Q. PLEASE STATE YOUR FULL NAME, ADDRESS, AND OCCUPATION.

A. My name is J. Randall Woolridge and my business address is 120 Haymaker Circle, State College, PA 16801. I am a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration at the University Park Campus of the Pennsylvania State University. I am also the Director of the Smeal College Trading Room and President of the Nittany Lion Fund, LLC. A summary of my educational background, research, and related business experience is provided in Appendix A.

I. SUBJECT OF TESTIMONY AND SUMMARY OF RECOMMENDATIONS

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I have been asked by the Utah Committee on Consumer Services (CCS) to provide an opinion as to the overall fair rate of return or cost of capital for Questar Gas Company ("QGC" or "Company") and to evaluate QGC's rate of return testimony in this proceeding.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. First I will address the critical analysis of capital costs in today's market. Then

turn my attention to QGC's comparable companies. Next I'll focus on the Company's capital structure. I'll follow that by a discussion of the cost of equity capital. Then I'll turn to the shortfalls with the company's rate of return analysis. Finally I'll conclude with my summary. I have a table of contents just after the title page for a more detailed outline.

Q. PLEASE REVIEW YOUR RECOMMENDATIONS REGARDING THE APPROPRIATE RATE OF RETURN FOR QGC.

A. My analysis suggests that the Company's proposed capital structure is consistent with the average capital structure ratios of my proxy group of gas distribution companies. I have also adopted the Company's long-term debt cost rate. I have applied the Discounted Cash Flow Model ("DCF") and the Capital Asset Pricing Model ("CAPM") to a group of publicly-held gas distribution companies. My DCF analysis begins on page 20 and has my recommendation on page 31. My CAPM recommendation immediately follows and concludes on page 53. My analysis indicates an equity cost rate of 9.0% is appropriate for the Company. This produces an overall rate for return of 7.84% for QGC. These findings are summarized in Exhibit JRW-1.

Q. PLEASE SUMMARIZE THE PRIMARY ISSUES REGARGING RATE OF RETURN IN THIS PROCEEDING.

A. QGC witness David M. Curtis provides the Company's proposed capital structure and long-term debt cost rate and QGC witness Robert B. Hevert estimates the Company's equity cost rate. The major area of contention in this

case is the proposed equity cost rate for QGC. Mr. Hevert's equity cost rate estimate is 11.25% whereas my analysis indicates an equity cost rate of 9.0% is appropriate for QGC. My 9.0% recommendation is at the upper end of my equity cost rate range for the Company and presumes that the proposed Conservation Enabling Tariff (CET) is eliminated. If the CET remains in effect, a lower equity cost rate would be appropriate. This issue is addressed later in my testimony.

Both Mr. Hevert and myself have applied the DCF and the CAPM approaches to a group of publicly-held gas distribution companies. The only difference in the two groups is that I have included WGL Holdings in my proxy group whereas Mr. Hevert has arbitrarily eliminated this company. Mr. Hevert has also use a Risk Premium approach as an alternative methodology to estimate an equity cost rate for QGC.

As discussed in my testimony, my equity cost rate recommendation is consistent with the current economic environment. Long-term capital costs are at historical low levels. The yields on long-term Treasury bonds have been in the 4-5 percent range for several years. Prior to this cyclical decline in rates in 2002, these yields had not been this low over an extended period of time since the 1960s. Long-term capital costs are also low due to the decline in the equity risk premium and the *Jobs and Growth Tax Relief Reconciliation Act of 2003* which reduced the tax rates on dividend income and capital gains.

The most significant areas of disagreement between Mr. Hevert and me with respect to the cost of equity are (1) the relevance of the DCF model

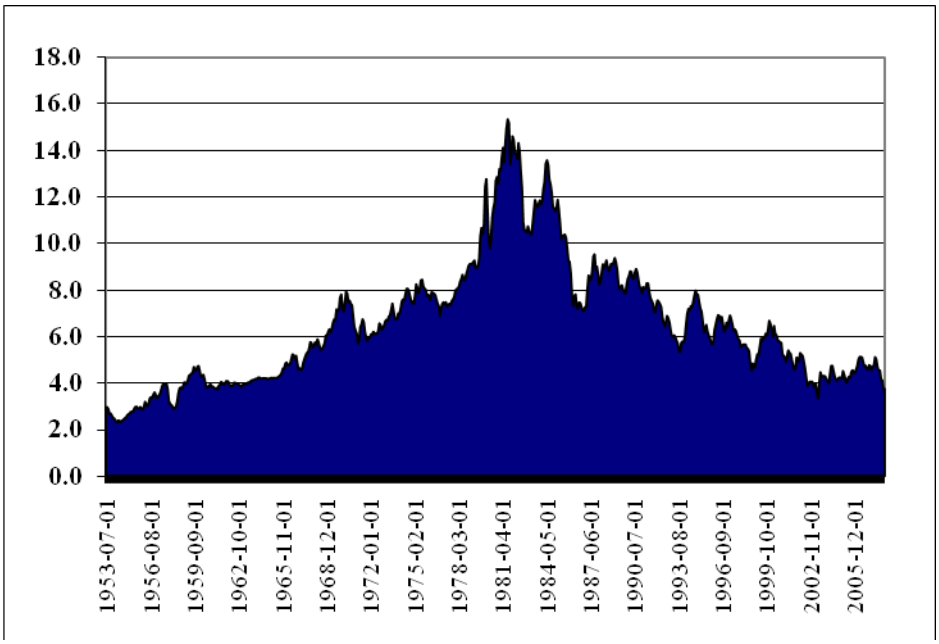
and its results in determining an equity cost rate for the Company, and (2) the measurement and magnitude of the equity risk premium, and (3) the need for the market value – book value adjustment. Mr. Hevert believes that the DCF model produces equity cost rate results that are too low and therefore have pretty much ignored his DCF results. On the other hand, I believe that the DCF model provides a good indication of equity cost rates for public utilities and have relied on these results in this proceeding. With respect to the measurement of an equity risk premium, Mr. Hevert uses historical stock and bond returns to arrive at an equity risk premium for both his CAPM and RP methodologies. As I discuss in my testimony, there are three procedures for estimating an equity risk premium – averages of historical returns, surveys of market professionals, and models of expected market returns. I provide evidence that risk premiums based on historic stock and bond returns are subject to a myriad of empirical errors which results in upwardly biased measures of expected equity risk premiums. I employ an equity risk premium which (1) uses all three approaches to estimating an equity premium and (2) employs the results of many studies of the equity risk premium. As I detail later in my testimony, my equity risk premium is consistent with the equity risk premiums (1) advanced in recent academic studies by leading finance scholars, (2) employed by leading investment banks and management consulting firms, and (3) developed in surveys of financial forecasters and corporate CFOs.

II. CAPITAL COSTS IN TODAY'S MARKETS

Q. PLEASE DISCUSS CAPITAL COSTS IN TODAY'S MARKETS.

A. Long-term capital cost rates for U.S. corporations are currently at their lowest levels in more than four decades. Corporate capital cost rates are determined by the level of interest rates and the risk premium demanded by investors to buy the debt and equity capital of corporate issuers. The base level of long-term interest rates in the US economy is indicated by the rates on ten-year U.S. Treasury bonds. The rates are provided in the graph below from 1953 to the present. As indicated, prior to the decline in rates that began in the year 2000, the 10-year Treasury yield had not consistently been in the 4-5 percent range over an extended period of time since the 1960s.

Yields on Ten-Year Treasury Bonds
1953-Present



Source: http://research.stlouisfed.org/fred2/series/GS10?cid=115

The second base component of the corporate capital cost rates is the risk premium. The risk premium is the return premium required by investors to purchase riskier securities. The equity risk premium is the return premium required to purchase stocks as opposed to bonds. Since the equity risk premium is not readily observable in the markets (as are bond risk premiums), and there are alternative approaches to estimating the equity premium, it is the subject of much debate. One way to estimate the equity risk premium is to compare the mean returns on bonds and stocks over long historical periods. Measured in this manner, the equity risk premium has been in the 5-7 percent range. But recent studies by leading academics indicate the forward-looking equity risk premium is in the 3-4 percent range. These authors indicate that historical equity risk premiums are upwardly biased measures of expected equity risk premiums. Jeremy Siegel, a Wharton finance professor and author of the book *Stocks for the Long Term*, published a study entitled "The Shrinking Equity Risk Premium."[1] He concludes:

> The degree of the equity risk premium calculated from data estimated from 1926 is unlikely to persist in the future. The real return on fixed-income assets is likely to be significantly higher than estimated on earlier data. This is confirmed by the yields available on Treasury index-linked securities, which currently exceed 4%. Furthermore, despite the acceleration in earnings growth, the return on equities is likely to fall from its historical level due to the very high level of equity prices relative to fundamentals.

[1] Jeremy J. Siegel, "The Shrinking Equity Risk Premium," *The Journal of Portfolio Management* (Fall, 1999), p. 15.

Even Alan Greenspan, the former Chairman of the Federal Reserve Board, indicated in an October 14, 1999, speech on financial risk that the fact that equity risk premiums have declined during the past decade is "not in dispute." His assessment focused on the relationship between information availability and equity risk premiums.

> There can be little doubt that the dramatic improvements in information technology in recent years have altered our approach to risk. Some analysts perceive that information technology has permanently lowered equity premiums and, hence, permanently raised the prices of the collateral that underlies all financial assets.
>
> The reason, of course, is that information is critical to the evaluation of risk. The less that is known about the current state of a market or a venture, the less the ability to project future outcomes and, hence, the more those potential outcomes will be discounted.
>
> The rise in the availability of real-time information has reduced the uncertainties and thereby lowered the variances that we employ to guide portfolio decisions. At least part of the observed fall in equity premiums in our economy and others over the past five years does not appear to be the result of ephemeral changes in perceptions. It is presumably the result of a permanent technology-driven increase in information availability, which by definition reduces uncertainty and therefore risk premiums. This decline is most evident in equity risk premiums. It is less clear in the corporate bond market, where relative supplies of corporate and Treasury bonds and other factors we cannot easily identify have outweighed the effects of more readily available information about borrowers.[2]

In sum, the relatively low interest rates in today's markets as well as the lower risk premiums required by investors indicate that capital costs for

[2] Alan Greenspan, "Measuring Financial Risk in the Twenty-First Century," Office of the Comptroller of the Currency Conference, October 14, 1999.

U.S. companies are the lowest in decades. In addition, the 2003 tax law further lowered capital cost rates for companies, as further set forth below.

Q. HOW DID THE *JOBS AND GROWTH TAX RELIEF RECONCILIATION ACT OF 2003* REDUCE THE COST OF CAPITAL FOR COMPANIES?

A. On May 28, 2003, President Bush signed the *Jobs and Growth Tax Relief Reconciliation Act of 2003.* The primary purpose of this legislation was to reduce taxes to enhance economic growth. A primary component of the new tax law was a significant reduction in the taxation of corporate dividends for individuals. Dividends have been described as "double-taxed." First, corporations pay taxes on the income they earn before they pay dividends to investors, then investors pay taxes on the dividends that they receive from corporations. One of the implications of the double taxation of dividends is that, all else equal, it results in a higher cost of raising capital for corporations. The tax legislation reduced the effect of double taxation of dividends by lowering the tax rate on dividends from the 30 percent range (the average tax bracket for individuals) to 15 percent.

Overall, the 2003 tax law reduced the pre-tax return requirements of investors, thereby reducing corporations' cost of equity capital. This is because the reduction in the taxation of dividends for individuals enhances their after-tax returns and thereby reduces their pre-tax required returns. This reduction in pre-tax required returns (due to the lower tax on dividends)

effectively reduces the cost of equity capital for companies. The 2003 tax law also reduced the tax rate on long-term capital gains from 20% to 15%. The magnitude of the reduction in corporate equity cost rates is debatable, but it could be as large as 100 basis points.

III. COMPARISON GROUP SELECTION

Q. PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR RATE OF RETURN RECOMMENDATION FOR QGC.

A. To develop a fair rate of return recommendation for QGC, I have evaluated the return requirements of investors on the common stock of a proxy group of publicly-held gas distribution companies.

Q. PLEASE DESCRIBE YOUR PROXY GROUP OF GAS DISTRIBUTION COMPANIES.

A. I am using Mr. Hevert's entire group of nine gas distribution companies. These companies include the group of eight companies that he actually uses in his equity cost rate study, as well as WGL Holdings, Inc., which he arbitrarily eliminates. Summary financial statistics for the proxy group of nine companies are listed in Exhibit JRW-2. The operating revenues for the group range from $974.2M for South jersey Industries to $5,953.3M for Atmos Energy, with an average of $2,575.5M. The average net plant for the group is $2,291.8, and on average the group receives 69% of revenues from regulated gas operations. The group's current average earned return on common equity and market-to-book

ratio are 12.3% and 1.79, respectively.

IV. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES

Q. PLEASE DISCUSS THE RECOMMENDED CAPITAL STRUCTURE OF THE COMPANY.

A. The Company's recommended capital structure is provided by QGC witness David M. Curtis. As shown in Panel A of page 1 of Exhibit JRW-3, this capital structure is for test year-end as of December 31, 2008. The recommended capital structure has a long-term debt ratio of 47.6% and a common equity ratio of 52.4%. In arriving at the recommended capitalization, Mr. Curtis has included a forecast for net income and dividends for 2008, the repayment of medium-term notes and a bank loan with a $135M, 30-year bond issue, and an equity infusion of $30M from Questar Corporation. The recommended capital structure includes no short-term debt.

Panel B of page 1 of Exhibit JRW-3 shows QGC's December 31, 2008 year-end capital structure including the Company's projected short-term debt balance of $92M. This capitalization provides for a common equity ratio of 46.52%. Panel C of page 1 of Exhibit JRW-3 provides the average capital structure ratios for the nine gas companies in the proxy group over the past four quarters. The average common equity ratio, including short-term debt, is 51.23%.

Q. PLEASE SUMMARIZE YOUR RECOMMENDED CAPITAL STRUCTURE AND SENIOR CAPITAL COST RATES.

A. My analysis comparing the Company's recommended capital structure and the capital structures of the proxy group of nine gas companies indicates that the Company's recommended capital structure is reasonable. I have also used the Company's long-term debt cost of 6.56%.

V. THE COST OF COMMON EQUITY CAPITAL

A. Overview

Q. WHY MUST AN OVERALL COST OF CAPITAL OR FAIR RATE OF RETURN BE ESTABLISHED FOR A PUBLIC UTILITY?

A. In a competitive industry, the return on a firm's common equity capital is determined through the competitive market for its goods and services. Due to the capital requirements needed to provide utility services, however, and to the economic benefit to society from avoiding duplication of these services, some public utilities are monopolies. It is not appropriate to permit monopoly utilities to set their own prices because of the lack of competition and the essential nature of the services. Thus, regulation seeks to establish prices which are fair to consumers and at the same time are sufficient to meet the operating and capital costs of the utility, i.e., provide an adequate return on capital to attract investors.

Q. PLEASE PROVIDE AN OVERVIEW OF THE COST OF CAPITAL IN THE CONTEXT OF THE THEORY OF THE FIRM.

A. The total cost of operating a business includes the cost of capital. The cost of common equity capital is the expected return on a firm's common stock that the marginal investor would deem sufficient to compensate for risk and the time value of money. In equilibrium, the expected and required rates of return on a company's common stock are equal.

Normative economic models of the firm, developed under very restrictive assumptions, provide insight into the relationship between firm performance or profitability, capital costs, and the value of the firm. Under the economist's ideal model of perfect competition where entry and exit is costless, products are undifferentiated, and there are increasing marginal costs of production, firms produce up to the point where price equals marginal cost. Over time, a long-run equilibrium is established where price equals average cost, including the firm's capital costs. In equilibrium, total revenues equal total costs, and because capital costs represent investors' required return on the firm's capital, actual returns equal required returns and the market value and the book value of the firm's securities must be equal.

In the real world, firms can achieve competitive advantage due to product market imperfections. Most notably, companies can gain competitive advantage through product differentiation (adding real or perceived value to products) and by achieving economies of scale (decreasing marginal costs of production). Competitive advantage allows firms to price products above

average cost and thereby earn accounting profits greater than those required to cover capital costs. When these profits are in excess of that required by investors, or when a firm earns a return on equity in excess of its cost of equity, investors respond by valuing the firm's equity in excess of its book value.

James M. McTaggart, founder of the international management consulting firm Marakon Associates, has described this essential relationship between the return on equity, the cost of equity, and the market-to-book ratio in the following manner:[3]

> Fundamentally, the value of a company is determined by the cash flow it generates over time for its owners, and the minimum acceptable rate of return required by capital investors. This "cost of equity capital" is used to discount the expected equity cash flow, converting it to a present value. The cash flow is, in turn, produced by the interaction of a company's return on equity and the annual rate of equity growth. High return on equity (ROE) companies in low-growth markets, such as Kellogg, are prodigious generators of cash flow, while low ROE companies in high-growth markets, such as Texas Instruments, barely generate enough cash flow to finance growth.
>
> A company's ROE over time, relative to its cost of equity, also determines whether it is worth more or less than its book value. If its ROE is consistently greater than the cost of equity capital (the investor's minimum acceptable return), the business is economically profitable and its market value will exceed book value. If, however, the business earns an ROE consistently less than its cost of equity, it is economically unprofitable and its market value will be less than book value.

[3] James M. McTaggart, "The Ultimate Poison Pill: Closing the Value Gap," *Commentary* (Spring 1988), p. 2.

As such, the relationship between a firm's return on equity, cost of equity, and market-to-book ratio is relatively straightforward. A firm which earns a return on equity above its cost of equity will see its common stock sell at a price above its book value. Conversely, a firm which earns a return on equity below its cost of equity will see its common stock sell at a price below its book value.

Q. PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE RELATIONSHIP BETWEEN RETURN ON EQUITY AND MARKET-TO-BOOK RATIOS.

A. This relationship is discussed in a classic Harvard Business School case study entitled "A Note on Value Drivers." On page 2 of that case study, the author describes the relationship very succinctly:[4]

> For a given industry, more profitable firms – those able to generate higher returns per dollar of equity – should have higher market-to-book ratios. Conversely, firms which are unable to generate returns in excess of their cost of equity should sell for less than book value.

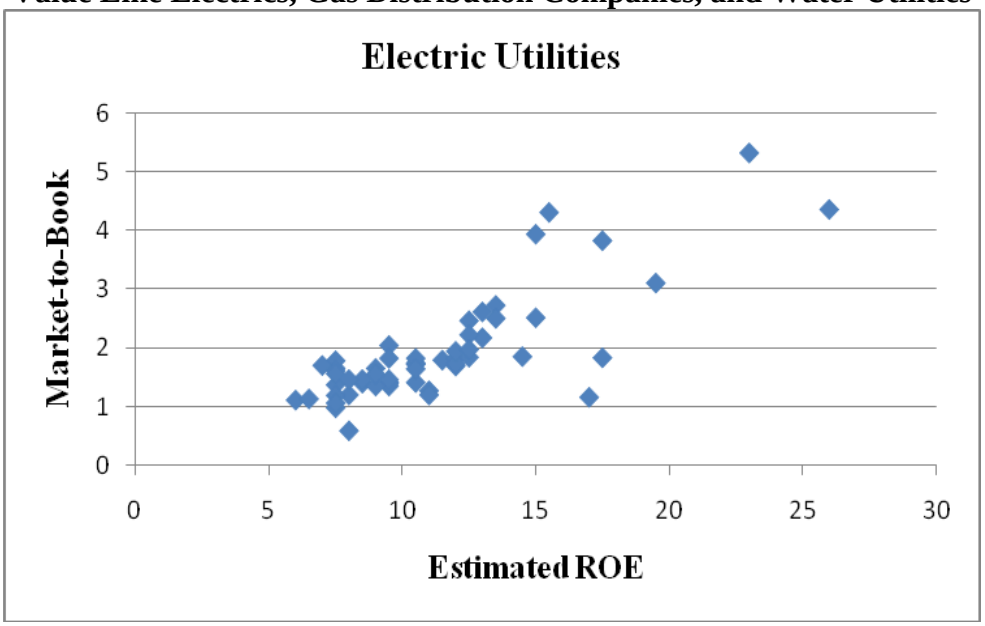
Profitability	*Value*
If ROE > K	*then Market/Book > 1*
If ROE = K	*then Market/Book =1*
If ROE < K	*then Market/Book < 1*

To assess the relationship by industry, as suggested above, I have performed a regression study between estimated return on equity and market-to-book ratios using natural gas distribution, electric utility and water utility companies. I used all companies in these three industries which are covered

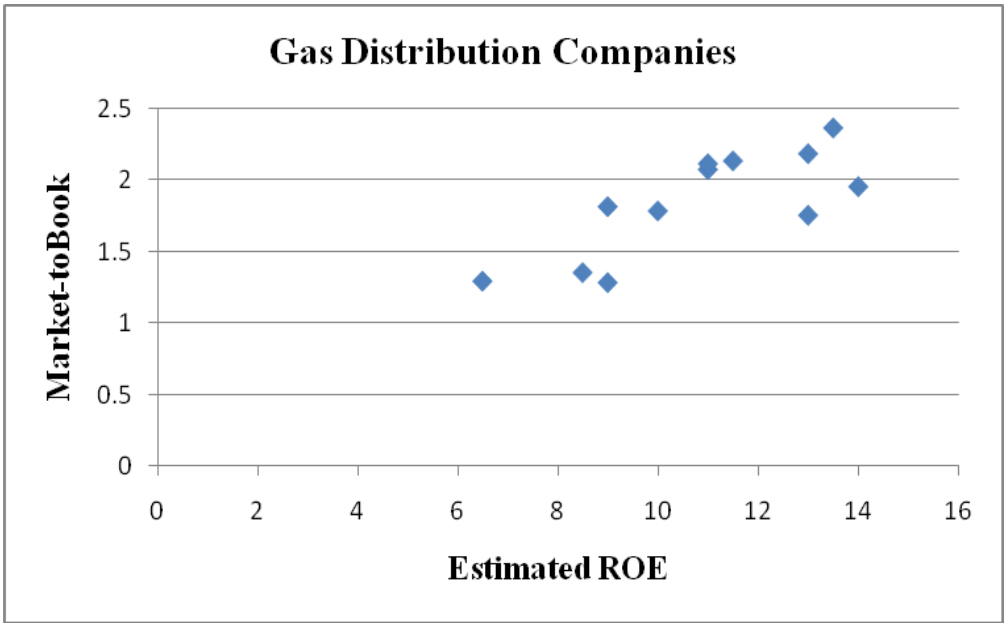
[4] Benjamin Esty, "A Note on Value Drivers," Harvard Business School, Case No. 9-297-082, April 7, 1997.

by *Value Line* and who have estimated return on equity and market-to-book ratio data. The results are presented below.

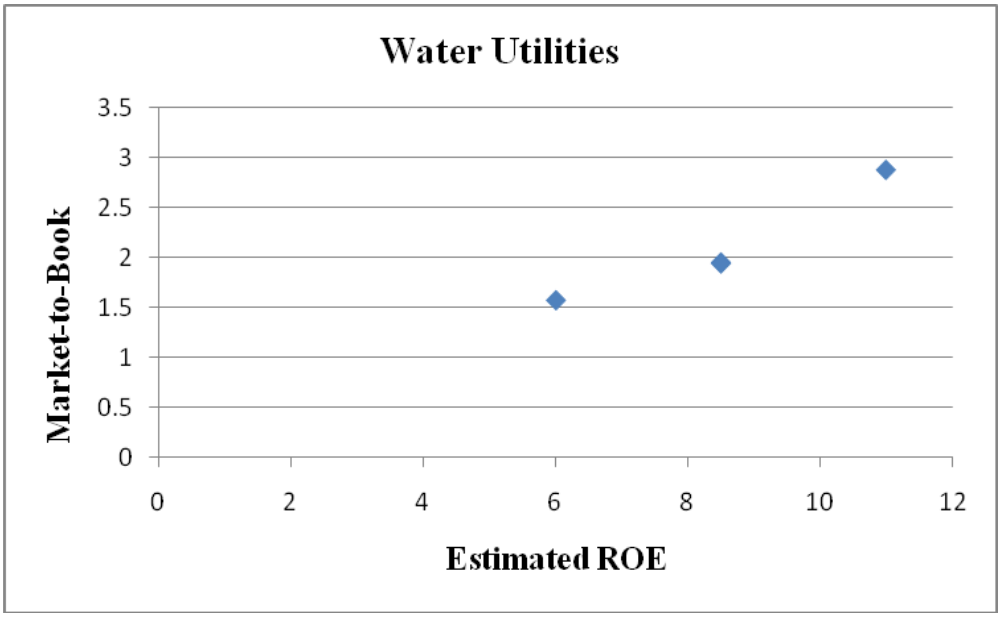
The Relationship Between Estimated ROE and Market-to-Book Ratios
Value Line Electrics, Gas Distribution Companies, and Water Utilities



R-Square = .65
N=56



R-Square = .60
N=12



R-Square = .92
N=4

The average R-squares for the electric, gas, and water companies are 0.70, 0.64, and 0.93. This demonstrates the strong positive relationship between ROEs and market-to-book ratios for public utilities.[5]

Q. WHAT ECONOMIC FACTORS HAVE AFFECTED THE COST OF EQUITY CAPITAL FOR PUBLIC UTILITIES?

A. Exhibit JRW-4 provides indicators of public utility equity cost rates over the past decade. Page 1 shows the yields on 10-year, 'A' rated public utility bonds. These yields peaked in the 1990s at 8.5%, then declined and again hit

[5] R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another variable (e.g., expected return on equity). R-squares vary between zero and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

the 8.0 percent range in the year 2000. They subsequently declined, hovering in the 4.5 to 5.0 percent range between 2003 and 2005. They increased to 6.0% in June of 2006, and have since retreated to the 5.50 percent range. Page 2 provides the dividend yields for the fifteen utilities in the Dow Jones Utilities Average over the past decade. These yields peaked in 1994 at 7.2%. Since that time they have declined and were at 3.5% as of 2006.

Average earned returns on common equity and market-to-book ratios are given on page 3 of Exhibit JRW-4. Over the past decade, earned returns on common equity have consistently been in the 10.0-13.0 percent range. The high point was 13.45% in 2001, and they subsequently decreased before recovering in 2005 and 2006. As of 2006, the average was 13.1%. Over the past decade, market-to-book ratios for this group have increased gradually, but with several ups and downs. The market-to-book average was 1.75 as of 2001, declined to 1.45 in 2003, and increased to 2.10 as of 2006.

The indicators in Exhibit JRW-4, coupled with the overall decrease in interest rates, suggest that capital costs for the Dow Jones Utilities have decreased over the past decade.

Q. WHAT FACTORS DETERMINE INVESTORS' EXPECTED OR REQUIRED RATE OF RETURN ON EQUITY?

A. The expected or required rate of return on common stock is a function of market-wide, as well as company-specific, factors. The most important market factor is the time value of money as indicated by the level of interest

rates in the economy. Common stock investor requirements generally increase and decrease with like changes in interest rates. The perceived risk of a firm is the predominant factor that influences investor return requirements on a company-specific basis. A firm's investment risk is often separated into business and financial risk. Business risk encompasses all factors that affect a firm's operating revenues and expenses. Financial risk results from incurring fixed obligations in the form of debt in financing its assets.

Q. HOW DOES THE INVESTMENT RISK OF GAS DISTRIBUTION COMPANIES COMPARE WITH THAT OF OTHER INDUSTRIES?

A. Due to the essential nature of their service as well as their regulated status, public utilities are exposed to a lesser degree of business risk than other, non-regulated businesses. The relatively low level of business risk allows public utilities to meet much of their capital requirements through borrowing in the financial markets, thereby incurring greater than average financial risk. Nonetheless, the overall investment risk of public utilities is below most other industries.

Exhibit JRW-5 provides an assessment of investment risk for 100 industries as measured by beta, which according to modern capital market theory is the only relevant measure of investment risk that need be of concern for investors. These betas come from the *Value Line Investment Survey* and are compiled by Aswath Damodoran of New York University.[6] The study

[6] They may be found on the Internet at http:// www.stern.nyu.edu/~adamodar.

shows that the investment risk of public utilities is relatively low. The average beta for gas distribution companies of 0.78 is in the bottom ten percent of all industries and well below the Value Line average of 1.24. As such, the cost of equity for the gas distribution industry is among the lowest of all industries in the U.S.

Q. HOW CAN THE EXPECTED OR REQUIRED RATE OF RETURN ON COMMON EQUITY CAPITAL BE DETERMINED?

A. The costs of debt and preferred stock are normally based on historical or book values and can be determined with a great degree of accuracy. The cost of common equity capital, however, cannot be determined precisely and must instead be estimated from market data and informed judgment. This return to the stockholder should be commensurate with returns on investments in other enterprises having comparable risks.

According to valuation principles, the present value of an asset equals the discounted value of its expected future cash flows. Investors discount these expected cash flows at their required rate of return that, as noted above, reflects the time value of money and the perceived riskiness of the expected future cash flows. As such, the cost of common equity is the rate at which investors discount expected cash flows associated with common stock ownership.

Models have been developed to ascertain the cost of common equity capital for a firm. Each model, however, has been developed using restrictive

economic assumptions. Consequently, judgment is required in selecting appropriate financial valuation models to estimate a firm's cost of common equity capital, in determining the data inputs for these models, and in interpreting the models' results. All of these decisions must take into consideration the firm involved as well as conditions in the economy and the financial markets.

Q. HOW DO YOU PLAN TO ESTIMATE THE COST OF EQUITY CAPITAL FOR THE COMPANY?

A. I rely primarily on the DCF model to estimate the cost of equity capital. Given the investment valuation process and the relative stability of the utility business, I believe that the DCF model provides the best measure of equity cost rates for public utilities. I have also performed a CAPM study, but I give these results less weight because I believe that risk premium studies, of which the CAPM is one form, provide a less reliable indication of equity cost rates for public utilities.

B. <u>Discounted Cash Flow Analysis</u>

Q. BRIEFLY DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF MODEL.

A. According to the discounted cash flow model, the current stock price is equal to the discounted value of all future dividends that investors expect to receive from investment in the firm. As such, stockholders' returns ultimately result

from current as well as future dividends. As owners of a corporation, common stockholders are entitled to a pro-rata share of the firm's earnings. The DCF model presumes that earnings that are not paid out in the form of dividends are reinvested in the firm so as to provide for future growth in earnings and dividends. The rate at which investors discount future dividends, which reflects the timing and riskiness of the expected cash flows, is interpreted as the market's expected or required return on the common stock. Therefore this discount rate represents the cost of common equity. Algebraically, the DCF model can be expressed as:

$$P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \ldots \frac{D_n}{(1+k)^n}$$

where P is the current stock price, D_n is the dividend in year n, and k is the cost of common equity.

Q. IS THE DCF MODEL CONSISTENT WITH VALUATION TECHNIQUES EMPLOYED BY INVESTMENT FIRMS?

A. Yes. Virtually all investment firms use some form of the DCF model as a valuation technique. One common application for investment firms is called the three-stage DCF or dividend discount model ("DDM"). The stages in a three-stage DCF model are discussed below. This model presumes that a company's dividend payout progresses initially through a growth stage, then proceeds through a transition stage, and finally assumes a steady-state stage. The dividend-payment stage of a firm depends on the profitability of its

internal investments, which, in turn, is largely a function of the life cycle of the product or service. These stages are depicted in the graphic below labeled the Three-Stage DCF Model. [7]

1. Growth stage: Characterized by rapidly expanding sales, high profit margins, and abnormally high growth in earnings per share. Because of highly profitable expected investment opportunities, the payout ratio is low. Competitors are attracted by the unusually high earnings, leading to a decline in the growth rate.

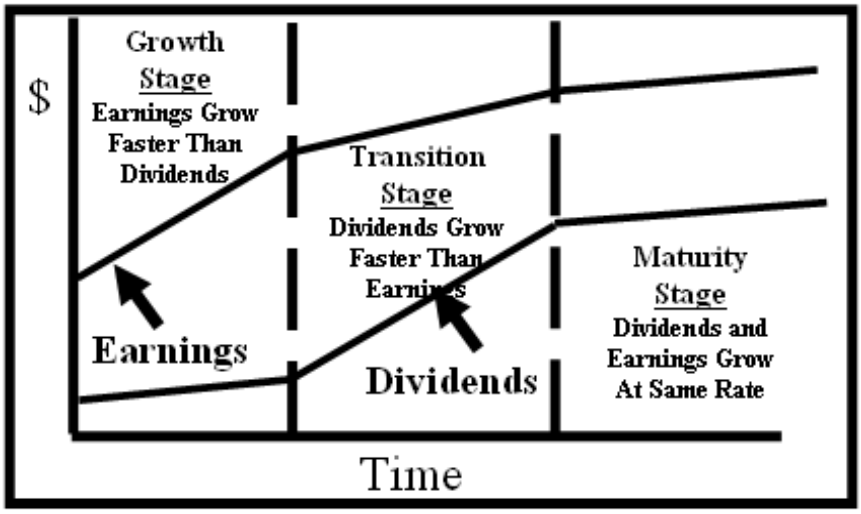
2. Transition stage: In later years, increased competition reduces profit margins and earnings growth slows. With fewer new investment opportunities, the company begins to pay out a larger percentage of earnings.

3. Maturity (steady-state) stage: Eventually the company reaches a position where its new investment opportunities offer, on average, only slightly attractive returns on equity. At that time its earnings growth rate, payout ratio, and return on equity stabilize for the remainder of its life. The constant-growth DCF model is appropriate when a firm is in the maturity stage of the life cycle.

In using this model to estimate a firm's cost of equity capital, dividends are projected into the future using the different growth rates in the alternative stages, and then the equity cost rate is the discount rate that equates the present value of the future dividends to the current stock price.

[7] This description comes from William F. Sharp, Gordon J. Alexander, and Jeffrey V. Bailey, *Investments* (Prentice-Hall, 1995), pp. 590-91.

Three-Stage DCF Model



Q. HOW DO YOU ESTIMATE STOCKHOLDERS' EXPECTED OR REQUIRED RATE OF RETURN USING THE DCF MODEL?

A. Under certain assumptions, including a constant and infinite expected growth rate, and constant dividend/earnings and price/earnings ratios, the DCF model can be simplified to the following:

$$P = \frac{D_1}{k - g}$$

where D_1 represents the expected dividend over the coming year and g is the expected growth rate of dividends. This is known as the constant-growth version of the DCF model. To use the constant-growth DCF model to estimate a firm's cost of equity, one solves for k in the above expression to obtain the following:

$$k = \frac{D_1}{P} + g$$

The economics of the public utility business indicate that the industry is in the steady-state or constant-growth stage of a three-stage DCF. The economics include the relative stability of the utility business, the maturity of the demand for public utility services, and the regulated status of public utilities (especially the fact that their returns on investment are effectively set through the ratemaking process). The DCF valuation procedure for companies in this stage is the constant-growth DCF. In the constant-growth version of the DCF model, the current dividend payment and stock price are directly observable. Therefore, the primary problem and controversy in applying the DCF model to estimate equity cost rates entails estimating investors' expected dividend growth rate.

Q. WHAT FACTORS SHOULD ONE CONSIDER WHEN APPLYING THE DCF METHODOLOGY?

A. One should be sensitive to several factors when using the DCF model to estimate a firm's cost of equity capital. In general, one must recognize the assumptions under which the DCF model was developed in estimating its components (the dividend yield and expected growth rate). The dividend yield can be measured precisely at any point in time, but tends to vary somewhat over time. Estimation of expected growth is considerably more difficult. One must consider recent firm performance, in conjunction with current economic developments and other information available to investors, to accurately estimate investors' expectations.

Q. PLEASE DISCUSS EXHIBIT JRW-6.

A. My DCF analysis is provided in Exhibit JRW-6. The DCF summary is on page 1 of this Exhibit and the supporting data and analysis for the dividend yield and expected growth rate are provided on the following pages.

Q. WHAT DIVIDEND YIELDS ARE YOU EMPLOYING IN YOUR DCF ANALYSIS FOR YOUR GROUP OF GAS DISTRIBUTION COMPANIES?

A. The dividend yields on the common stock for the companies in the group are provided on page 2 of Exhibit JRW-6 for the six-month period ending March, 2008. Over this period, the average monthly dividend yields for the group of gas distribution companies was 3.8%. As of March, 2008, the mean dividend yield for the group was 3.9%. For the DCF dividend yields for the group, I use the average of the six month and March, 2008 dividend yields. Hence, I am employing a DCF dividend yield of 3.9%.

Q. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT DIVIDEND YIELD.

A. According to the traditional DCF model, the dividend yield term relates to the dividend yield over the coming period. As indicated by Professor Myron Gordon, who is commonly associated with the development of the DCF model for popular use, this is obtained by: (1) multiplying the expected dividend over the coming quarter by 4, and (2) dividing this dividend by the current

stock price to determine the appropriate dividend yield for a firm, which pays dividends on a quarterly basis.[8]

In applying the DCF model, some analysts adjust the current dividend for growth over the coming year as opposed to the coming quarter. This can be complicated because firms tend to announce changes in dividends at different times during the year. As such, the dividend yield computed based on presumed growth over the coming quarter as opposed to the coming year can be quite different. Consequently, it is common for analysts to adjust the dividend yield by some fraction of the long-term expected growth rate.

The appropriate adjustment to the dividend yield is further complicated in the regulatory process when the overall cost of capital is applied to a projected rate base. The net effect of this application is an overstatement of the equity cost rate estimate derived from the DCF model. In the context of the constant-growth DCF model, both the adjusted dividend yield and the growth component are overstated. The overstatement results from applying an equity cost rate computed using current market data to a future or test-year-end rate base which includes growth associated with the retention of earnings during the year. In other words, an equity cost rate times a future, yet to be achieved rate base, results in an inflated dividend yield and growth rate.

[8] *Petition for Modification of Prescribed Rate of Return*, Federal Communications Commission, Docket No. 79-05, Direct Testimony of Myron J. Gordon and Lawrence I. Gould at 62 (April 1980).

Q. GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR WILL YOU USE FOR YOUR DIVIDEND YIELD?

A. I will adjust the dividend yield by one-half (1/2) the expected growth so as to reflect growth over the coming year.

Q. PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE DCF MODEL.

A. There is much debate as to the proper methodology to employ in estimating the growth component of the DCF model. By definition, this component is investors' expectation of the long-term dividend growth rate. Presumably, investors use some combination of historical and/or projected growth rates for earnings and dividends per share and for internal or book value growth to assess long-term potential.

Q. WHAT GROWTH DATA HAVE YOU REVIEWED FOR THE GROUP OF GAS DISTRIBUTION COMPANIES?

A. I have analyzed a number of measures of growth for the gas distribution companies. I have reviewed *Value Line's* historical and projected growth rate estimates for earnings per share (EPS), dividends per share (DPS), and book value per share (BVPS). In addition, I have utilized the average EPS growth rate forecasts of Wall Street analysts as provided by Zacks, Reuters, and First Call. These services solicit five-year earnings growth rate projections from securities analysts and compile and publish the averages of these forecasts on

the Internet. Finally, I have also assessed prospective growth as measured by prospective earnings retention rates and earned returns on common equity.

Q. PLEASE DISCUSS HISTORICAL GROWTH IN EARNINGS AND DIVIDENDS AS WELL AS INTERNAL GROWTH.

A. Historical growth rates for EPS, DPS, and BVPS are readily available to virtually all investors and presumably an important ingredient in forming expectations concerning future growth. However, one must use historical growth numbers as measures of investors' expectations with caution. In some cases, past growth may not reflect future growth potential. Also, employing a single growth rate number (for example, for five or ten years), is unlikely to accurately measure investors' expectations due to the sensitivity of a single growth rate figure to fluctuations in individual firm performance as well as overall economic fluctuations (i.e., business cycles). However, one must appraise the context in which the growth rate is being employed. According to the conventional DCF model, the expected return on a security is equal to the sum of the dividend yield and the expected long-term growth in dividends. Therefore, to best estimate the cost of common equity capital using the conventional DCF model, one must look to long-term growth rate expectations.

Internally generated growth is a function of the percentage of earnings retained within the firm (the earnings retention rate) and the rate of return earned on those earnings (the return on equity). The internal growth rate is

computed as the retention rate times the return on equity. Internal growth is significant in determining long-run earnings and, therefore, dividends. Investors recognize the importance of internally generated growth and pay premiums for stocks of companies that retain earnings and earn high returns on internal investments.

Q. PLEASE DISCUSS THE HISTORICAL GROWTH OF THE COMPANIES IN THE GROUP AS PROVIDED IN THE *VALUE LINE INVESTMENT SURVEY.*

A. Historic growth rates for the companies in the group, as published in the *Value Line Investment Survey*, are provided on page 3 of Exhibit JRW-6. Due to the presence of outliers among the historic growth rate figures, both the mean and medians are used in the analysis. The historical growth measures in EPS, DPS, and BVPS for the group, as measured by the means and medians, range from 2.4% to 6.9%, with an average of 4.8%.

Q. PLEASE SUMMARIZE *VALUE LINE'S* PROJECTED GROWTH RATES FOR THE GROUP OF GAS DISTRIBUTION COMPANIES.

A. *Value Line's* projections of EPS, DPS, and BVPS growth for the group are shown on page 4 of Exhibit JRW-6. As above, due to the presence of outliers, both the mean and medians are used in the analysis. For the group, the central tendency measures range from 3.5% to 5.1%, with an average of 4.2%.

Also provided on page 4 of Exhibit JRW-6 is prospective internal growth for the group as measured by *Value Line*'s average projected retention

rate and return on shareholders' equity. The average prospective internal growth rate for the group is 5.1%.

Q. PLEASE ASSESS GROWTH FOR THE GROUP AS MEASURED BY ANALYSTS' FORECASTS OF EXPECTED 5-YEAR GROWTH IN EPS.

A. Zacks, First Call, and Reuters collect, summarize, and publish Wall Street analysts' five-year EPS growth rate forecasts for the gas distribution companies. These forecasts are provided for the companies in the group of companies on page 5 of Exhibit JRW-6. The mean of the analysts' projected EPS growth rates for the group is 5.0%.[9]

Q. PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL AND PROSPECTIVE GROWTH OF THE GAS DISTRIBUTION GROUP.

A. The table below shows the summary DCF growth rate indicators for the group of gas distribution companies. For the group, the average of *Value Line*'s historical mean and median growth rate measures in EPS, DPS, and BVPS is 4.8%. *Value Line*'s average projected growth rate for EPS, DPS, and BVPS is 4.2%. The average internal growth rate is 5.1%, and the mean projected EPS growth rate for companies in the group is 5.0%. Given these results, an

[9] Since there is considerable overlap in analyst coverage between the three services, and not all of the companies have forecasts from the different services, I have averaged the expected five-year EPS growth rates from the three services for each company to arrive at an expected EPS growth rate by company.

expected growth rate in the 5.0 percent range is very reasonable for the group. I will use this figure as my DCF growth rate.

DCF Growth Rate Indicators

Growth Rate Indicator	Proxy Group
Historic *Value Line* Growth in EPS, DPS, and BVPS	4.8%
Projected *Value Line* Growth in EPS, DPS, and BVPS	4.2%
Internal Growth ROE * Retention rate	5.1%
Projected EPS Growth from First Call, Reuters, and Zacks	5.0%

Q. BASED ON THE ABOVE ANALYSIS, WHAT ARE YOUR INDICATED COMMON EQUITY COST RATES FROM THE DCF MODEL FOR THE GROUP?

A. My DCF-derived equity cost rate for the group is:

$$\text{DCF Equity Cost Rate (k)} = \frac{D}{P} + g$$

	Dividend Yield	½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Gas Group	3.9%	1.025	5.0%	9.0%

These results are summarized on page 1 of Exhibit JRW-6.

C. Capital Asset Pricing Model Results

Q. PLEASE DISCUSS THE CAPITAL ASSET PRICING MODEL (CAPM).

A. The CAPM is a risk premium approach to gauging a firm's cost of equity capital. According to the risk premium approach, the cost of equity is the sum of the interest rate on a risk-free bond (R_f) and a risk premium (RP), as in the following:

$$k = R_f + RP$$

The yield on long-term Treasury securities is normally used as R_f. Risk premiums are measured in different ways. The CAPM is a theory of the risk and expected returns of common stocks. In the CAPM, two types of risk are associated with a stock: firm-specific risk or unsystematic risk; and market or systematic risk, which is measured by a firm's beta. The only risk that investors receive a return for bearing is systematic risk.

According to the CAPM, the expected return on a company's stock, which is also the equity cost rate (K), is equal to:

$$\boldsymbol{K = (R_f) + ß_i * [E(R_m) - (R_f)]}$$

Where:

- *K* represents the estimated rate of return on the stock;
- $E(R_m)$ represents the expected return on the overall stock market. Frequently, the 'market' refers to the S&P 500;
- (R_f) represents the risk-free rate of interest;
- $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—the excess return that an investor expects to receive above the risk-free rate for investing in risky stocks; and
- *Beta*—($ß_i$) is a measure of the systematic risk of an asset.

To estimate the required return or cost of equity using the CAPM requires three inputs: the risk-free rate of interest (R_f), the beta ($ß_i$), and the expected equity or market risk premium, $[E(R_m) - (R_f)]$. R_f is the easiest of

the inputs to measure – it is the yield on long-term Treasury bonds. $ß_i$, the measure of systematic risk, is a little more difficult to measure because there are different opinions about what adjustments, if any, should be made to historical betas due to their tendency to regress to 1.0 over time. And finally, an even more difficult input to measure is the expected equity or market risk premium, $[E(R_m) - (R_f)]$. I will discuss each of these inputs, with most of the discussion focusing on the expected equity risk premium.

Q. PLEASE DISCUSS EXHIBIT JRW-7.

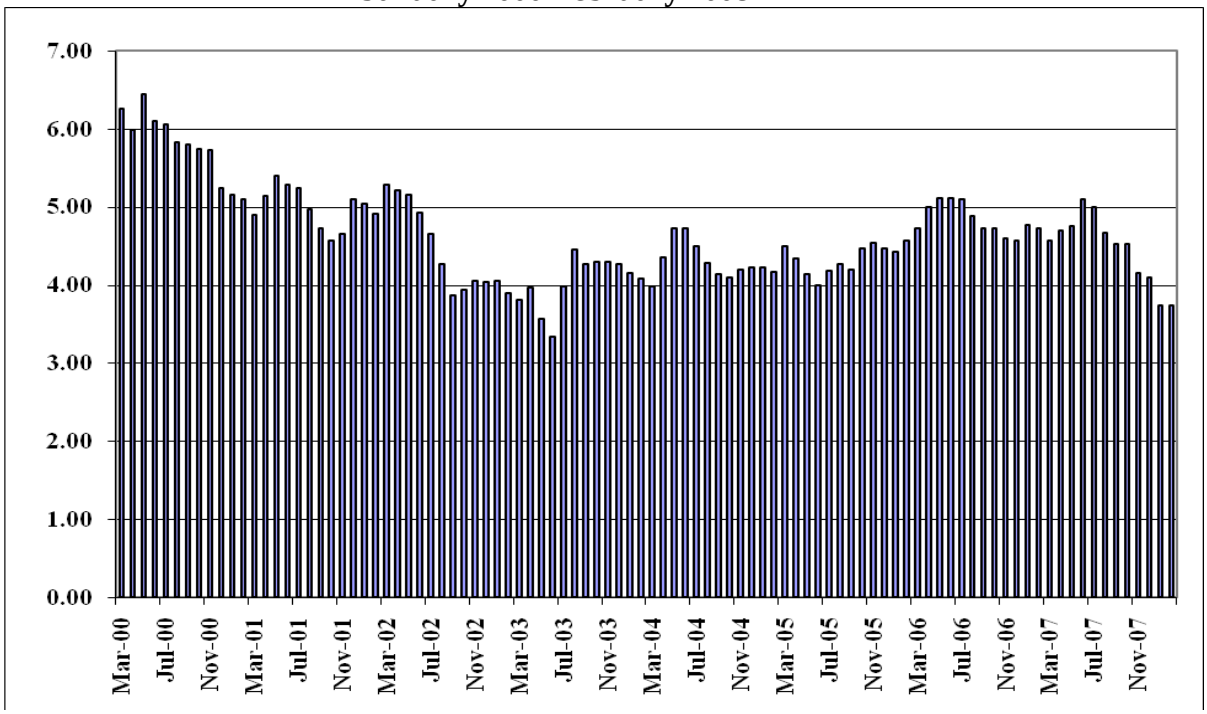
A. Exhibit JRW-7 provides the summary results for my CAPM study. Page 1 shows the results, and the pages following it contain the supporting data.

Q. PLEASE DISCUSS THE RISK-FREE INTEREST RATE.

A. The yield on long-term Treasury bonds has usually been viewed as the risk-free rate of interest in the CAPM. The yield on long-term Treasury bonds, in turn, has been considered to be the yield on Treasury bonds with 30-year maturities. However, when the Treasury's issuance of 30-year bonds was interrupted for a period of time in recent years, the yield on 10-year Treasury bonds replaced the yield on 30-year Treasury bonds as the benchmark long-term Treasury rate. The 10-year Treasury yields over the past five years are shown in the chart below. These rates hit a 60-year low in the summer of 2003 at 3.33%. They increased with the rebounding economy and fluctuated in the 4.0-4.50 percent range over the past three years until advancing to 5.0% in early 2006 in response to a strong economy and increases in energy,

commodity, and consumer prices. In late 2006, long-term interest rates retreated to the 4.5 percent area as commodity and energy prices declined and inflationary pressures subsided. These rates rebounded to the 5.0% level as the economy remained strong in 2007. However, the effects of the housing and sub-prime mortgage issues that surfaced in the summer of 2007 have helped lead the economy into a severe slowdown, causing ten-year Treasury yields to once again fall below 4.0 percent.

Ten-Year U.S. Treasury Yields
January 2000-February 2008



http://research.stlouisfed.org/fred2/series/GS10?cid=115

Q. WHAT RISK-FREE INTEREST RATE ARE YOU USING IN YOUR CAPM?

A. The U.S. Treasury began to issue the 30-year bond in the early 2000s as the U.S. budget deficit increased. As such, the market has once again focused on

its yield as the benchmark for long-term capital costs in the U.S. As noted above, the yields on the 10- and 30- year Treasuries have increased and have decreased to below 5.0% in response to the sub-prime mortgage and housing concerns. As of March 14, 2008, as shown in the table below, the rates on 10- and 30- Treasury Bonds were 3.44% and 4.36%, respectively. Given this recent range and recent movement, I will use 4.5% as the risk-free rate, or R_f, in my CAPM.

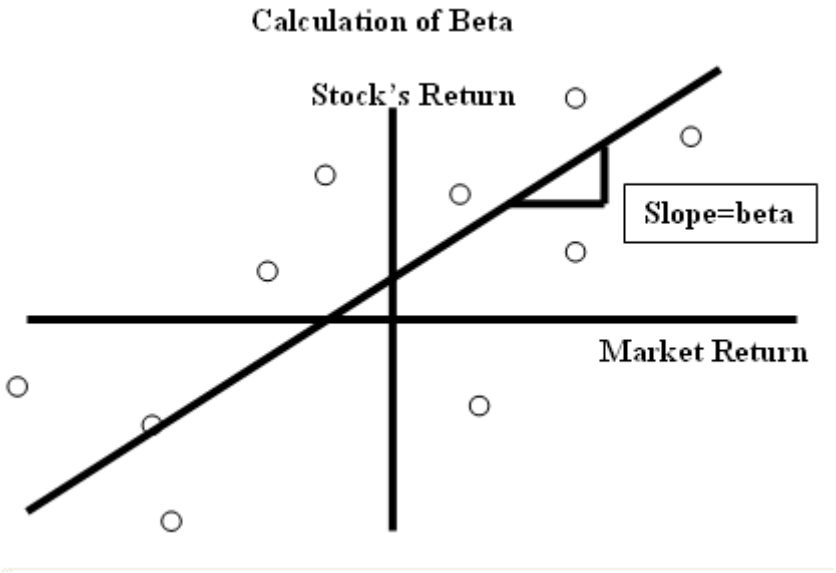
U.S. Treasury Yields
March 14, 2008

NOTES/BONDS	COUPON	MATURITY DATE	CURRENT PRICE/YIELD
2-YEAR	2.000	02/28/2010	100-31+ / 1.48
5-YEAR	2.750	02/28/2013	101-20½ / 2.40
10-YEAR	3.500	02/15/2018	100-15 / 3.44
30-YEAR	4.375	02/15/2038	100-06+ / 4.36

Source: www.bloomberg.com

Q. WHAT BETAS ARE YOU EMPLOYING IN YOUR CAPM?

A. Beta (ß) is a measure of the systematic risk of a stock. The market, usually taken to be the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement as the market also has a beta of 1.0. A stock whose price movement is greater than that of the market, such as a technology stock, is riskier than the market and has a beta greater than 1.0. A stock with below average price movement, such as that of a regulated public utility, is less risky than the market and has a beta less than 1.0. Estimating a stock's beta involves running a linear regression of a stock's return on the market return as in the following:



The slope of the regression line is the stock's ß. A steeper line indicates the stock is more sensitive to the return on the overall market. This means that the stock has a higher ß and greater than average market risk. A less steep line indicates a lower ß and less market risk.

Numerous online investment information services, such as Yahoo and Reuters, provide estimates of stock betas. Usually these services report different betas for the same stock. The differences are usually due to (1) the time period over which the ß is measured and (2) any adjustments that are made to reflect the fact that betas tend to regress to 1.0 over time. In estimating an equity cost rate for the group of natural gas distribution companies, I am using the betas for the companies as provided in the *Value Line Investment Survey*. As shown on page 2 of Exhibit JRW-7, the average beta for the group is 0.86.

Q. PLEASE DISCUSS THE OPPOSING VIEWS REGARDING THE EQUITY RISK PREMIUM.

A. The equity or market risk premium—*[$E(R_m) - R_f$]*: is equal to the expected return on the stock market (e.g., the expected return on the S&P 500 ($E(R_m)$) minus the risk-free rate of interest (R_f). The equity premium is the difference in the expected total return between investing in equities and investing in "safe" fixed-income assets, such as long-term government bonds. However, while the equity risk premium is easy to define conceptually, it is difficult to measure because it requires an estimate of the expected return on the market.

Q. PLEASE DISCUSS THE ALTERNATIVE APPROACHES TO ESTIMATING THE EQUITY RISK PREMIUM.

A. The table below highlights the primary approaches to, and issues in, estimating the expected equity risk premium. The traditional way to measure the equity risk premium was to use the difference between historical average stock and bond returns. In this case, historical stock and bond returns, also called ex post returns, were used as the measures of the market's expected return (known as the ex ante or forward-looking expected return). This type of historical evaluation of stock and bond returns is often called the "Ibbotson approach" after Professor Roger Ibbotson who popularized this method of using historical financial market returns as measures of expected returns. Most historical assessments of the equity risk premium suggest an equity risk premium of 5-7 percent above the rate on long-term Treasury bonds.

However, this can be a problem because (1) ex post returns are not the same as ex ante expectations, (2) market risk premiums can change over time, increasing when investors become more risk-averse, and decreasing when investors become less risk-averse, and (3) market conditions can change such that ex post historical returns are poor estimates of ex ante expectations.

Risk Premium Approaches

	Historical Ex Post Excess Returns	Surveys	Ex Ante Models and Market Data
Means of Assessing the Equity-Bond Risk Premium	Historical average is a popular proxy for the ex ante premium – but likely to be misleading	Investor and expert surveys can provide direct estimates of prevailing expected returns/premiums	Current financial market prices (simple valuation ratios or DCF-based measures) can give most objective estimates of feasible ex ante equity-bond risk premium
Problems/Debated Issues	Time variation in required returns and systematic selection and other biases have boosted valuations over time, and have exaggerated realized excess equity returns compared with ex ante expected premiums	Limited survey histories and questions of survey representativeness. Surveys may tell more about hoped-for expected returns than about objective required premiums due to irrational biases such as extrapolation.	Assumptions needed for DCF inputs, notably the trend earnings growth rate, make even these models' outputs subjective. The range of views on the growth rate, as well as the debate on the relevant stock and bond yields, leads to a range of premium estimates.

Source: Antti Ilmanen, Expected Returns on Stocks and Bonds," *Journal of Portfolio Management*, (Winter 2003).

The use of historical returns as market expectations has been criticized in numerous academic studies.[10] The general theme of these studies is that the large equity risk premium discovered in historical stock and bond returns cannot be justified by the fundamental data. These studies, which fall under the category "Ex Ante Models and Market Data," compute ex ante expected returns using market data to arrive at an expected equity risk premium. These studies have also been called "Puzzle Research" after the famous study by

[10] The problems with using ex post historical returns as measures of ex ante expectations will be discussed at length later in my testimony.

Mehra and Prescott in which the authors first questioned the magnitude of historical equity risk premiums relative to fundamentals.[11]

Q. PLEASE BRIEFLY SUMMARIZE SOME OF THE ACADEMIC STUDIES THAT DEVELOP EX ANTE EQUITY RISK PREMIUMS.

A. Two of the most prominent studies of ex ante expected equity risk premiums were by Eugene Fama and Ken French (2002) and James Claus and Jacob Thomas (2001). The primary debate in these studies revolves around two related issues: (1) the size of expected equity risk premium, which is the return equity investors require above the yield on bonds; and (2) the fact that estimates of the ex ante expected equity risk premium using fundamental firm data (earnings and dividends) are much lower than estimates using historical stock and bond return data. Fama and French (2002), two of the most preeminent scholars in finance, use dividend and earnings growth models to estimate expected stock returns and ex ante expected equity risk premiums.[12] They compare these results to actual stock returns over the period 1951-2000. Fama and French estimate that the expected equity risk premium from DCF models using dividend and earnings growth to be between 2.55% and 4.32%. These figures are much lower than the ex post historical equity risk premium produced from the average stock and bond return over the same period, which is 7.40%.

[11] Rahnish Mehra and Edward Prescott, "The Equity Premium: A Puzzle," *Journal of Monetary Economics* (1985).

[12] Eugene F. Fama and Kenneth R. French, "The Equity Premium," *The Journal of Finance*, (April 2002).

Fama and French conclude that the ex ante equity risk premium estimates using DCF models and fundamental data are superior to those using ex post historical stock returns for three reasons: (1) the estimates are more precise (a lower standard error); (2) the Sharpe ratio, which is measured as the [(expected stock return – risk-free rate)/standard deviation], is constant over time for the DCF models but varies considerably over time and more than doubles for the average stock-bond return model; and (3) valuation theory specifies relationships between the market-to-book ratio, return on investment, and cost of equity capital that favor estimates from fundamentals. They also conclude that the high average stock returns over the past 50 years were the result of low expected returns and that the average equity risk premium has been in the 3-4 percent range.

The study by Claus and Thomas of Columbia University provides direct support for the findings of Fama and French.[13] These authors compute ex ante expected equity risk premiums over the 1985-1998 period by (1) computing the discount rate that equates market values with the present value of expected future cash flows, and (2) then subtracting the risk-free interest rate. The expected cash flows are developed using analysts' earnings forecasts. The authors conclude that over this period the ex ante expected equity risk premium is in the range of 3.0%. Claus and Thomas note that, over this period, ex post historical stock returns overstate the ex ante expected

[13] James Claus and Jacob Thomas, "Equity Risk Premia as Low as Three Percent? Empirical Evidence from Analysts' Earnings Forecasts for Domestic and International Stock Market," *Journal of Finance*. (October 2001).

equity risk premium because, as the expected equity risk premium has declined, stock prices have risen. In other words, from a valuation perspective, the present value of expected future returns increase when the required rate of return decreases. The higher stock prices have produced stock returns that have exceeded investors' expectations and therefore ex post historical equity risk premium estimates are biased upwards as measures of ex ante expected equity risk premiums.

Q. PLEASE PROVIDE A SUMMARY OF THE EQUITY RISK PREMIUM STUDIES.

A. Derrig and Orr (2003) and Fernandez (2007) have completed the most comprehensive reviews to date of the research on the equity risk premium.[14] Derrig and Orr's study evaluated the various approaches to estimating equity risk premiums as well as the issues with the alternative approaches, and summarized the findings of the published research on the equity risk premium. Fernandez examined four alternative measures of the equity risk premium – historical, expected, required, and implied. He also reviewed the major studies of the equity risk premium and presented the summary equity risk premium results. Page 3 of Exhibit JRW-7 provides a summary of the results of the primary risk premium studies reviewed by Derrig and Orr and Fernandez. In developing page 3 of Exhibit JRW-7, I have categorized the

[14] Richard Derrig and Elisha Orr, "Equity Risk Premium: Expectations Great and Small," Working Paper (version 3.0), Automobile Insurers Bureau of Massachusetts, August 28, 2003, and Pablo Fernandez, "Equity Premium: Historical, Expected, Required, and Implied," IESE Business School Working Paper, 2007.

studies as discussed on page 40 of my testimony. I have also included the results of the "Building Blocks" approach to estimating the equity risk premium, including a study I performed which is presented below. The Building Blocks approach is a hybrid approach employing elements of both historic and ex ante models.

Q. PLEASE DISCUSS YOUR DEVELOPMENT OF AN EQUITY RISK PREMIUM COMPUTED USING THE BUILDING BLOCKS METHODOLOGY.

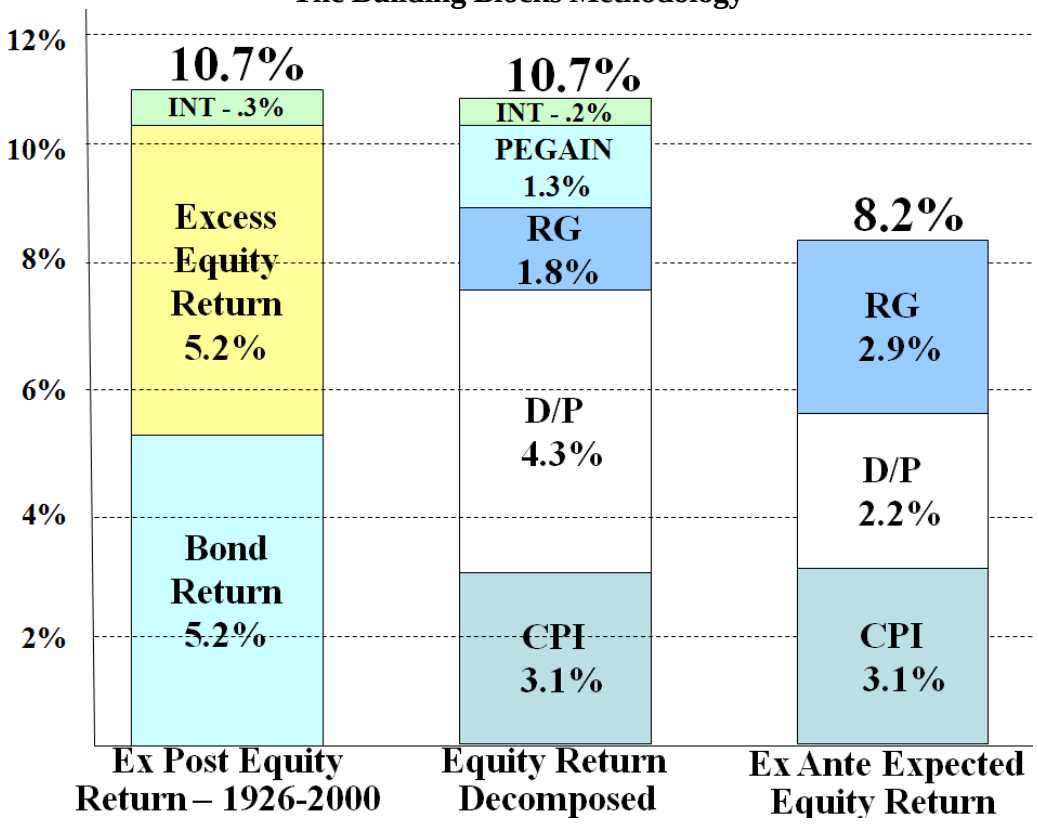
A. Ibbotson and Chen (2003) evaluate the ex post historical mean stock and bond returns in what is called the Building Blocks approach.[15] They use 75 years of data and relate the compounded historical returns to the different fundamental variables employed by different researchers in building ex ante expected equity risk premiums. Among the variables included were inflation, real EPS and DPS growth, ROE and book value growth, and P/E ratios. By relating the fundamental factors to the ex post historical returns, the methodology bridges the gap between the ex post and ex ante equity risk premiums. Ilmanen (2003) illustrates this approach using the geometric returns and five fundamental variables – inflation (CPI), dividend yield (D/P), real earnings growth (RG), repricing gains (PEGAIN) and return interaction/reinvestment (INT).[16] This is shown in the graph below. The first

[15] Roger Ibbotson and Peng Chen, "Long Run Returns: Participating in the Real Economy," *Financial Analysts Journal*, January 2003.

[16] Antti Ilmanen, Expected Returns on Stocks and Bonds," *Journal of Portfolio Management*, (Winter 2003), p. 11.

column breaks the 1926-2000 geometric mean stock return of 10.7% into the different return components demanded by investors: the historical Treasury bond return (5.2%), the excess equity return (5.2%), and a small interaction term (0.3%). This 10.7% annual stock return over the 1926-2000 period can then be broken down into the following fundamental elements: inflation (3.1%), dividend yield (4.3%), real earnings growth (1.8%), repricing gains (1.3%) associated with higher P/E ratios, and a small interaction term (0.2%).

Decomposing Equity Market Returns
The Building Blocks Methodology

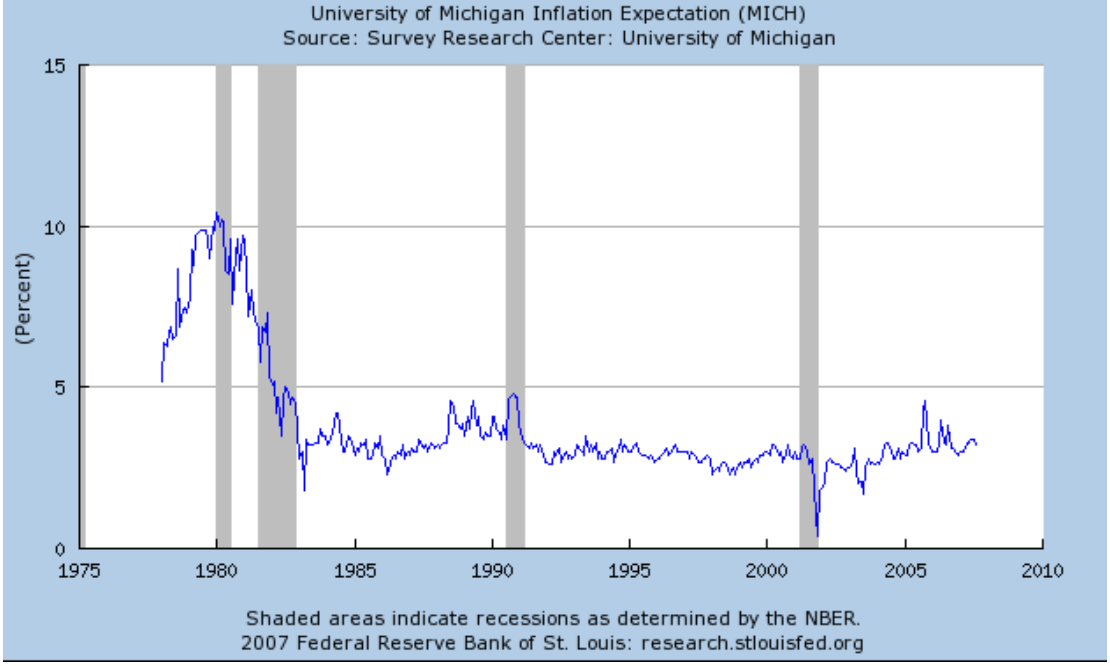


Q. HOW ARE YOU USING THIS METHODOLOGY TO DERIVE AN EX ANTE EXPECTED EQUITY RISK PREMIUM?

A. The third column in the graph above shows current inputs to estimate an ex ante expected market return. These inputs include the following:

CPI – To assess expected inflation, I have employed expectations of the short-term and long-term inflation rate. The graph below shows the expected annual inflation rate according to consumers, as measured by the CPI, over the coming year. This survey is published monthly by the University of Michigan Survey Research Center. In the most recent report, the expected one-year inflation rate was 3.6%.

Expected Inflation Rate
University of Michigan Consumer Research
(Data Source: http://research.stlouisfed.org/fred2/series/MICH/98)



Longer term inflation forecasts are available in the Federal Reserve Bank of Philadelphia's publication entitled *Survey of Professional*

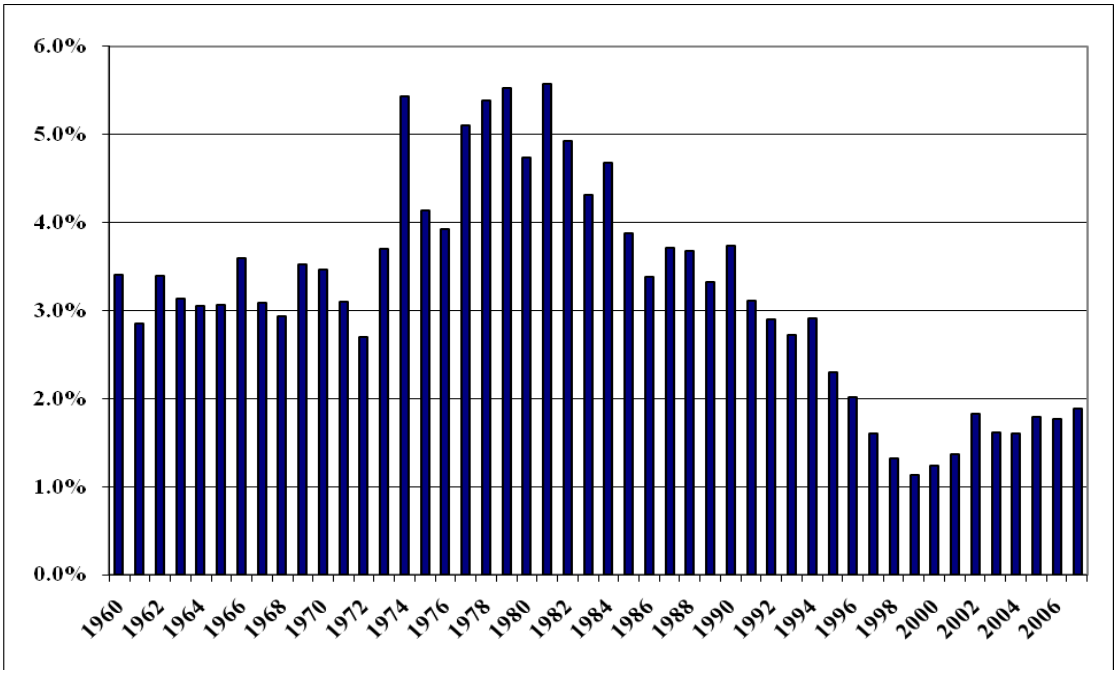
Forecasters.[17] This survey of professional economists has been published for almost 50 years. While this survey is published quarterly, only the first quarter survey includes long-term forecasts of GDP growth, inflation, and market returns. In the first quarter, 2008 survey, published on February 12, 2008, the median long-term (10-year) expected inflation rate as measured by the CPI was 2.5% (see page 4 of Exhibit JRW-7).

Given these results, I will use the average of the University of Michigan and Philadelphia Federal Reserve's surveys (3.6% and 2.5%), or 3.1%.

D/P – As shown in the graph below, the dividend yield on the S&P 500 has decreased gradually over the past decade. Today, it is far below its average of 4.3% over the 1926-2000 time period. Whereas the S&P dividend yield bottomed out at less than 1.4% in 2000, it is currently at 2.2% which I use in the ex ante risk premium analysis.

[17]Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, February 12, 2008. The *Survey of Professional Forecasters* was formerly conducted by the American Statistical Association (ASA) and the National Bureau of Economic Research (NBER) and was known as the ASA/NBER survey. The survey, which began in 1968, is conducted each quarter. The Federal Reserve Bank of Philadelphia, in cooperation with the NBER, assumed responsibility for the survey in June 1990.

S&P 500 Dividend Yield



RG – To measure expected real growth in earnings, I use (1) the historical real earnings growth rate for the S&P 500, and (2) expected real GDP growth. The S&P 500 was created in 1960. It includes 500 companies which come from ten different sectors of the economy. Over the 1960-2006 period, nominal growth in EPS for the S&P 500 was 7.38%. On page 5 of Exhibit JRW-7, real EPS growth is computed using the CPI as a measure of inflation. As indicated by Ibbotson and Chen, real earnings growth over the 1926-2000 period was 1.8%. The real growth figure over 1960-2007 period for the S&P 500 is 3.0 %.

The second input for expected real earnings growth is expected real GDP growth. The rationale is that over the long-term, corporate profits have

averaged a relatively consistent 5.50% of US GDP.[18] Real GDP growth, according to McKinsey, has averaged 3.5% over the past 80 years. Expected GDP growth, according to the Federal Reserve Bank of Philadelphia's *Survey of Professional Forecasters,* is 3.0% (see page 4 of Exhibit JRW-7).

Given these results, I will use the average of the historical S&P EPS real growth and the projected real GDP growth (as reported by the Philadelphia Federal Reserve Survey) -- 3.0% and 2.75% -- or 2.9%, for real earnings growth.

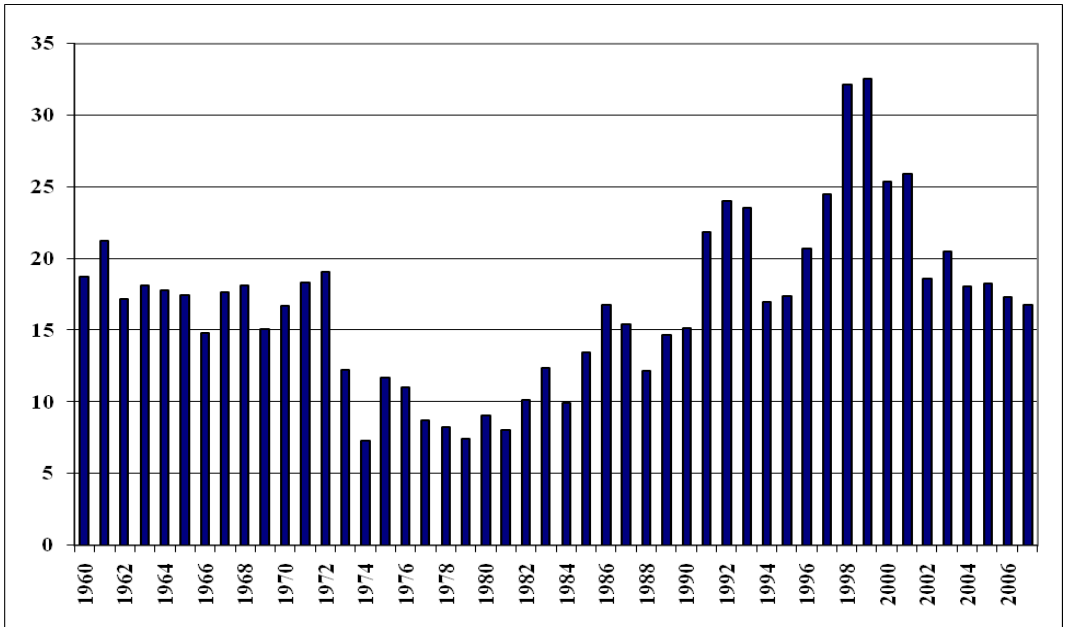
PEGAIN – PEGAIN is the repricing gain associated with an increase in the P/E ratio. It accounted for 1.3% of the 10.7% annual stock return in the 1926-2000 period. In estimating an ex ante expected stock market return, one issue is whether investors expect P/E ratios to increase from their current levels. The graph below shows the P/E ratios for the S&P 500 over the past 25 years. The run-up and eventual peak in P/Es is most notable in the chart. The relatively low P/E ratios (in the range of 10) over two decades ago are also quite notable. As of March, 2008 the P/E for the S&P 500, is 21.44 according to www.standardandpoors.com.

Given the current economic and capital markets environment, I do not believe that investors expect even higher P/E ratios. Therefore, a PEGAIN would not be appropriate in estimating an ex ante expected stock market return. There are two primary reasons for this. First, the average historical S&P 500 P/E ratio is 15 – thus the current P/E exceeds this figure. Second, as

[18]Marc. H. Goedhart, et al, "The Real Cost of Equity," *McKinsey on Finance* (Autumn 2002), p.14.

previously noted, interest rates are at a cyclical low not seen in almost 50 years. This is a primary reason for the high current P/Es. Given the current market environment with relatively high P/E ratios and low relative interest rates, investors are not likely to expect to get stock market gains from lower interest rates and higher P/E ratios.

S&P 500 P/E Ratios



Q. GIVEN THIS DISCUSSION, WHAT IS YOUR EX ANTE EXPECTED MARKET RETURN AND EQUITY RISK PREMIUM USING THE "BUILDING BLOCKS METHODOLOGY"?

A. My expected market return is represented by the last column on the right in the graph entitled "Decomposing Equity Market Returns: The Building Blocks Methodology" set forth on page 43 of my testimony. As shown, my expected market return of 8.2% is composed of 3.1% expected inflation, 2.2% dividend yield, and 2.9% real earnings growth rate.

Q. GIVEN THAT THE HISTORICAL COMPOUNDED ANNUAL MARKET RETURN IS IN EXCESS OF 10%, WHY DO YOU BELIEVE THAT YOUR EXPECTED MARKET RETURN OF 8.2% IS REASONABLE?

A. As discussed above in the development of the expected market return, stock prices are relatively high at the present time in relation to earnings and dividends and interest rates are relatively low. Hence, it is unlikely that investors are going to experience high stock market returns due to higher P/E ratios and/or lower interest rates. In addition, as shown in the decomposition of equity market returns, whereas the dividend portion of the return was historically 4.3%, the current dividend yield is only 2.2%. Due to these reasons, lower market returns are expected for the future.

Q. IS YOUR EXPECTED MARKET RETURN OF 8.2% CONSISTENT WITH THE FORECASTS OF MARKET PROFESSIONALS?

A. Yes. In the first quarter, 2008 survey, published on February 12, 2008, the median long-term expected return on the S&P 500 was 6.5% (see page 4 of Exhibit JRW-7). This is consistent with my expected market return of 8.2%.

Q. IS YOUR EXPECTED MARKET RETURN CONSISTENT WITH THE EXPECTED MARKET RETURNS OF CORPORATE CHIEF FINANCIAL OFFICERS (CFOS)?

A. Yes. John Graham and Campbell Harvey of Duke University conduct a quarterly survey of corporate CFOs. The survey is a joint project of Duke

University and *CFO Magazine.* In the March, 2008 survey, the median expected return on the S&P 500 over the next ten years is 8.0%.[19]

Q. GIVEN THIS EXPECTED MARKET RETURN, WHAT IS YOUR EX ANTE EQUITY RISK PREMIUM USING THE BUILDING BLOCKS METHODOLOGY?

A. As shown in the March, 14, 2008, as shown in the U. S. Treasury Yield Chart above, the current 30-year Treasury yield is 4.36%. My ex ante equity risk premium is simply the expected market return from the Building Blocks methodology minus this risk-free rate:

Ex Ante Equity Risk Premium = 8.2% - 4.36% = 3.84%

Q. GIVEN THIS DISCUSSION, HOW ARE YOU MEASURING AN EXPECTED EQUITY RISK PREMIUM IN THIS PROCEEDING?

A. As discussed above, page 3 of Exhibit JRW-7 provides a summary of the results of the equity risk premium studies that I have reviewed. These include the results of (1) the various studies of the historical risk premium, (2) ex ante equity risk premium studies, (3) equity risk premium surveys of CFOs, Financial Forecasters, as well as academics, and (4) the Building Block approaches to the equity risk premium. There are results reported for thirty

[19] The survey results are available at www.cfosurvey.org.

studies, and the average equity risk premium is 4.51%, which I will use as the equity risk premium in my CAPM study.

Q. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE EQUITY RISK PREMIUMS OF LEADING INVESTMENT FIRMS?

A. Yes. One of the first studies in this area was by Stephen Einhorn, one of Wall Street's leading investment strategists.[20] His study showed that the market or equity risk premium had declined to the 2.0 to 3.0 percent range by the early 1990s. Among the evidence he provided in support of a lower equity risk premium is the inverse relationship between real interest rates (observed interest rates minus inflation) and stock prices. He noted that the decline in the market risk premium has led to a significant change in the relationship between interest rates and stock prices. One implication of this development was that stock prices had increased higher than would be suggested by the historical relationship between valuation levels and interest rates.

The equity risk premiums of some of the other leading investment firms today support the result of the academic studies. An article in *The Economist* indicated that some other firms like J.P. Morgan are estimating an equity risk premium for an average risk stock in the 2.0 to 3.0 percent range above the interest rate on U.S. Treasury Bonds.[21]

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[20] Steven G. Einhorn, "The Perplexing Issue of Valuation: Will the Real Value Please Stand Up?" *Financial Analysts Journal* (July-August 1990), pp. 11-16.

[21] For example, see "Welcome to Bull Country," *The Economist* (July 18, 1998), pp. 21-3, and "Choosing the

Q. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE EQUITY RISK PREMIUMS USED BY CORPORATE CHIEF FINANCIAL OFFICERS (CFOS)?

A. Yes. In the previously-referenced March, 2008 CFO survey conducted by *CFO Magazine* and Duke University, the expected 10-year equity risk premium was 4.1%.

Q. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE EX ANTE EQUITY RISK PREMIUMS OF PROFESSIONAL FORECASTERS?

A. Yes. The financial forecasters in the previously-referenced Federal Reserve Bank of Philadelphia survey project both stock and bond returns. As shown on page 4 of Exhibit JRW-7, the median long-term expected stock and bond returns were 6.50% and 5.00%, respectively. This provides an ex ante equity risk premium of 1.50%.

Q. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE EQUITY RISK PREMIUMS USED BY THE LEADING CONSULTING FIRMS?

A. Yes. McKinsey & Co. is widely recognized as the leading management consulting firm in the world. They recently published a study entitled "The Real Cost of Equity" in which they developed an ex ante equity risk premium for the US. In reference to the decline in the equity risk premium, as well as

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Right Mixture," *The Economist* (February 27, 1999), pp. 71-2.

what is the appropriate equity risk premium to employ for corporate valuation purposes, the McKinsey authors concluded the following:

> We attribute this decline not to equities becoming less risky (the inflation-adjusted cost of equity has not changed) but to investors demanding higher returns in real terms on government bonds after the inflation shocks of the late 1970s and early 1980s. We believe that using an equity risk premium of 3.5 to 4 percent in the current environment better reflects the true long-term opportunity cost of equity capital and hence will yield more accurate valuations for companies.[22]

Q. WHAT EQUITY COST RATE IS INDICATED BY YOUR CAPM ANALYSIS?

A. The results of my CAPM study for the group of natural gas distribution companies are provided below:

$$K = (R_f) + ßi * [E(R_m) - (R_f)]$$

$$K = 4.50 + (0.86) * (4.51\%) = 8.4\%$$

V. EQUITY COST RATE SUMMARY

Q. PLEASE SUMMARIZE YOUR EQUITY COST RATE STUDY.

A. The results for my DCF and CAPM analyses for the group of natural gas distribution companies are indicated below:

	DCF	CAPM
Gas Company Group	9.0%	8.4%

[22] Marc H. Goedhart, et al, "The Real Cost of Equity," *McKinsey on Finance* (Autumn 2002), p. 15.

Q. GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY COST RATE FOR QGC?

A. I conclude that the equity cost rate for the group of natural gas distribution companies is in the 8.4-9.0 percent range. The midpoint of these figures is 8.65%. However, since I give greater weight to the DCF model and we are not recommending the permanent adoption of the Company's CET, I will use the upper end of this range - 9.0% - as the equity cost rate for QGC.

Q. PLEASE DISCUSS THE COMPANY'S CET.

A. The Company's CET was implemented as a pilot plan in 2006 which allows for the collection of distribution non-gas (DNG) revenue for certain customer classes. The CET is a revenue decoupling mechanism in that DNG revenue varies with the number of customers as opposed to the gas consumption. It works as a balancing account between DNG revenues and actual revenues received each month. Revenue neutrality through decoupling mechanisms such as CET is viewed by analysts at rating agencies as a significant measure as being beneficial to shareholders by reducing business risk. For example, both Moody's and Standard & Poor's have indicated that revenue decoupling mechanisms impact business risk profiles and improve credit ratings relative to utilities that do not have such mechanisms.

Q. HAVE STATE UTILITY COMMISSIONS RECOGNIZED THE IMPACT OF DECOUPLING ON THE COST OF EQUITY?

A. Yes. State Regulatory Commissions have begun to reflect the impact of decoupling mechanisms on allowed return on equity levels for public utility companies.

Q. CAN YOU GIVE EXAMPLES OF STATE COMMISSION DECISIONS THAT MAKE THIS ADJUSTMENT TO ALLOWED ROE LEVELS?

A. Yes. In a December 22, 2006 Decision in Docket Nos. 7175 and 7176, the Vermont Public Service Board reduced the Green Mountain Power Corporation's allowed ROE by 50 basis points for the adoption of an alternative regulation plan that included a decoupling mechanism.

In a July 19, 2007 Decision in Order No. 81517 Case No. 9092, the Maryland Public Service Commission adjusted Potomac Electric Power Company's authorized ROE downward by 50 basis points to reflect reduced risk associated with a decoupling mechanism.

On the same date, the Maryland Public Service Commission in Order No. 81518 Case No. 9093 also reduced the authorized ROE by 50 basis points for the Delmarva Power & Light Company due to the adoption of a decoupling mechanism.

Q. WHAT IS YOUR RECOMMENDATION IF THE COMPANY'S CET PROPOSAL IS APPROVED BY THE COMMISSION?

A. If the CET is adopted as a permanent decoupling mechanism by the Commission, I recommend that QGC's equity cost rate be reduced to recognize the reduction in business risk of the Company. I would leave it to the Commission to assess the magnitude of such a reduction in the authorized return on equity, with some guidance provided by the actions of other regulatory commissions.

Q. ISN'T YOUR EQUITY COST RATE RECOMMENDATION OF 9.0% LOW BY HISTORICAL STANDARDS?

A. Yes it is, and appropriately so. My rate of return is low by historical standards for three reasons. First, as discussed above, current capital costs are very low by historical standards, with interest rates at a cyclical low not seen since the 1960s. Second, the 2003 tax law, which reduces the tax rates on dividend income and capital gains, lowers the pre-tax return required by investors. And third, as discussed below, the equity or market risk premium has declined.

Q. FINALLY, PLEASE DISCUSS YOUR RATE OF RETURN IN LIGHT OF RECENT YIELDS ON 'A' RATED PUBLIC UTILITY BONDS.

A. In recent months the yields on long-term public utility bonds have been in the 6.00 percent range. My rate of return may appear to be too low given these yields. However, as previously noted, my recommendation must be viewed in the context of the significant decline in the market or equity risk premium. As

a result, the return premium that equity investors require over bond yields is much lower today. This decline was previously reviewed in my discussion of capital costs in today's markets.

Q. HOW DO YOU TEST THE REASONABLENESS OF YOUR COST OF EQUITY AND OVERALL RATE OF RETURN RECOMMENDATION?

A. To test the reasonableness of my equity cost rate recommendation, I examine the relationship between the return on common equity and the market-to-book ratios for the companies in the group of gas distribution companies.

Q. WHAT DO THE RETURNS ON COMMON EQUITY AND MARKET-TO-BOOK RATIOS FOR THE GROUP OF GAS DISTRIBUTION COMPANIES INDICATE ABOUT THE REASONABLENESS OF YOUR RECOMMENDATION?

A. Exhibit JRW-2 provides financial performance and market valuation statistics for the group of gas distribution companies. The median current return on equity and market-to-book ratios for the group are summarized below:

	Current ROE	**Market-to-Book Ratio**
Gas Company Group	12.3 %	1.79

Source: Exhibit JRW-2.

These results indicate that, on average, these companies are earning returns on equity above their equity cost rates. As such, this observation provides evidence that my recommended equity cost rate is reasonable and

fully consistent with the financial performance and market valuation of the proxy group of gas distribution companies.

VI. CRITIQUE OF QGC'S RATE OF RETURN TESTIMONY

Q. PLEASE SUMMARIZE QGC'S OVERALL RATE OF RETURN RECOMMENDATION.

A. QGC's rate of return of return recommendation is provided by Mr. David Curtis and Mr. Robert Hevert. The recommendation is summarized below:

Capital Source	Ratio	Cost Rate	Weighted Cost Rate
L-T Debt	47.56%	6.56%	3.12%
Common Equity	52.44%	11.25%	5.90%
Total	100.00%		9.02%

Q. WHAT ARE THE ERRORS IN COMPANY'S RATE OF RETURN POSITION?

A. QGC's proposed rate of return is excessive due to an overstated equity cost rate.

Q. PLEASE REVIEW MR. HEVERT'S EQUITY COST RATE APPROACHES.

A. Mr. Hevert estimates an equity cost rate of 11.25% for QGC by applying the DCF and CAPM approaches to a group of gas distribution companies. He has

also used the RP approach as a supporting methodology. The DCF results use two different dividend yield measures (30-day and 180-day) and the CAPM employs three alternative long-term risk-free interest rate measures (30-day, 180-day, and a 2008-09 forecast). His results are summarized below:

Summary of Approaches and Results

	Mean Low	Mean	Mean High
Constant Growth DCF – 30-Day Average	8.63%	9.67%	10.70%
Constant Growth DCF – 180-Day	8.44%	9.48%	10.50%
CAPM 4.57% (30-Day Average)	10.36%	10.96%	11.55%
CAPM 4.88% (180-Day Average)	10.68%	11.27%	11.86%
CAPM 4.62% (2008-2009 Forecast)	10.42%	11.01%	11.60%
Supporting Methodologies			
Risk Premium (Authorized ROE and Treasury Yields)	10.87%	10.94%	11.02%
DCF Normalized Dividend Yield		9.75%	10.77%
Estimated Size Premium	0.61%		

DCF Approach

Q. PLEASE SUMMARIZE MR. HEVERT'S DCF ESTIMATES.

A. Mr. Hevert uses two dividend yield measures (30 and 180 days) and computes DCF equity cost rates using low, mean, and high expected growth rates. The DCF expected growth rate measures include the projected EPS growth rates from Zacks and Value Line as well as retention growth (BR + SV). These low and high DCF equity cost rates use the lowest and the highest of the expected growth rates from Zacks, Value Line, and retention growth. Mr. Hevert's DCF estimates are listed in the table below.

DCF using 30/180 prices and low, mean, and high growth rates

	Mean Low	Mean	Mean High
30-Day Average	8.63%	9.67%	10.70%
180-Day Average	8.44%	9.48%	10.50%

Q. PLEASE EXPRESS YOUR CONCERNS WITH MR. HEVERT'S DCF STUDIES.

A. I have four major concerns with Mr. Hevert's DCF equity cost rate studies: (1) the arbitrary elimination of WGL Holdings because of low DCF equity cost rate estimates, and (2) the heavy reliance on the upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line*, (3) an inappropriately applied retention growth methodology, and (4) Mr. Hevert's contention that the DCF approach understates equity cost rates.

Q. PLEASE DISCUSS MR. HEVERT'S ARBITRARY ELIMINATION OF DCF RESULTS FOR WGL HOLDINGS.

A. Mr. Hevert's has eliminated WGL Holdings from his proxy group because the DCF equity cost results for WGL fall below a figure that Mr. Hevert believes is appropriate. Such an arbitrarily elimination of a company from the proxy group due to low a DCF equity cost rate result serves to inflate his DCF results. To be unbiased in his proxy group selection and not inflate his DCF results, he should be symmetric in his proxy group analysis and eliminate the company with the highest DCF equity cost rate. Otherwise, he has produced

upwardly-biased his DCF equity cost rate results. If he has also eliminated the results for the highest DCF results (South Jersey Industries) for his 30 day/180 day DCF models, his median DCF results would be 9.0% and 9.23%.

Q. PLEASE REVIEW MR. HEVERT'S EXCESSIVE RELIANCE ON ANALYSTS' AND *VALUE LINE*'S PROJECTED EPS GROWTH RATE ESTIMATES.

A. Mr. Hevert has relied excessively on the EPS forecasts of Wall Street analysts and *Value Line* to gauge growth for his DCF model. It seems highly unlikely that investors today would rely excessively on the forecasts of securities analysts, and ignore historical growth, in arriving at expected growth. In the academic world, the fact that EPS forecasts of securities analysts are overly optimistic and biased upwards has been known for years. In addition, as I show below, *Value Line's* EPS forecasts are excessive and unrealistic.

Q. PLEASE REVIEW THE BIAS IN ANALYSTS' GROWTH RATE FORECASTS.

A. Analysts' growth rate forecasts are collected and published by Zacks, First Call, I/B/E/S, and Reuters. These services retrieve and compile EPS forecasts from Wall Street Analysts. These analysts come from both the sell side (Merrill Lynch, Paine Webber) and the buy side (Prudential Insurance, Fidelity).

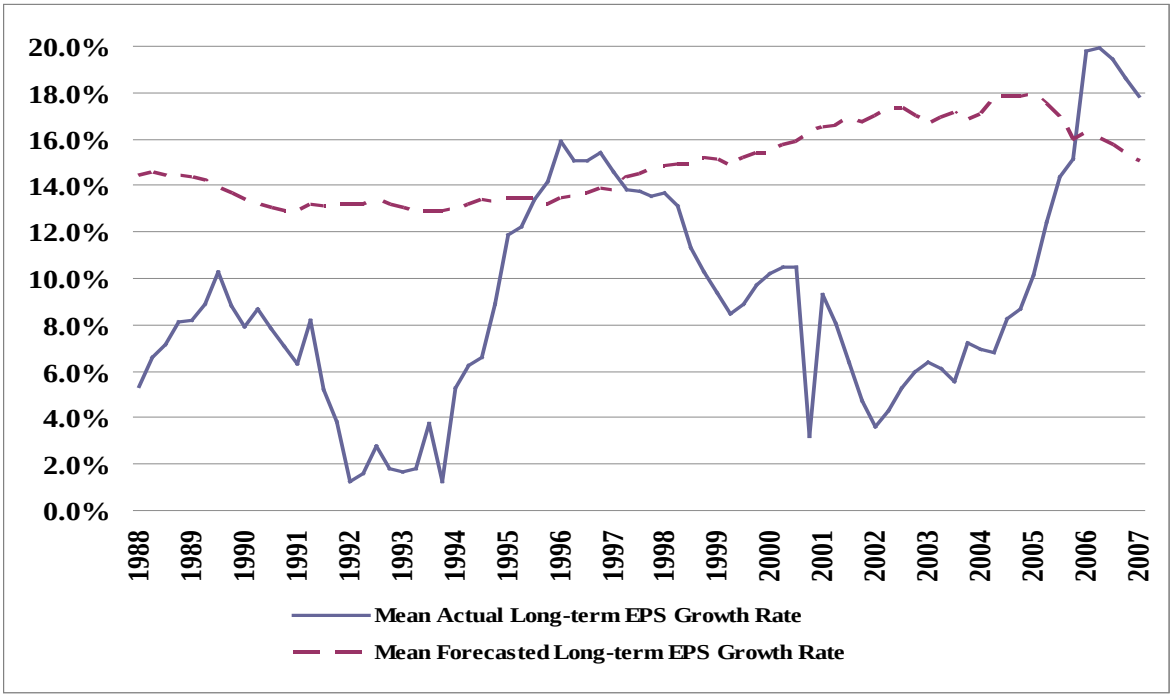
The problem with using these forecasts to estimate a DCF growth rate is that the objectivity of Wall Street research has been challenged, and many have

argued that analysts' EPS forecasts are overly optimistic and biased upwards. To evaluate the accuracy of analysts' EPS forecasts, I have compared actual 3-5 year EPS growth rates with forecasted EPS growth rates on a quarterly basis over the past 20 years for all companies covered by the I/B/E/S data base. In the graph below, I show the average analysts' forecasted 3-5 year EPS growth rate with the average actual 3-5 year EPS growth rate. Because of the necessary 3-5 year follow-up period to measure actual growth, the analysis in this graph only (1) covers forecasted and actual EPS growth rates through 2006, and (2) includes only companies that have 3-5 years of actual EPS data following the forecast period.

The following example shows how the results can be interpreted. For average 3-5-year annual prior to the first quarter of 1999, analysts had projected an EPS growth rate of 15.0%, but companies only generated an average annual EPS growth rate over the next 3-5 years of 8.%. This 15.0% figure represented the average projected growth rate for over 1,000 companies, with an average of 4.70 analysts' forecasts per company over the 20 year period covered by the study. Overall, my findings indicate that forecast errors for long-term estimates are predominantly positive, which indicates an upward bias in growth estimates. The mean and median forecast errors over the observation period are 143.06% and 75.08%, respectively. They are only negative for 11 time periods: five consecutive quarters starting at the end of 1995 and six consecutive quarters starting in 2006. As can be seen in the figure below, the negative forecast errors clearly follow periods of

declined earnings growth when higher growth rates can be attained. Overall, there is evidence of a persistent upward bias in long-term EPS growth forecasts.

Long-Term Forecasted Versus Actual EPS Growth Rates
1988-2006



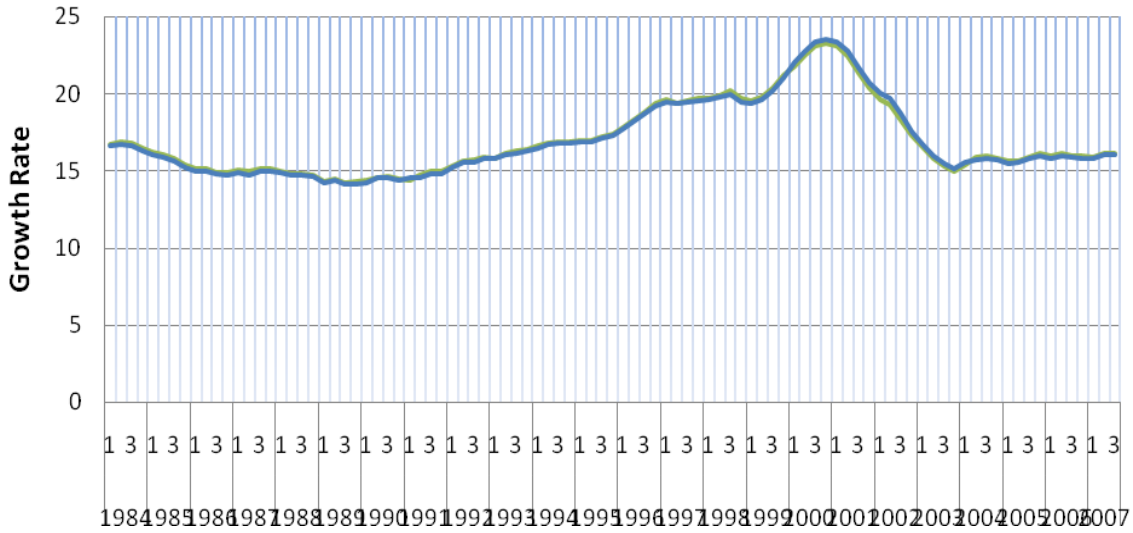
Source: J. Randall Woolridge.

The post-1999 period has seen the boom and then the bust in the stock market, an economic recession, 9/11, and the Iraq war. Furthermore, and highly significant in the context of this study, we have also had the Elliott Spitzer investigation of Wall Street firms and the subsequent Global Securities Settlement in which nine major brokerage firms paid a fine of $1.5B for their biased investment research.

To evaluate the impact of these events on analysts' forecasts, the graph below provides the average 3-5-year EPS growth rate projections for all

companies provided in the I/B/E/S database on a quarterly basis from 1988 to 2006. In this graph, no comparison to actual EPS growth rates is made and hence there is no follow-up period. Therefore, 3-5 year growth rate forecasts are shown until 2006 and, since companies are not lost due to a lack of follow-up EPS data, these results are for a larger sample of firms. Analysts' forecasts for EPS growth were higher for this larger sample of firms, with a more pronounced run-up and then decline around the stock market peak in 2000. The average projected growth rate hovered in the 14.5%-17.5% range until 1995, and then increased dramatically over the next five years to 23.3% in the fourth quarter of the year 2000. Forecasted growth has since declined to the 15.0% range.

Long-Term IBES Forecasted EPS Growth Rates
1988-2006



While analysts' EPS growth rates forecasts have subsided since 2000, these results suggest that, despite the Elliot Spitzer investigation and the

Global Securities Settlement, analysts' EPS forecasts are still upwardly biased. The actual 3-5 year EPS growth rate over time has been about one half the projected 3-5 year growth rate forecast of 15.0%. Furthermore, as discussed above, historic growth in GNP and corporate earnings has been in the 7% range. As such, an EPS growth rate forecast in excess of ten percent does not reflect economic reality. This observation is supported by a *Wall Street Journal* article entitled "Analysts Still Coming Up Rosy – Over-Optimism on Growth Rates is Rampant – and the Estimates Help to Buoy the Market's Valuation." The following quote provides insight into the continuing bias in analysts' forecasts:

> Hope springs eternal, says Mark Donovan, who manages Boston Partners Large Cap Value Fund. 'You would have thought that, given what happened in the last three years, people would have given up the ghost. But in large measure they have not.'
>
> These overly optimistic growth estimates also show that, even with all the regulatory focus on too-bullish analysts allegedly influenced by their firms' investment-banking relationships, a lot of things haven't changed: Research remains rosy and many believe it always will.[23]

Q. ARE *VALUE LINE*'S GROWTH RATE FORECASTS SIMILARILY UPWARDLY BIASED?

A. Yes. *Value Line* has a decidedly positive bias to its earnings growth rate

[23] Ken Brown, "Analysts Still Coming Up Rosy – Over-Optimism on Growth Rates is Rampant – and the Estimates Help to Buoy the Market's Valuation." *Wall Street Journal*, (January 27, 2003), p. C1.

forecasts as well. To assess *Value Line*'s earnings growth rate forecasts, I used the *Value Line Investment Analyzer*. The results are summarized in the table below. I initially filtered the database and found that *Value Line* has 3-5 year EPS growth rate forecasts for 2,611firms. The average projected EPS growth rate was 16.1%. This is incredibly high given that the average historical EPS growth rate in the US is about seven percent! Equally incredible is that *Value Line* only predicts negative EPS growth for thirty companies. That is one percent of the companies covered by *Value Line*. Given the ups and downs of corporate earnings, this is unreasonable.

Value Line 3-5 year EPS Growth Rate Forecasts

	Average Projected EPS Growth rate	**Number of Negative EPS Growth Projections**	**Percent of Negative EPS Growth Projections**
2,611 Firms	**16.1%**	**30**	**1.1%**

To put this figure in perspective, I screened the 2,611 firms with 3-5 year growth rate forecasts to see what percent had experienced negative EPS growth rates over the past five years. *Value Line* reported a five-year historic growth rate for 1,613 of the 2,613 companies. It should be noted that the past five years have been a period of rapidly rising corporate earnings as the economy and businesses have rebounded from the recession of 2001. These results, shown in the table below, indicate that the average historic growth was 9.40% and *Value Line* reported negative historic growth for 405 firms which represents 25.1% of these companies.

Historical Five-Year EPS Growth Rates for Companies with Value Line 3-5 year EPS Growth Rate Forecasts

	Average Historical EPS Growth rate	Number with Negative Historical EPS Growth	Percent with Negative Historical EPS Growth
1,613 Firms	**9.40%**	**405**	**25.1%**

These results indicate that *Value Line*'s EPS forecasts are excessive and unrealistic. It appears that analysts at *Value Line* are similar to the analysts at Wall Street firms and view future earnings through 'rose-colored' glasses and provide overly-optimistic forecasts of future growth.

Q. PLEASE NOW ASSESS MR. HEVERT'S RETENTION GROWTH METHODOLOGY.

A. In addition to using the EPS forecasts of Wall Street analysts and *Value Line*, Mr. Hevert also computes a retention growth rate for each company. His retention growth methodology includes estimates of internal growth (from earnings retention and earned returns) and external growth (from selling additional shares at prices above book value). The inputs for his retention growth methodology all come from *Value Line*. The average retention growth for his eight companies is 6.01%.

The problem with Mr. Hevert's retention growth methodology is that it clearly is erroneous. As noted, Mr. Hevert's inputs come from *Value Line*. *Value Line* also produces its estimate of retention growth in its projected book value per share (BVPS) figure. The table below shows the projected BVPS for Mr. Hevert's eight gas companies. The average is only 4.2%. Clearly, Mr.

Hevert's methodology, using *Value Line*'s own data, comes up with a much higher internal growth rate than *Value Line* does when it forecasts internal growth.

***Value Line* BVPS Growth Rate Forecasts**

Company	Sym	Projected BVPS Growth
AGL Resources	**ATG**	**1.5%**
Atmos Energy	**ATO**	**3.5%**
New Jersey Resources	**NJR**	**9.0%**
Nicor Inc.	**GAS**	**4.0%**
Northwest Natural Gas Company	**NWN**	**3.5%**
Piedmont Natural Gas, Inc.	**PNY**	**3.5%**
South Jersey Industries	**SJI**	**5.0%**
Southwest Gas	**SWX**	**3.5%**
Average		**4.2%**

Q. FINALLY, PLEASE EVALUATE MR. HEVERT'S ASSESSMENT OF THE USE OF THE DCF MODEL TO ESTIMATE AN EQUITY COST RATE FOR QGC.

A. Mr. Hevert criticizes the use of the DCF model to estimate equity cost rates for QGC. He cites the assumptions used in the theoretical derivation of the DCF model, and goes on to conduct an empirical analysis which he claims demonstrates that the DCF model understates equity cost rates for gas companies at this time.

With respect to the DCF model's assumptions, as Mr. Hevert is fully aware, all economic models are derived using fairly restrictive assumptions. In the DCF model, assumptions such as constant P/E and dividend payout ratios

make the model internally consistent. Criticisms of the assumptions of the model are valid if it can be demonstrated that the model is not robust with respect to obvious real world conditions that deviate from these assumptions. For example, P/E ratios change constantly as new information comes to the market that causes investors to revalue a company's shares (the numerator of the P/E ratio) relative to current earnings (the denominator of the P/E ratio). This new information may be associated with changes in the economic landscape that result in changes in equity cost rates (such as changes in interest rates or investors' risk/return tradeoff). In the context of the DCF model, the fact that P/E ratios change only provides an indication of changes in a firm's share price relative to past earnings. Share prices look forward and are determined by a firm's prospective cash returns discounted to the present by investors' required return. Earnings look backwards and are a function of firm performance and generally accepted accounting conventions.

Thus, in the context of the DCF model, the fact that P/E ratios change is simply an indication that new information relating to the economic environment is available and this has caused investors to revalue shares. The DCF is based on expectations, and thus it is also likely that the new information actually results in a change in equity cost rates. The fact that the DCF model is used almost universally in the investment community and in utility ratemaking is indicative of the robustness of the methodology.

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Q. DOES MR. HEVERT'S EVALUATION OF THE RELATIONSHIP

BETWEEN GAS COMPANY RELATIVE P/E RATIOS AND/OR THEIR DIVIDEND YIELDS RELATIVE TO THIRTY-YEAR TREASURY YIELDS PROVIDE ANY INSIGHT INTO THE USE OF THE DCF MODEL TO ESTIMATE AN EQUITY COST RATE FOR QGC.

A. No. Mr. Hevert's analysis simply indicates that (1) as discussed above, P/E ratios change over time which can reflect changes in equity cost rates, and (2) that gas company dividend yields, as well as 30-year Treasury yields, are at historically low levels. These factors do not indicate in any way whatsoever that the DCF model understates the equity cost rate for QGC.

CAPM

Q. PLEASE SUMMARIZE MR. HEVERT'S CAPM EQUITY COST RATES.

A. Mr. Hevert initially develops CAPM equity cost rate estimates for QGC using three alternative long-term risk-free interest rate measures (30-day, 180-day, and 2008-09 forecast). His results are summarized below:

Hevert's CAPM Results

Risk Free Rate	Mean Low	Mean	Mean High
4.57% (30-Day Average)	10.36%	10.96%	11.55%
4.88% (180-Day Average)	10.68%	11.27%	11.86%
4.62% (2008-2009 Forecast)	10.42%	11.01%	11.60%

Q. WHAT CONCERNS DO YOU HAVE WITH MR. HEVERT'S CAPM ANALYSES?

A. I have two major concerns with Mr. Hevert's CAPM analyses: (1) his risk-free interest rates are above current market rates, and (2) most significantly, his equity or market risk premiums for both his CAPM and ECAPM results.

Q. YOU NOTE THAT MR. HEVERT'S RISK-FREE RATES ARE ABOVE CURRENT MARKET RATES. PLEASE ELABORATE.

A. Since Mr. Hevert filed his testimony, interest rates have fallen significantly. At this time (Mid-March), the yield on 30-year Treasury bonds is 40-50 basis points below the yields used by Mr. Hevert.

Q. YOUR PRIMARY PROBLEM WITH MR. HEVERT'S CAPM ANALYSES INVOLVES THE EQUITY RISK PREMIUM. WHAT ARE YOUR CONCERNS ON THIS MATTER?

A. The primary problem with Mr. Hevert's CAPM is his equity or market risk premium. Mr. Hevert uses an equity risk premium of 7.10%, which is the Ibbotson Associates historic risk premium computed as the difference between annual stock returns and bond income returns over the 1926-2006 time period. As I previously noted, there are three procedures for estimating an equity risk premium – historic returns, surveys, and expected return models. Mr. Hevert has only employed one approach. Furthermore, as I discussed above in developing my CAPM equity risk premium, over two

decades ago Mehra and Prescott highlighted the fact that equity risk premiums computed using historical stock and bond returns produce inflated equity risk premiums relative to fundamentals.

Q. PLEASE PROVIDE FURTHER INSIGHTS INTO THE ERRORS IN THE USE OF HISTORIC RETURNS TO COMPUTE A FORWARD-LOOKING OR EX ANTE RISK PREMIUM.

A. Using the historic relationship between stock and bond returns to measure an ex ante equity risk premium is erroneous and, especially given current market conditions, overstates the true market equity risk premium. The equity risk premium is based on expectations of the future and when past market conditions vary significantly from the present, historic data does not provide a realistic or accurate barometer of expectations of the future. At the present time, using historic returns to measure the ex ante equity risk premium ignores market conditions and masks the dramatic change in the risk and return relationship between stocks and bonds. This change suggests that the equity risk premium has declined.

Q. PLEASE DISCUSS THE ERRORS IN USING HISTORIC STOCK AND BOND RETURNS TO ESTIMATE AN EX ANTE EQUITY RISK PREMIUM.

A. There are a number of flaws in using historic returns over long time periods to estimate expected equity risk premiums. These issues include:

(A) Biased historic bond returns;

(B) The arithmetic versus the geometric mean return;

(C) Unattainable and biased historic stock returns;

(D) Survivorship bias;

(E) The "Peso Problem;"

(F) Market conditions today are significantly different than the past; and

(G) Changes in risk and return in the markets.

These issues will be addressed in order.

Biased Historic Bond Returns

Q. HOW ARE HISTORIC BOND RETURNS BIASED?

A. An essential assumption of these studies is that over long periods of time investors' expectations are realized. However, the experienced returns of bondholders in the past violate this critical assumption. Historic bond returns are biased downward as a measure of expectancy because of capital losses suffered by bondholders in the past. As such, risk premiums derived from this data are biased upwards.

The Arithmetic versus the Geometric Mean Return

Q. PLEASE DISCUSS THE ISSUE RELATING TO THE USE OF THE ARITHMETIC VERSUS THE GEOMETRIC MEAN RETURNS IN THE IBBOTSON METHODOLOGY.

A. The measure of investment return has a significant effect on the interpretation of the risk premium results. When analyzing a single security price series over time (i.e., a time series), the best measure of investment performance is the geometric mean return. Using the arithmetic mean overstates the return experienced by investors. In a study entitled "Risk and Return on Equity: The Use and Misuse of Historical Estimates," Carleton and Lakonishok make the following observation: "The geometric mean measures the changes in wealth over more than one period on a buy and hold (with dividends invested) strategy."[24] Since Mr. Hevert's study covers more than one period (and he assumes that dividends are reinvested), he should be employing the geometric mean and not the arithmetic mean.

Q. PLEASE PROVIDE AN EXAMPLE DEMONSTRATING THE PROBLEM WITH USING THE ARITHMETIC MEAN RETURN.

A. To demonstrate the upward bias of the arithmetic mean, consider the following example. Assume that you have a stock (that pays no dividend) that is selling for $100 today, increases to $200 in one year, and then falls back to $100 in two years. The table below shows the prices and returns.

Time Period	Stock Price	Annual Return
0	$100	
1	$200	100%
2	$100	-50%

[24] Willard T. Carleton and Josef Lakonishok, "Risk and Return on Equity: The Use and Misuse of Historical Estimates," *Financial Analysts Journal* (January-February, 1985), pp. 38-47.

The arithmetic mean return is simply (100% + (-50%))/2 = 25% per year. The geometric mean return is $((2 * .50)^{(1/2)}) - 1 = 0\%$ per year. Therefore, the arithmetic mean return suggests that your stock has appreciated at an annual rate of 25%, while the geometric mean return indicates an annual return of 0%. Since after two years, your stock is still only worth $100, the geometric mean return is the appropriate return measure. For this reason, when stock returns and earnings growth rates are reported in the financial press, they are generally reported using the geometric mean. This is because of the upward bias of the arithmetic mean.

As further evidence as to the appropriate mean return measure, the U.S. Securities and Exchange Commission requires equity mutual funds to report historical return performance using geometric mean and not arithmetic mean returns.[25] Therefore, Mr. Hevert's arithmetic mean return measures are biased and should be disregarded.

Unattainable and Biased Historic Stock Returns

Q. YOU NOTE THAT HISTORIC STOCK RETURNS ARE BIASED USING THE IBBOTSON METHODOLOGY. PLEASE ELABORATE.

A. Returns developed using Ibbotson's methodology are computed on stock indexes and therefore (1) cannot be reflective of expectations because these returns are unattainable to investors, and (2) produce biased results. This methodology assumes (a) monthly portfolio rebalancing and (b) reinvestment of interest and

[25] U.S. Securities and Exchange Commission, Form N-1A.

dividends. Monthly portfolio rebalancing presumes that investors rebalance their portfolios at the end of each month in order to have an equal dollar amount invested in each security at the beginning of each month. The assumption would obviously generate extremely high transaction costs and, as such, these returns are unattainable to investors. In addition, an academic study demonstrates that the monthly portfolio rebalancing assumption produces biased estimates of stock returns.[26]

Transaction costs themselves provide another bias in historic versus expected returns. The observed stock returns of the past were not the realized returns of investors due to the much higher transaction costs of previous decades. These higher transaction costs are reflected through the higher commissions on stock trades, and the lack of low cost mutual funds like index funds.

Survivorship Bias

Q. HOW DOES SURVIVORSHIP BIAS TAINT MR. HEVERT'S HISTORIC EQUITY RISK PREMIUM?

A. Using historic data to estimate an equity risk premium suffers from survivorship bias. Survivorship bias results when using returns from indexes like the S&P 500. The S&P 500 includes only companies that have survived. The fact that returns of firms that did not perform so well were dropped from

[26] See Richard Roll, "On Computing Mean Returns and the Small Firm Premium," *Journal of Financial Economics* (1983), pp. 371-86.

these indexes is not reflected. Therefore these stock returns are upwardly biased because they only reflect the returns from more successful companies.

The "Peso Problem"

Q. WHAT IS THE "PESO PROBLEM" AND HOW DOES IT AFFECT HISTORIC RETURNS AND EQUITY RISK PREMIUMS?

A. Mr. Hevert's use of historic return data also suffers from the so-called "peso problem." This issue involves the fact that past stock market returns were higher than were expected at the time because despite war, depression, and other social, political, and economic events, the US economy survived and did not suffer hyperinflation, invasion, and the calamities of other countries. Therefore, historic stock returns are overstated as measures of expected returns.

Market Conditions Today are Significantly Different than in the Past

Q. FROM AN EQUITY RISK PREMIUM PERSPECTIVE, PLEASE DISCUSS HOW MARKET CONDITIONS ARE DIFFERENT TODAY.

A. The equity risk premium is based on expectations of the future. When past market conditions vary significantly from the present, historic data does not provide a realistic or accurate barometer of expectations of the future. As noted previously, stock valuations (as measured by P/E) are relatively high and interest rates are relatively low, on a historic basis. Therefore, given the

high stock prices and low interest rates, expected returns are likely to be lower on a going forward basis.

Changes in Risk and Return in the Markets

Q. PLEASE DISCUSS THE NOTION THAT HISTORIC EQUITY RISK PREMIUM STUDIES DO NOT REFLECT THE CHANGE IN RISK AND RETURN IN TODAY'S FINANCIAL MARKETS.

A. The historic equity risk premium methodology is unrealistic in that it makes the explicit assumption that risk premiums do not change over time based on market conditions such as inflation, interest rates, and expected economic growth. Furthermore, using historic returns to measure the equity risk premium masks the dramatic change in the risk and return relationship between stocks and bonds. The nature of the change, as I will discuss below, is that bonds have increased in risk relative to stocks. This change suggests that the equity risk premium has declined in recent years.

Page 1 of Exhibit JRW-8 provides the yields on long-term U.S. Treasury bonds from 1926 to 2007. One very obvious observation from this graph is that interest rates increase dramatically from the mid-1960s until the early 1980s, and since have returned to their 1960 levels. The annual market risk premiums for the 1926 to 2007 period are provided on page 2 of Exhibit JRW-8. The annual market risk premium is defined as the return on common stock minus the return on long-term Treasury Bonds. There is considerable variability in this series and a clear decline in recent decades. The high was

54% in 1933 and the low was -38% in 1931. Evidence of a change in the relative riskiness of bonds and stocks is provided on page 3 of Exhibit JRW-8 which plots the standard deviation of monthly stock and bond returns since 1930. The plot shows that, whereas stock returns were much more volatile than bond returns from the 1930s to the 1970s, bond returns became more variable than stock returns during the 1980s. In recent years stocks and bonds have become much more similar in terms of volatility, but stocks are still a little more volatile. The decrease in the volatility of stocks relative to bonds over time has been attributed to several stock related factors: the impact of technology on productivity and the new economy; the role of information (see former Federal Reserve Chairman Greenspan's comments referred to earlier in this testimony) on the economy and markets; better cost and risk management by businesses; and several bond related factors; deregulation of the financial system; inflation fears and interest rates; and the increase in the use of debt financing. Further evidence of the greater relative riskiness of bonds is shown on page 4 of Exhibit JRW-8, which plots real interest rates (the nominal interest rate minus inflation) from 1926 to 2007. Real rates have been well above historic norms during the past 10-15 years. These high real interest rates reflect the fact that investors view bonds as riskier investments.

The net effect of the change in risk and return has been a significant decrease in the return premium that stock investors require over bond yields. In short, the equity or market risk premium has declined in recent years. This decline has been discovered in studies by leading academic scholars and

investment firms, and has been acknowledged by government regulators. As such, using a historic equity risk premium analysis is simply outdated and not reflective of current investor expectations and investment fundamentals.

Q. DO YOU HAVE ANY OTHER THOUGHTS ON THE USE OF HISTORICAL RETURN DATA TO ESTIMATE AN EQUITY RISK PREMIUM?

A. Yes. Jay Ritter, a Professor of Finance at the University of Florida, identified the use of historical stock and bond return data to estimate a forward-looking equity risk premium as one of the "Biggest Mistakes" taught by the finance profession.[27] His argument is based on the theory behind the equity risk premium, the excessive results produced by historical returns, and the previously-discussed errors of such as survivorship bias in historical data.

Risk Premium

Q. PLEASE SUMMARIZE MR. HEVERT'S RISK PREMIUM ANALYSIS.

A. Mr. Hevert uses a RP approach as a supporting methodology in equity cost rate analysis. He calculates equity cost rates of 10.81% to 11.0% using this approach. In his RP approach, Mr. Hevert regressed authorized ROEs for gas distribution companies on the yields on 10-year Treasury bonds for the years 1992 to 2007.

[27] Jay Ritter, "The Biggest Mistakes We Teach," *Journal of Financial Research* (Summer 2002).

Q. PLEASE EVALUATE THE BASE YIELD OF MR. HEVERT'S RISK PREMIUM ANALYSIS.

A. Mr. Hevert's RP risk premium analysis is based on the yields on the 10-year Treasury bonds. On page 39 of his testimony, he indicates that a 10-year Treasury implies a ROE of 10.91%. Today, 10-year Treasury yields are about 3.5%, which implies a ROE below 10.0 percent.

Q. WHAT OTHER PROBLEMS ARE ASSOCIATED WITH MR. HEVERT'S RP?

A. The key issue is the use of authorized ROEs. There are several problems with interpreting the results using authorized ROEs as the appropriate ROE for QGC. First, there is the issue of circularity. It is not appropriate to simply review the returns that other regulatory commissions are providing without testing as to whether it is greater or less than the return that investors require. Second, gas companies have been selling at market-to-books in excess of 1.0 for some time. This is evidence that authorized ROEs have been, in fact, in excess of the returns required by investors. I believe that this is because regulatory commissions are not cognizant of the extensive research that indicates the equity risk premium has declined. Third, many of these authorized ROEs are the result of settlements which could involve other negotiated rate case elements beyond the announced ROE.

Macroeconomic Indicators

Q. MR. HEVERT HAS CITED INTEREST RATE LEVELS IN SUPPORT OF HIS RECOMMENDATION. PLEASE COMMENT.

A. On page 40 of his testimony Mr. Hevert cites interest rates in support of his recommendation. The table below provides the figures for the timing of the Company last rate case (June-August 2002), the timing of Mr. Hevert's testimony, and current rates. Clearly the macroeconomic data used by Mr. Hevert to support his recommendation in September-October 2007 no longer exists.

	June – August 2002	**September – November 2007**	**March 18, 2008**
Federal Funds Rate (Target)	1.75%	4.50%	2.25%
2-Year Treasury Yield	2.56%	3.77%	1.52%
10-Year Treasury Yield	4.61%	4.40%	3.40%

Size Premium

Q. PLEASE ADDRESS MR. HEVERT'S ARGUEMNT FOR A SIZE PREMIUM FOR THE COMPANY.

A. Mr. Hevert claims that a size premium could be appropriate for the QGC. He

supports his size premium on the basis of a historical return analysis performed by Ibbotson Associates. As discussed above, there are numerous errors in using historical market returns to compute risk premiums. These errors provide inflated estimates of expected risk premiums. Among the errors are the well-known survivorship bias (only successful companies survive – poor companies do not survive) and unattainable return bias (the Ibbotson procedure presumes monthly portfolio rebalancing). Again, these biases are discussed at more length later in my testimony. The net result is that Ibbotson's size premiums are poor measures for any risk adjustment to account for the size of the Company. This observation is further supported by a review of the Ibbotson study. The Ibbotson study used for the explicit size premium is based on the stock returns for companies in different size deciles. A review of table in the Ibbotson document indicates that these companies have betas that are larger than the betas of utility companies. Hence, these size premiums are not associated with the utility industry. Finally, and most significantly, Professor Annie Wong has tested for a size premium in utilities and concluded that, unlike industrial stocks, utility stocks do not exhibit a significant size premium.[28] As explained by Professor Wong, there are several reasons why such a size premium would not be attributable to utilities. Utilities are regulated closely by state and federal agencies and commissions and hence their financial performance is monitored on an ongoing basis by both the state and federal

[28] Annie Wong, "Utility Stocks and the Size Effect: An Empirical Analysis," *Journal of the Midwest Finance Association*, 1993, PP. 95-101.

governments. In addition, public utilities must gain approval from government entities for common financial transactions such as the sale of securities. Furthermore, unlike their industrial counterparts, accounting standards and reporting are fairly standardized for public utilities.

Finally, a utility's earnings are predetermined to a certain degree through the ratemaking process in which performance is reviewed by state commissions and other interested parties. Overall, in terms of regulation, government oversight, performance review, accounting standards, and information disclosure, utilities are much different than industrials, which could account for the lack of a size premium.

Authorized Returns on Equity

Q. ON PAGE 56 OF HIS TESTIMONY, AND IN EXHIBIT 3.15, MR. HEVERT CLIAMS THAT HIS RECOMMENDATION IS IN LINE WITH THE RECENT AUTHORIZED RETURNS ON COMMON EQUITY FOR GAS COMPANIES. PLEASE COMMENT.

A. There are several problems with Mr. Hevert's analysis. First, his recommendation is at the high end of the range. Second, Mr. Hevert's analysis includes data from 2005 through the third quarter of 2007. If you only consider the authorized returns during 2007 from Exhibit 3.15, the average authorized ROE is only 10.25%. Third, as discussed above, gas companies have been selling at market-to-books in excess of 1.0 for some

time which is evidence that authorized ROEs have been in excess of the returns required by investors. Fourth, also as discussed above, many of these authorized ROEs are the result of settlements which may involve other negotiated rate case elements beyond the announced ROE.

VII. SUMMARY

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. My testimony examined the critical element of the capital costs in today's market, looked at the proper set of comparable companies to QGC, analyzed the capital structure of the Company, determined the cost of common equity capital, and refuted the errors in the Company's testimony.

My conclusion regarding the proper cost of capital for Questar Gas results in an ROE of 9.0% as I showed by my DCF analysis. I checked this analysis with a CAPM analysis which showed an even lower ROE of 8.4% confirming the reasonableness of my 9.0% recommendation.

Q. PLEASE SUMMARIZE SOME OF THE MAIN DIFFERENCES BETWEEN YOUR RECOMMEMDED ROE AND THE COMPANY'S.

A. Errors in the company's analysis explain the contrast between their request and my recommendation. As I described in my testimony, some of the flaws in the company's analysis include: overstatement of equity cost rates, arbitrary elimination of a lower DCF comparable company, reliance on upwardly biased

growth forecasts, the claim that DCF underestimates equity cost rates, outdated risk-free interest rates used in the CAPM analysis, inaccurate market risk premiums, improper reliance on outcome from other jurisdictions, and incorrect use of size premium.

Q. NONETHELESS YOUR RECOMMENDED ROE IS BELOW THE AVERAGE OF RECENT AUTHORIZED ROES. WHY IS THIS?

A. Beyond the issues discussed above, capital costs have declined significantly over the past six months due to the decline in interest rates. These lower capital costs are not reflected in the decisions made by these regulatory commissions, but they rightly should be addressed now.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.