ratio of Missouri American Water Company on is assumed to be equal to the average market-to-book ratio of the MIEC Witness Janous' water proxy group.
(9) Missouri American Water Company's common stock, if traded, would trade at a market-to-book ratio equal to the average market-to-book ratio of the MIEC Witness Janous' water proxy group, 203.8%, and Missouri American Water Company's market capitalization would therefore have been $617.772 million. ($617.77 = $303.146 * 203.8%).
(10) The market-to-book ratio of Missouri American Water Company on is assumed to be equal to the average market-to-book ratio of the MIEC Witness Janous' gas distribution proxy group.
(11) Missouri American Water Company's common stock, if traded, would trade at a market-to-book ratio equal to the average market-to-book ratio of the MIEC Witness Janous' gas distribution proxy group, 185.3%, and Missouri American Water Company's market capitalization would therefore have been $561.730 million. ($561.730 = $303.146 * 185.3%).

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

Ibbotson® SBBI®
2008 Valuation Yearbook

Market Results for
Stocks, Bonds, Bills, and Inflation
1926–2007



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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	7.58%	192	1,111,672,200	6.69%
4	4.73%	184	709,696,610	4.27%
5	3.24%	203	541,399,790	3.26%
6	2.38%	251	411,039,680	2.47%
7	1.75%	275	378,485,160	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	$472,618,672	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	2,411,784	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	$60,103	$13,795	$4,213	$13,800	$4,263	$43
1927	$64,820	$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	$5,973	$118
1930	$66,750	$12,918	$3,359	$13,050	$3,369	$30
1931	$42,607	$8,142	$1,927	$8,222	$1,844	$15
1932	$12,212	$2,208	$468	$2,223	$469	$19
1933	$40,298	$7,210	$1,830	$7,280	$1,875	$120
1934	$38,019	$6,638	$1,673	$6,669	$1,691	$69
1935	$37,631	$6,548	$1,350	$6,605	$1,383	$38
1936	$48,883	$11,505	$2,754	$11,526	$2,800	$88
1937	$51,750	$13,635	$3,539	$13,793	$3,563	$68
1938	$35,019	$8,372	$2,195	$8,400	$2,200	$80
1939	$35,409	$7,478	$1,819	$7,500	$1,854	$75
1940	$29,803	$7,980	$1,861	$8,007	$1,872	$51
1941	$30,362	$8,316	$2,088	$8,336	$2,087	$72
1942	$26,037	$6,868	$1,770	$6,870	$1,778	$82
1943	$42,721	$11,403	$3,847	$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	$508
1948	$67,238	$19,832	$7,329	$19,651	$7,348	$663
1949	$56,092	$14,549	$5,037	$14,577	$5,108	$378
1950	$66,143	$18,675	$6,225	$18,700	$6,243	$303
1951	$82,517	$22,750	$7,698	$22,880	$7,600	$668
1952	$95,636	$25,405	$8,428	$25,452	$8,480	$480
1953	$98,218	$26,340	$8,156	$25,374	$8,168	$459
1954	$125,834	$29,707	$8,488	$29,791	$8,502	$483
1955	$170,829	$41,445	$12,368	$41,681	$12,444	$553
1956	$183,792	$48,805	$13,524	$48,886	$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	$258,283	$64,110	$19,548	$64,221	$19,701	$1,804
1960	$252,292	$61,485	$19,293	$61,529	$19,344	$831
1961	$298,281	$77,983	$23,662	$77,996	$23,613	$2,455
1962	$250,786	$58,785	$18,952	$58,886	$18,868	$1,018
1963	$308,903	$71,846	$23,927	$71,971	$24,056	$296
1964	$349,675	$79,508	$25,595	$79,937	$25,607	$223
1965	$365,675	$84,600	$26,483	$85,065	$26,543	$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	$361
1967	$459,438	$118,988	$42,188	$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	$45,670	$147,810	$45,571	$865
1972	$557,181	$143,835	$46,726	$144,283	$46,757	$1,031
1973	$431,354	$96,699	$29,352	$96,710	$29,430	$561
1974	$356,876	$79,878	$23,356	$80,280	$23,400	$444
1975	$477,054	$102,313	$30,353	$103,283	$30,394	$540
1976	$566,296	$121,717	$34,864	$121,892	$34,901	$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	$948
1980	$782,195	$199,312	$50,496	$199,315	$50,544	$549
1981	$962,397	$264,690	$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	$315,965	$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	$898
1989	$2,145,847	$480,975	$100,285	$483,623	$100,384	$98
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	$698
1995	$2,789,938	$647,210	$155,386	$647,253	$155,532	$89
1996	$3,142,657	$751,316	$193,001	$751,880	$193,018	$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	$1,108,959	$265,738	$443
2002	$4,930,328	$1,116,525	$308,980	$1,124,331	$309,245	$501
2003	$4,744,560	$1,163,369	$328,060	$1,163,423	$329,529	$332
2004	$6,241,953	$1,607,854	$505,437	$1,607,931	$506,410	$1,393
2005	$7,187,244	$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	21.82	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	15.6	29.03	0.03
Micro-Cap, 9–10	12.6	18.6	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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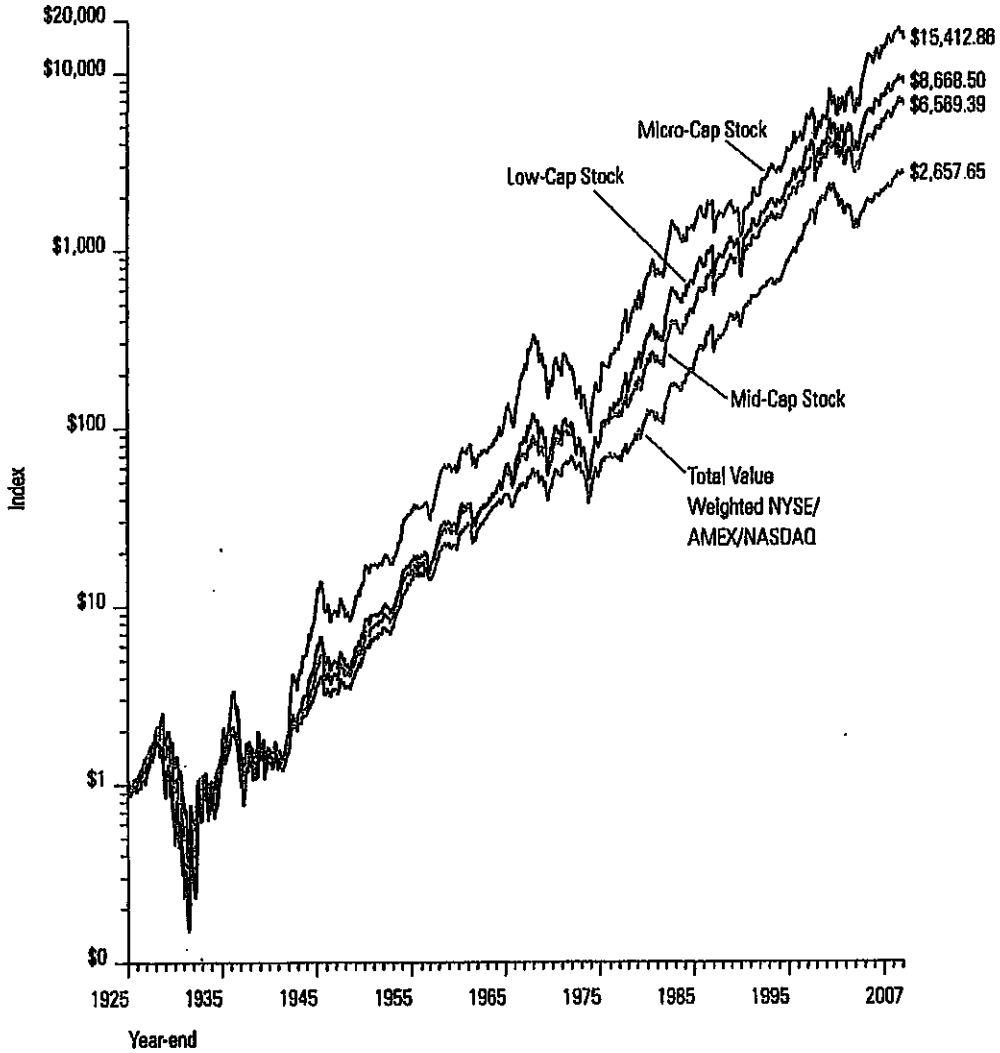
Graph 7-1[1]

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[3]
Long-Term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ
1926–2007

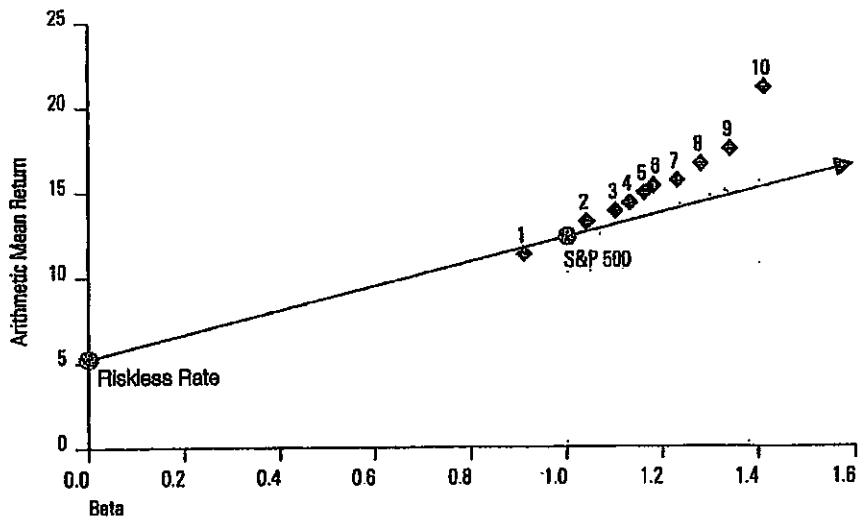
Decile	Beta*	Arithmetic Mean Return	Realized Return in Excess of Riskless Rate**	Estimated Return in Excess of Riskless Rate†	Size Premium (Return in Excess of CAPM)
1-Largest	0.91	11.31%	6.10%	6.45%	–0.34%
2	1.03	13.16%	7.95%	7.27%	0.68%
3	1.10	13.72%	8.51%	7.75%	0.76%
4	1.12	14.07%	8.86%	7.93%	0.93%
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	16.56%	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%	10.28%	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[4]
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.

‡ Source: ©2008 CRSP®, Center for Research in Security Prices. Graduate School of Business, The University of Chicago used with permission. All rights reserved. www.crsp.chicagogsb.edu

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%	9.16%	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%	8.64%	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 62-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

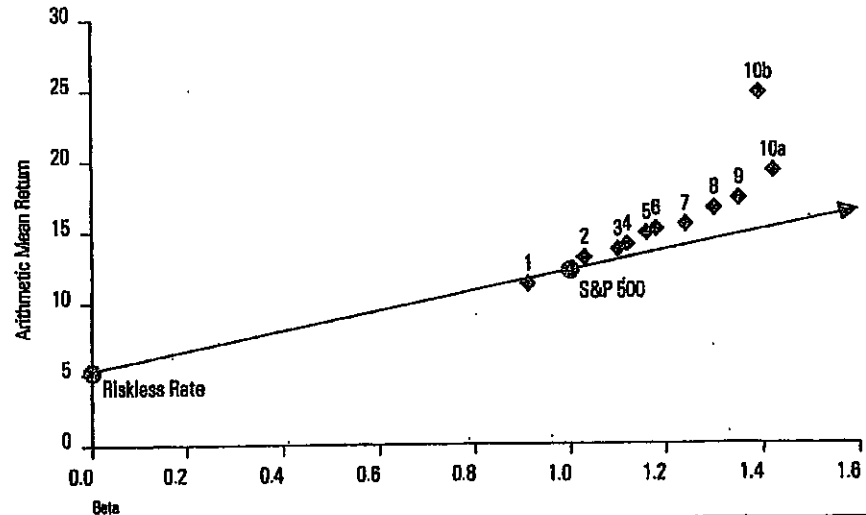


Table 7-8‡
Historical Number of Companies for NYSE/AMEX/NASDAQ Decile 10

Sept.	Number of Companies
1926	52*
1930	72
1940	78
1950	100
1960	109
1970	885
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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Missouri American Water Company
Market-to-Book Ratios, Earnings / Book Ratios and
Inflation for Standard & Poor's Industrial Index and
the Standard & Poor's 500 Composite Index
from 1947 through 2007

Year	Market-to-Book Ratio (1)		Earnings/ Book Ratio (2)				
	S&P Industrial Index (3)	S&P 500 Composite Index (3)	S&P Industrial Index (3)	S&P 500 Composite Index (3)	Inflation (4)	Earnings / Book Ratio - Net of Inflation	
1947	1.23 %	NA	13.0 %	NA	9.0 %	4.0 %	NA
1948	1.13	NA	17.3	NA	2.7	14.6	NA
1949	1.00	NA	16.3	NA	(1.8)	18.1	NA
1950	1.16	NA	18.3	NA	5.8	12.5	NA
1951	1.27	NA	14.4	NA	5.9	8.5	NA
1952	1.29	NA	12.7	NA	0.9	11.8	NA
1953	1.21	NA	12.7	NA	0.6	12.1	NA
1954	1.45	NA	13.5	NA	(0.5)	14.0	NA
1955	1.81	NA	16.0	NA	0.4	15.6	NA
1956	1.92	NA	13.7	NA	2.9	10.8	NA
1957	1.71	NA	12.5	NA	3.0	9.5	NA
1958	1.70	NA	9.8	NA	1.8	8.0	NA
1959	1.94	NA	11.2	NA	1.5	9.7	NA
1960	1.82	NA	10.3	NA	1.5	8.8	NA
1961	2.01	NA	9.8	NA	0.7	9.1	NA
1962	1.83	NA	10.9	NA	1.2	9.7	NA
1963	1.94	NA	11.4	NA	1.7	9.7	NA
1964	2.18	NA	12.3	NA	1.2	11.1	NA
1965	2.21	NA	13.2	NA	1.9	11.3	NA
1966	2.00	NA	13.2	NA	3.4	9.8	NA
1967	2.05	NA	12.1	NA	3.0	9.1	NA
1968	2.17	NA	12.6	NA	4.7	7.9	NA
1969	2.10	NA	12.1	NA	6.1	6.0	NA
1970	1.71	NA	10.4	NA	5.5	4.9	NA
1971	1.99	NA	11.2	NA	3.4	7.8	NA
1972	2.16	NA	12.0	NA	3.4	8.6	NA
1973	1.96	NA	14.6	NA	8.8	5.8	NA
1974	1.39	NA	14.8	NA	12.2	2.6	NA
1975	1.34	NA	12.3	NA	7.0	5.3	NA
1976	1.51	NA	14.5	NA	4.8	9.7	NA
1977	1.38	NA	14.6	NA	6.8	7.8	NA
1978	1.25	NA	15.3	NA	9.0	6.3	NA
1979	1.23	NA	17.2	NA	13.3	3.9	NA
1980	1.31	NA	15.6	NA	12.4	3.2	NA
1981	1.24	NA	14.9	NA	8.9	6.0	NA
1982	1.17	NA	11.3	NA	3.9	7.4	NA
1983	1.45	NA	12.2	NA	3.8	8.4	NA
1984	1.46	NA	14.6	NA	4.0	10.6	NA
1985	1.67	NA	12.2	NA	3.8	8.4	NA
1986	2.02	NA	11.5	NA	1.1	10.4	NA
1987	2.50	NA	15.7	NA	4.4	11.3	NA
1988	2.13	NA	19.0	NA	4.4	14.6	NA
1989	2.56	NA	18.5	NA	4.7	13.8	NA
1990	2.63	NA	16.3	NA	6.1	10.2	NA
1991	2.77	NA	10.8	NA	3.1	7.7	NA
1992	3.29	NA	13.0	NA	2.9	10.1	NA
1993	3.72	NA	15.7	NA	2.8	12.9	NA
1994	3.73	NA	23.0	NA	2.7	20.3	NA
1995	4.06	2.64	22.9	16.0 %	2.5	20.4	13.5 %
1996	4.79	3.00	24.8	16.8	3.3	21.5	13.5
1997	5.88	3.53	24.6	16.3	1.7	22.9	14.6
1998	7.13	4.16	21.3	14.5	1.6	19.7	12.9
1999	8.27	4.76	25.2	17.1	2.7	22.5	14.4
2000	7.51	4.51	23.9	16.2	3.4	20.5	12.8
2001	NA	3.50	NA	7.4	1.6	NA	5.8
2002	NA	2.93	NA	8.3	2.4	NA	5.9
2003	NA	2.78	NA	14.1	1.9	NA	12.2
2004	NA	2.91	NA	15.3	3.3	NA	12.0
2005	NA	2.78	NA	16.4	3.4	NA	13.0
2006	NA	2.75 (5)	NA	17.2	2.5	NA	14.7
2007	NA	2.77 (5)	NA	12.8	4.1	NA	8.7
Average	2.34 %	3.31 %	14.9 %	14.5 %	3.9 %	10.9 %	11.8 %

Notes: (1) Market-to-Book Ratio equals average of the high and low market price for the year divided by the average book value.

(2) Earnings/Book equals earnings per share for the year divided by the average book value.

(3) On January 2, 2001 Standard & Poor's released Global Industry Classification Standard (GICS) price indexes for all Standard & Poor's U.S. indexes. As a result, all S&P Indexes have been calculated with a common base of 100 at a start date of December 31, 1994. Also, the GICS industrial sector is not comparable to the former S&P Industrial Index and data for the former S&P Industrial Index has been discontinued.

(4) As measured by the Consumer Price Index (CPI).

(5) Ratios for 2006 / 2007 are based upon estimated book values using the actual average price and the estimated book value calculated by adding the 2006 earnings per share to the 2005 / 2006 book value per share and then subtracting the 2006 / 2007 dividends per share as provided by Standard & Poor's Statistical Record - Current Statistics, March 2008, p. 29.

Source of Information: Standard & Poor's Security Price Index Record, 2000 Edition, p. 40
Standard & Poor's Statistical Service, Current Statistics, January 2001, p. 36
Standard & Poor's Statistical Service, Current Statistics, June 2006, p. 29.
Standard & Poor's Statistical Service, Current Statistics, August 2007, p. 29.
Standard & Poor's Statistical Service, Current Statistics, March 2008, p. 29.
Standard & Poor's Compustat Services, Inc. PC Plus Research Insight Database
Ibbotson Associates, Stocks, Bonds, Bills and Inflation - Valuation Edition 2008 Yearbook, 2008, Table B-15, pp. 256-257.

Missouri American Water Company
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		MIEC Witness Janous' Water Proxy Group	The Proxy Group of MIEC Witness Janous' Ten Gas Distribution Companies
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	0.72 (2)	0.72 (2)
3.	Adjusted Prospective Yield on A Rated Public Utility Bonds	6.59 %	6.59 %
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	0.00 (3)	0.19 (4)
5.	Adjusted Prospective Bond Yield	6.59	6.78
6.	Equity Risk Premium (5)	5.37	5.02
7.	Risk Premium Derived Common Equity Cost Rate	11.96 %	11.80 %

Notes:
(1) Derived in Note (3) on page 5 of Schedule PMA-20.
(2) The average yield spread of A rated public utility bonds over Aaa rated corporate bonds of 0.72% from page 3 of this Schedule.
(3) No adjustment necessary as the average Moody's bond rating of the proxy group is A2 as shown on page 2 of this Schedule.
(4) Adjustment to reflect the A3 Moody's Bond Rating of the Proxy Group of Ten Gas Distribution Companies. As shown on page 2 of this schedule. The 18 basis point adjustment is derived by taking 1/3 of the spread between Baa and A2 Public Utility Bonds (1/3 * 0.58% = 0.19%)
(5) From page 4 of this Schedule.

Missouri American Water Company
Comparison of Bond Ratings, Business Risk and Financial Risk Profiles for
MIEC Witness Janous' Water Proxy Group
and MIEC Witness Janous' Gas Distribution Proxy Group

		Moody's Bond Rating September 2008		Standard & Poor's Bond Rating September 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)
MIEC Witness Janous' Water Proxy Group											
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
Connecticut Water Services		NR	--	AAA	1	A	6	Excellent	1	Intermediate	2
Middlesex Water Company		NR	--	A	6	A-	7	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+	4.8	A	6.0	Excellent	1.0	Intermediate	2.0
MIEC Witness Janous' Gas Distribution Proxy Group											
AGL Resources Inc. (8)		A3	7	A-	7	A	6	Excellent	1	Intermediate	2
Atmos Energy Corporation		Baa3	10	BBB	9	BBB	9	Excellent	1	Aggressive	3
Laclede Group, Inc.		A3	7	A	6	A	6	Excellent	1	Intermediate	2
New Jersey Resources Corp.		NR	--	A+	5	NR	--	NR	--	NR	--
Nicor Inc. (9)		A1	5	AA	3	AA	3	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	7.3	A	6.3	A	6.2	Excellent	1.1	Intermediate	2.3

Notes:

(1) From page 3 of Schedule PMA-11 accompanying Ms. Ahern's direct testimony.
(2) From Standard & Poor's Issuer Ranking: U.S. Investor-Owned Water Utilities, Strongest to Weakest, August 5, 2008 and U.S. Natural Gas Distributors and Integrated Gas Companies, Strongest to Weakest, August 7, 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 Infor Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

Moody's
for the Three Months Ending August 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
June-08	5.68	6.19	6.38	6.93 %					
July-08	5.67	6.13	6.40	6.97					
August-08	5.64	6.09	6.37	6.98					
Average of Last 3 Months	5.66 %	6.14 %	6.38 %	6.96 %	0.48 %	0.72 %	1.30 %	0.24 %	0.58 %

Notes: (1) All yields are distributed yields.

Source of Information: Mergent Bond Record, September 2008, Vol. 75, No. 9

Missouri American Water Company
Judgment of Equity Risk Premium for
MIEC Witness Janous' Water Proxy Group
and MIEC Witness Janous' Gas Distribution Proxy Group

Line No.		MIEC Witness Jenous' Water Proxy Group	MIEC Witness Janous' Gas Distribution Proxy Group
1.	Calculated equity risk premium based on the total market using the beta approach (1)	6.08	5.39
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	5.37 %	5.02 %

Notes: (1) From page 5 of this Schedule.
(2) From page 6 of this Schedule.

Missouri American Water Company
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
MIEC Witness Janous' Water Proxy Group
and MIEC Witness Janous' Gas Distribution Proxy Group

Line No.		MIEC Witness Janous' Water Proxy Group	MIEC Witness Janous' Gas Distribution Proxy Group
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)	18.15 %	18.15 %
5.	Prospective Yield an Aaa Rated Corporate Bonds (4)	(5.87)	(5.87)
6.	Forecasted Equity Risk Premium	12.28 %	12.28 %
7.	Conclusion of Equity Risk Premium (5)	6.20 %	6.20 %
8.	Adjusted Value Line Beta (6)	0.98	0.87
9.	Beta Adjusted Equity Risk Premium	6.08 %	5.39 %

Notes:

(1) From Ibbotson SBBI - 2008 Valuation Yearbook - Market Results for Stocks Bonds Bills and Inflation for 1926-2007 , Morningstar, Inc., 2008 Chicago, IL.

(2) From Moody's Industrial Manual and Mergent Bond Record Monthly Update.

(3) From page 3 of Schedule PMA-23.

(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 page 2 of Schedule 14). 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 12.28% from Line No. 6 ((6.20% + 12.28%) / 2 = 9.24%. 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.

(6) From page 8 of this Schedule.

Missouri American Water Company
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.

Missouri American Water Company
Value Line Adjusted Betas for
MIEC Witness Janous' Water Proxy Group
and MIEC Witness Janous' Gas Distribution Proxy Group

	Value Line Adjusted Beta (1)
MIEC Witness Janous' Water Proxy Group	
American States Water Co.	1.05
Aqua America, Inc.	0.95
California Water Service Group	1.15
Connecticut Water Service, Inc.	0.85
Middlesex Water Company	0.90
SJW Corp.	1.15
Southwest Water Company	1.05
York Water Company	0.50
Average	0.98
MIEC Witness Janous' Gas Distribution Proxy Group	
AGL Resources, Inc.	0.85
Atmos Energy Corp.	0.85
Laclede Group, Inc.	0.90
New Jersey Resources Corp.	0.85
NICOR Inc.	0.95
Northwest Natural Gas Company	0.80
Piedmont Natural Gas Co., Inc.	0.85
South Jersey Industries, Inc.	0.85
Southwest Gas Corporation	0.90
WGL Holdings, Inc.	0.90
Average	0.87

(1) From MIEC Witness Janous' Schedule BAJ-11.

Missouri American Water Company
Indicated Common Equity Cost Rate Through Use
of the Capital Asset Pricing Model for
MIEC Witness Janous' Water Proxy Group
and MIEC Witness Janous' Gas Distribution Proxy Group

Line No.		MIEC Witness Janous' Water Proxy Group	MIEC Witness Janous' Gas Distribution Proxy Group
1.	Traditional Capital Asset Pricing Model (1)	11.85 %	11.28 %
2.	Empirical Capital Asset Pricing Model (1)	11.94 %	11.51 %
3.	Conclusion	11.90 %	11.40 %

Notes: (1) From page 2 of this Schedule.

Missouri American Water Company
Indicated Common Equity Cost Rate Through Use
of the Capital Asset Pricing Model for
MIEC Witness Janous' Water Proxy Group
and MIEC Witness Janous' Gas Distribution Proxy Group

	1	2	3
	Value Line Adjusted Beta (1)	Company-Specific Risk Premium Based on Market Premium of 7.10% (2)	CAPM Result Including Risk-Free Rate of 5.10% (3)
Traditional Capital Asset Pricing Model (4)			
MIEC Witness Janous' Water Proxy Group			
American States Water Co.	1.05	7.46 %	12.56 %
Aqua America, Inc.	0.95	6.75	11.85
California Water Service Group	1.15	8.17	13.27
Connecticut Water Serive Corp.	0.85	6.04	11.14
Middlesex Water Company	0.90	6.39	11.49
SJW Corp.	1.15	8.17	13.27
Southwest Water Company	1.05	7.46	12.56
York Water Company	0.50	3.55	8.65
Average	0.95	6.75 %	11.85 %
MIEC Witness Janous' Gas Distribution Proxy Group			
AGL Resources, Inc.	0.85	6.04 %	11.14 %
Atmos Energy Corp.	0.85	6.04	11.14
Laclede Group, Inc.	0.90	6.39	11.49
New Jersey Resources Corp.	0.85	6.04	11.14
NICOR Inc.	0.95	6.75	11.85
Northwest Natural Gas Company	0.80	5.68	10.78
Piedmont Natural Gas Co., Inc.	0.85	6.04	11.14
South Jersey Industries, Inc.	0.85	6.04	11.14
Southwest Gas Corporation	0.90	6.39	11.49
WGL Holdings, Inc.	0.90	6.39	11.49
Average	0.87	6.18 %	11.28 %
Empirical Capital Asset Pricing Model (5)			
MIEC Witness Janous' Water Proxy Group			
American States Water Co.	1.05	7.37 %	12.47 %
Aqua America, Inc.	0.95	6.83	11.93
California Water Service Group	1.15	7.90	13.00
Connecticut Water Serive Corp.	0.85	6.30	11.40
Middlesex Water Company	0.90	6.57	11.67
SJW Corp.	1.15	7.90	13.00
Southwest Water Company	1.05	7.37	12.47
York Water Company	0.50	4.44	9.54
Average	0.95	6.84 %	11.94 %
MIEC Witness Janous' Gas Distribution Proxy Group			
AGL Resources, Inc.	0.85	6.30 %	11.40
Atmos Energy Corp.	0.85	6.30	11.40
Laclede Group, Inc.	0.90	6.57	11.67
New Jersey Resources Corp.	0.85	6.30	11.40
NICOR Inc.	0.95	6.83	11.93
Northwest Natural Gas Company	0.80	6.04	11.14
Piedmont Natural Gas Co., Inc.	0.85	6.30	11.40
South Jersey Industries, Inc.	0.85	6.30	11.40
Southwest Gas Corporation	0.90	6.57	11.67
WGL Holdings, Inc.	0.90	6.57	11.67
Average	0.87	6.41 %	11.51 %

See page 3 for notes.

Missouri American Water Company
Development of the Market-Required Rate of Return on Common Equity Using
the Capital Asset Pricing Model for
MIEC Witness Janous' Water Proxy Group
and MIEC Witness Janous' Gas Distribution Proxy Group
Adjusted to Reflect a Forecasted Risk-Free Rate and Market Return

Notes:

(1) From the MIEC Witness Janous' Schedule BAJ-11.

(2) 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 (September 19, 2008), Value Line Summary & Index, a forecasted 3-5 year total annual market return of 18.15% 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 80% produces a four-year average annual return of 15.83% ($(1.80^{25}) - 1$). When the average annual forecasted dividend yield of 2.32% is added, a total average market return of 18.15% (2.32% + 15.83%) is derived.

The 3-month and spot forecasted total market return of 18.15% minus the risk-free rate of 5.10% is 13.05% (18.15% - 5.10%). 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 page 20 of this Exhibit.

(3) From the MIEC Witness Janous' Schedule BAJ-12.

(4) The traditional Capital Asset Pricing Model (CAPM) is applied using the following 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

(5) The empirical CAPM is applied using the foll