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BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO 891345-EI

TESTIMONY AND EXHIBITS
OF
R. A. MORIN

Gulf Power

GULF POWER COMPANY

Before the Florida Public Service Commission
Direct Testimony of
Dr. Roger A. Morin
In Support of Rate Relief
Docket No. 891345-EI
Date of Filing December 15, 1989

Q. Would you please state your name, business address, and occupation?

A. My name is Dr. Roger A. Morin. My business is 640 Clearlake Terrace, Roswell, Georgia, 30076. I am Professor of Finance at the College of Business Administration, Georgia State University and Professor of Finance for Regulated Industry at the Center for the Study of Regulated Industry at Georgia State University.

Q. Please describe your educational background.

A. I hold a Bachelor of Engineering degree and an MBA in Finance from McGill University, Montreal, Canada. I received my Ph.D in Finance and Econometrics at the Wharton School of Finance, University of Pennsylvania.

Q. Do you have an exhibit that contains information to which you will refer in your testimony?

A. Yes.

Counsel: We ask that Dr. Morin's Exhibit,

comprised of 8 Schedules, be marked for identification as Exhibit No. ____ (RAM-1).

Q. Please summarize your academic and business career.

A. I have taught at the Wharton School of Finance, University of Pennsylvania, at the Amos Tuck School of Business at Dartmouth College where I was Visiting Professor of Finance in 1986, at Drexel University, University of Montreal, McGill University. I have been a professor of Finance at the College of Business Administration at Georgia State University since 1979. I was a faculty member of Advanced Management Research International, and I am currently a faculty member of The Management Exchange, Inc., where I conduct frequent national executive-level education seminars throughout the United States and Canada. In the last five years and throughout 1989, I have conducted national seminars on "Utility Cost of Capital" and "Utility Capital Allocation." These are programs which I have developed on behalf of The Management Exchange, Inc., in conjunction with Public Utilities Reports, Inc.

I have authored or co-authored several books, monographs, and articles in academic and scientific journals on the subject of finance, including the

Journal of Finance, the Journal of Business Administration, International Management Review, and Public Utility Fortnightly. I have also published a widely-used textbook on regulatory finance, entitled Utilities Cost of Capital, published by Public Utility Reports, Inc., Arlingtn, VA, 1984, and have engaged in extensive consulting activities on behalf of numerous corporations and legal firms in matters of financial management and corporate litigation. Schedule 1 describes my professional credentials in more detail.

Q. Have you ever testified on cost of capital before?

A. Yes, I have been a cost of capital witness before numerous regulatory boards across the U.S. and Canada, including the Federal Energy Regulatory Commission and the Federal Communications Commission. The details of my participation in regulatory proceedings are provided in Schedule 1.

Q. Have you had any association with Regulatory Commissions?

A. Yes, in the summer of 1989, I was a consultant for the Ontario Telephone Service Commission (OTSC) to establish procedures for determining the cost of

capital for municipal, cooperative, and investor-owned telephone utilities regulated by the OTSC. Currently, I am assisting the Illinois Commerce Commission staff in assessing cost of capital methodologies.

Q. What is the purpose of your testimony?

A. I have been asked to conduct an independent appraisal of the cost of common equity capital for the Gulf Power Company (Gulf, the Company), and to recommend a return on such capital which will be fair to the ratepayer, allow the company to attract capital on reasonable terms, and maintain its financial integrity.

Q. Please summarize your testimony and recommendation.

A. I recommend the adoption of a return on common equity of 13.00 percent. My recommendation is derived from studies I performed using the discounted cash flow (DCF) and risk premium methodologies.

I performed DCF analyses on two different surrogates for Gulf: The Southern Company (Southern) and a group of comparable risk electric utilities.

I also performed five risk premium analyses. In addition to three traditional risk premium

analyses applied to Southern and to an electric utility industry index, I used the capital asset pricing model (CAPM) and an empirical approximation of the CAPM (ECAPM).

My recommended rate of return reflects the average equity return from my various DCF and risk premium analyses and the application of my professional judgment to the results in light of GPC's current business risk environment.

Q. What economic and financial concepts have guided your assessment of Gulf's cost of common equity?

A. Two fundamental economic principles underlie the appraisal of Gulf's cost of equity, one relating to the supply side of capital markets, the other to the demand side. According to the first principle, a rational investor is maximizing the performance of his portfolio only if he expects the returns earned on investments of comparable risk to be the same. If not, the rational investor will switch out of those investments yielding lower returns at a given risk level in favor of those investment activities offering higher returns for the same degree of risk. This principle implies that a company will be unable to attract the capital funds it needs to meet its

service demands and to maintain financial integrity unless it can offer returns to capital suppliers which are comparable to those achieved on alternate competing investments of similar risk.

On the demand side, the second principle asserts that a company will continue to invest in real physical assets if the return on these investments exceeds or equals the company's cost of capital. This concept suggests that a regulatory commission should set rates at a level sufficient to create an equality between the return on physical asset investments and the company's cost of capital.

These pivotal concepts were articulated in landmark statements of the nation's highest court in the well-known cases of Federal Power Commission vs Hope Natural Gas Company, 320 U.S. 591 (1944), and Bluefield Water Works & Improvements Company vs Public Service Commission of West Virginia, 262 U.S. 679 (1923). The U.S. Supreme Court reiterated the criteria set forth in Hope in the Federal Power Commission vs Memphis Light, Gas & Water Division, 411 U.S. 458 (1973), Permian Basin Rate Cases, 390 U.S. 747 (1968), and most recently in Duquesne Light Co. and Pennsylvania Power Co. vs D.M. Barasch, etc., et al. No. 87-1160, 109 U.S. 609 (1989).

Q. Under traditional cost of service regulation, please explain how a regulated company's rates should be set.

A. Under the traditional regulatory process, a regulated company's rates should be set so that the company covers its costs, including taxes and depreciation, plus a fair and reasonable return on its invested capital. The allowed rate of return must necessarily reflect the cost of the funds obtained, that is, investors' return requirements. In determining a company's rate of return, the starting point is investors' return requirements in financial markets. A rate of return can then be set at a level sufficient to enable the company to earn a return commensurate with the cost of those funds.

Funds can be obtained in two general forms: debt capital and equity capital. The cost of debt funds and preferred stock funds can be easily ascertained from an examination of the contractual interest payments and preferred dividends. The cost of common equity funds, that is, investors' required rate of return, is more difficult to estimate. It is the purpose of this testimony to estimate a fair and reasonable return on the common equity capital of Gulf.

Q. What must be considered in estimating a fair return on equity?

A. The basic premise, as stated in the Hope and Bluefield cases, is that the allowable return on equity should be commensurate with returns on investments in other firms having corresponding risks. The allowed return should be sufficient to assure confidence in the financial integrity of the firm in order to maintain creditworthiness and ability to attract capital on reasonable terms.

The attraction of capital standard focuses on investors' return requirements which are generally determined using market value methods, such as the Discounted Cash Flow (DCF) or risk premium methods. These market value tests define fair return as the return investors anticipate when they purchase equity shares of comparable risk in the financial marketplace. This is a market rate of return, defined in terms of anticipated dividends and capital gains as determined by expected changes in stock prices, and reflects the opportunity cost of capital. The economic basis for market value tests is that new capital will be attracted to a firm only if the return expected by the suppliers of funds is commensurate with that available from alternatives of comparable risk.

Q. Please describe how your testimony is organized.

A. My testimony is organized in four sections:

I. DCF Methodology

II. Flotation Cost

III. Risk Premium

IV. Summary and Recommendation

The first section focuses on the capital attraction standard through the market value (DCF) method. Investor return requirements are determined by the rates at which investors are discounting expected future cash flows from GPC or from companies of similar risk. The second section describes the need for a flotation cost allowance and its magnitude. The third section considers the relative risk premium between equity securities and bonds in order to arrive at the required return on Gulf's common equity. In the last section, the results from the various approaches used in determining a fair return are summarized.

Q. Why did you use more than one approach for estimating the cost of equity?

A. No one individual method provides a level of precision for determining a fair return, but each method provides useful evidence so as to facilitate

the exercise of an informed judgment. Reliance on any single method or preset formula is inappropriate when dealing with investor expectations. Moreover, the advantage of using several different approaches is that the results of each one can be used to check the others.

As a general proposition, it is dangerous to rely on only one generic methodology to estimate equity costs. The difficulty is compounded when only one variance of that methodology is employed. It is compounded even further when that one methodology is applied to a single company. Hence, several methodologies should be employed to estimate the cost of capital, and such methodologies should be applied to several comparable groups of companies.

Q. What is your recommendation on Gulf's return on common equity?

A. Based on my judgment and the results of my various studies, it is my opinion that a rate of return on common equity of 13.00 percent is reasonable at this time. This return will allow the company to attract capital on reasonable terms and to maintain its financial integrity.

I. DCF METHODOLOGY

Q. How do you estimate the cost of equity capital for a public utility?

A. A utility's cost of equity is estimated using a variety of equally-weighted market-based techniques. The DCF model is usually applied to company-specific data, or to its parent company, as a starting point. Then, the DCF model is applied to one or more samples of companies which are comparable in risk. As a check on the DCF results, one or more risk premium tests are also applied to either company-specific data, industry-wide data, or to aggregate market data. The average results from all the tests then form the basis for the recommended return.

I followed this general process, even though I have some reservations concerning the applicability of the DCF model to utility stocks at this time in the current capital market environment.

Q. Please elaborate on your concern regarding the applicability of the standard DCF model at this time.

A. Caution has to be used in applying the DCF model to utility stocks at this time. The traditional DCF model is not equipped to deal with surges in

market-to-book and price-earnings ratios, as has been experienced by utility stocks during 1989. The standard infinite growth DCF model assumes constancy in such ratios. That is, the model assumes that the investors expect the ratio of market price to dividends (or earnings) in any given year to be the same as the current price/dividend (or earnings) ratio. This must be true if the infinite growth assumption is made. This is discussed in detail in my book entitled Utilities Cost of Capital, Public Utility Reports, Inc., Arlington, VA, 1984, Chapter 5.

Contrary to the standard DCF assumption of a constant price/earnings ratio, stock price may not necessarily be expected to grow at the same rate as earnings and dividends by investors. This is especially true in the short run. Investors can be myopic and make investment decisions based on time horizons that are far from infinite. Investors may very well assume that the price/earnings ratio will, in fact, continue to increase in the short run, thereby raising the expected rate of return. For example, the current Value Line edition (9/22/1989) for Southern reports an expected total price appreciation mean of 18 percent over the next three years, or about 6 percent per year. If the

percentage is added to the 7.9 percent current dividend yield, the total return expected by Value Line is of the order of 14 percent per year, a higher return than the standard infinite growth DCF model would suggest.

In other words, the constancy of the price/earnings ratio required in the standard DCF model may not be a perfectly accurate assumption for Southern or for the other companies used in a DCF analysis. To the extent that increases in relative market valuation are anticipated by investors, especially investors with short-term investment horizons, the standard DCF model understates the cost of equity. Of course, the converse is also true. A simple numerical example clearly illustrates this phenomenon.

Given that a stock is trading at $100, assume further that its earnings per share are expected to be $8.00 for the current year, and are expected to grow at 10 percent per year in the future. Finally, assume that the company pays out one half of its earnings as dividends. If the stock is initially trading at 12.5 times earnings, the dividend yield is 4 percent. If investors do not expect the price/earnings ratio of 12.5 to change in the next

year, the estimated expected return from holding the stock for one year using the standard DCF model is as follows: a dividend yield of 4 percent, plus growth in value (stock price) from $100 to $110, or 10 percent, for a total return of 14 percent. The ending stock price is $110, that is, 12.5 times next year's earnings of $8.80.

But what if investors expect an increase in the price/earnings ratio from 12.5 to say 13.0? Then, the growth in value is from $100 to $114.40, or 13.0 times next year's earnings of $8.80, for a total return of 18.40 percent (dividend yield of 4 percent, plus growth in value of 14.40 percent). The orthodox DCF model would indicate returns of 14 percent, whereas the investors' true expected return is 18.4 percent. Investor expected returns are substantially understated whenever investors anticipate increases in relative market valuation, and conversely.

Q. Given your reservations concerning the applicability of the DCF model at this time, how did you estimate Gulf's cost of equity?

A. Despite my concerns with the applicability of the DCF model at this particular point in time, I have

nevertheless applied it to the Southern data and to a group of comparable risk firms. The DCF model is widely used by cost of capital witnesses, and its inclusion in my analysis offers a traditional benchmark which the Commission may find useful.

Given the circumstances under which the standard DCF model's application may be questionable, it is imperative that, as a minimum, comparable groups of companies be used as additional sources of DCF estimates, and that other methodologies, such as risk premium, be applied to arrive at market derived cost of equity for Gulf. I have, therefore, included several risk premium tests in order to arrive at my final recommendation on Gulf's cost of equity.

Q. Please explain the discounted cash flow approach.

A. The value of any security to an investor is the expected discounted value of the future stream of dividends or other benefits. One widely used method to measure these anticipated benefits in the case of a non-static company is to examine the current dividend plus the increases in future dividend payments expected by investors. This valuation process can be represented by the following formula, which is the traditional DCF model:

$$K_e = D_1/P_o + g$$

where: K_e = investors' expected return on equity

D_1 = expected dividend during the coming year

P_o = current stock price

g = expected growth rate of future dividends

The traditional DCF formula states that under certain assumptions which have been articulated in several articles in professional journals and in testimony before regulatory agencies, the equity investor's expected return, K_e, can be viewed as the sum of an expected dividend yield, D_1/P_o, plus the expected growth rate of future dividends, g. The principal appeal of the DCF approach is its simplicity and its correspondence with the intuitive notion of dividends plus capital appreciation as a measure of investors' expected return. The returns anticipated at the given market price are not directly observable and must be quantified from statistical market information. The idea of the market value approach is to infer "K_e" from the observed share price and from an estimate of investors' expected future growth.

The assumptions underlying this valuation

formulation are well known. The assumptions are discussed in detail in my book mentioned above, Chapter 5. The traditional DCF model assumes a constant average growth trend for both dividends and earnings, a stable dividend payout policy, a discount rate in excess of the expected growth rate, and a constant price-earnings multiple, which implies that growth in price is synonymous with growth in earnings and dividends. I must emphasize the latter assumption because the recent runup in utility stock prices in a short period, which have resulted in changes in their P/E ratios, casts a shadow on the applicability of the traditional DCF model at the present time. The traditional DCF model also assumes that dividends are paid annually when, in fact, dividend payments are normally made on a quarterly basis.

Q. How did you apply the discounted cash flow (DCF) approach to determine Gulf's cost of equity capital?

A. Gulf's stock is not publicly traded, since the company is a wholly owned subsidiary of Southern. Therefore, any market value approach to determine the investor's expected return on equity must be applied indirectly.

The stock of Southern, however, is publicly traded. Therefore, I applied estimating techniques to Southern as a proxy for Gulf, since we have observable market valuation signals for Southern.

In order to estimate Gulf's cost of equity, I have applied the DCF model to Southern data using an average of security analysts' growth expectations, the sustainable growth rate method, and historical growth rates as a proxy for expected growth. I also applied the DCF formula to a control group of comparable risk companies as a means of comparison, using an average of both historical growth rates and analysts' growth forecasts as proxy for growth.

DCF IMPLEMENTATION

Q. How did you apply the DCF methodology?

A. The measurement of K_e can be broken down into two components: measurement of the expected dividend yield, D_1/P_o, and the measurement of growth, g.

DIVIDEND YIELD COMPONENT

Two issues are involved in the determination of the dividend yield: the appropriate stock price,

P_o, and the appropriate dividend to employ, D_1.

Conceptually, the stock price to employ is the current price of the security at the time of estimating the cost of equity. The current stock prices provide a better indication of expected future prices than any other price in an efficient market. An efficient market implies that prices adjust instantaneously to the arrival of new information. Therefore, current prices reflect the fundamental economic value of a security. A considerable body of empirical evidence indicates that U.S. capital markets are remarkably efficient with respect to a broad set of information. This implies that observed current prices represent the true fundamental value of a security, and that a cost of capital estimate should be based on current prices.

To guard against the possibility that the current stock price reflects abnormal conditions or constitutes a temporary aberration, while at the same time retaining the spirit of market efficiency, averaging stock prices over several recent trading days is a reasonable compromise. In implementing the DCF model to calculate Southern's cost of equity, I have relied on the average closing stock price calculated over the most recent ten trading days

period, at the time of preparing my testimony, November 16th to November 30th, 1989. A similar average computed over a one-month period rather than a 10-day period would not be unreasonable. Closing stock prices are obtained from Dow Jones News/Retrieval's Historical Quotes service. In implementing the DCF model across larger groups of comparable companies, I have used the recent stock price cited in Value Line Investment Survey's Summary & Index, November 17th, 1989 edition.

The expected dividend, D_1, in the traditional DCF model can be obtained by multiplying the current indicated annual dividend rate by a growth factor, which depends on how long the current quarterly dividend rate has been in effect and on the timing of the anticipated dividend increase. In general, it can be shown that the expected dividend can be obtained by multiplying the spot dividend by (1+n/4g), where n is the number of quarters since the last dividend increase. To illustrate, in applying the DCF model to Southern, I have examined the quarterly pattern of past dividends and assumed that an investor buying Southern stock at this time expects to receive four quarterly dividends of $0.535(1 + g) in the next year, because the current

quarterly rate has been in effect for four quarters already. This assumption is in conformity with the assumptions of the traditional DCF model. The expected dividend can be obtained by multiplying the current quarterly rate by an appropriate growth factor, here $(1 + 4/4\ g) = (1 + g)$.

One further modification to the expected dividend yield is warranted to account for the quarterly nature of dividend payments. The traditional DCF model assumes that dividend payments are made annually at the end of the year, while most companies, in fact, pay dividends on a quarterly basis. Since investors are aware of the quarterly timing of dividend payments, this knowledge is reflected in stock prices. Clearly, a stock that pays four quarterly dividends of one dollar would command a higher price than a stock that pays a four dollar dividend a year hence, holding risk and growth constant. Since the stock price fully reflects the quarterly payment of dividends, it is essential that the DCF model used to estimate equity costs also reflect the actual timing of quarterly dividends, in the same way that bond yield calculations are routinely adjusted to reflect semiannual interest payments. Since the stock price employed in the DCF

model already reflects the quarterly stream of dividends to be received, consistency, therefore, requires explicit recognition of the quarterly nature of dividend payments.

Schedule 2 restates the traditional DCF model to recognize the quarterly nature of dividend payments, and the value to the investor of receiving money earlier than later. As shown on page 4 of Schedule 2, the magnitude of the error using the annual model rather than the quarterly model is in the order of 40 basis points (0.40 percent) for any reasonable values of Southern data. In determining the cost of equity with the DCF model, I have employed the quarterly version of the DCF model discussed in Schedule 2, using the appropriate dividend stream for a given company in equation 2, given past dividend patterns. Finally, as will be discussed more fully later, I have translated my market-based cost of capital estimate into a fair return on equity by an allowance for flotation cost through the dividend yield component.

Q. Is the quarterly DCF model widely recognized by the regulatory community?

A. Although financial theory indicates unambiguously

that the quarterly DCF model is the correct model to use in assessing investor return requirements, the annual DCF model enjoys wider usage. However, the use of the quarterly DCF model is becoming more frequent. For example, the staff of this Commission and of the Wisconsin regulatory commission employ the quarterly DCF model; the Mississippi commission employs the quarterly DCF model in determining the benchmark ROE in its Performance Evaluation Plan.

The traditional annual DCF model is based on the limiting assumptions that dividends are paid annually, and that dividends increase once a year starting in exactly one year from the present. These assumptions are unnecessarily restrictive. The quarterly DCF model refines the annual model so as to capture the exact timing of cash flows received by investors. Because dividends are paid quarterly in practice, the investors' required return should be determined with a DCF model that reflects accurately the quarterly nature of dividends.

The use of the annual rather than the quarterly DCF model violates the capital attraction standard described earlier in my testimony. If an investor has a choice between investing $1,000 in a bank account which promises a return of 10 percent

compounded annually and another bank account which promises a return of 10 percent but compounded quarterly, he will clearly select the latter. Due to the quarterly compounding of interest, the investor earns an effective return of 10.38 percent on the latter bank account versus 10 percent on the former.

If the first investment was a stock investment of a public utility that is only allowed to earn the annual DCF return of 10 percent, and the second investment was the stock of another company of comparable risk which was expected to earn the quarterly DCF return of 10.38 percent, the investor would clearly choose the latter. At the end of the year, the investor's wealth would only be $1,100.00 with the first investment, compared to $1,103.80 for the second investment. Therefore, the investor will not invest funds in a public utility stock which is only allowed to earn the annual DCF return when comparable risk alternatives are earning more.

GROWTH COMPONENT

Q. Please elaborate on how you determined expected growth in applying the DCF method to Southern.

A. As a proxy for Southern's growth, I have taken a

simple average of three growth estimates, one based on historical data, and two based on prospective data.

Q. Please describe your estimate of historical growth.

A. In computing historical growth rates, three decisions must be made:

1) which historical data series is most relevant for determining expected "g,"
2) over what past period, and
3) which computational method is most appropriate.

Q. What historical data did you employ in determining expected growth?

A. DCF proponents have variously based their historical growth computations on earnings per share, dividends per share, and book value per share. Of the three possible growth rate measures, growth in dividends per share is conceptually preferable. DCF theory states clearly that it is expected future cash flows in the form of dividends which constitute investment value.

Since the ability to pay dividends stems from a company's ability to generate earnings, growth in earnings per share can be expected to influence the

market's dividend expectations. Dividend growth can only be sustained if there is growth in earnings. However, confining attention to historical earnings growth alone as a surrogate for expected dividend growth can be misleading, since historical earnings per share are frequently more volatile than dividends per share. This is clearly the case for Southern, as seen from the graphic display of its earnings on page 1 of Schedule 3.

Dividend growth rates are more stable. They are much less affected by year-to-year inconsistencies in accounting procedures, and they are not likely to be distorted by an unusually poor year, or by episodic writeoffs. Most companies, and utilities in particular, are reluctant to alter their dividend policies in response to transitory earnings variations.

Under certain circumstances, historical growth in book value per share may also be useful as a proxy for future dividend growth. Earnings per share is the product of book value per share and rate of return on book equity so that historical growth in book value per share may provide an indication of the growth in earnings that would have occurred if past rates of return had remained constant. Past growth in book

value per share, however, is an adequate proxy for future growth only if two crucial assumptions are met: 1) that investors expect no change in earnings per share arising from changes in the future in the book rate of return on equity, and 2) that market-to-book ratios have remained stable. The latter assumption is vital, for book value may increase or decrease based on issuances of common stock at a premium or discount from existing book value. Based on a simple examination of historical data, these two assumptions are frequently violated, particularly in the case of utilities. Therefore, I rely more heavily on dividend per share growth, whenever using historical growth rates.

TIME PERIOD

Q. Over what time period should historical growth be measured?

A. Once an appropriate historical data series has been selected, and that history is deemed relevant for that company, the period over which the growth is to be measured must be determined. Historical growth rates are customarily computed over the last five or ten years. The period must be long enough to avoid

undue distortions by short-term influences and by abnormal years. Dividend growth over the past year is hardly representative of a trend. The last year is normally the most recent year. The period, however, should be short enough to encompass current and foreseeable conditions relevant for investors' assessment of the future. I have relied on the five-year historical dividend growth rate in my calculations which required such estimates.

GROWTH RATE COMPUTATION

Q. How should growth be calculated?

A. The method of calculating growth is most meaningful in the context of compound interest. If dividends grow from $2 to $3 over a ten-year period, for example, the total growth is 50 percent, or a simple average per annum rate of 5 percent. But 5 percent is not a meaningful expression of the growth rate, because it ignores compounding, that is, the accrual of interest on interest as well as on the original value. Assuming annual compounding, $2 grows to $3 in ten years at a rate of 4.1 percent. The latter percentage can be obtained either from a set of standard compound interest tables or from a

specialized financial calculator.

Use of the compounding method of calculating growth may be vulnerable to a potential distortion. If either the initial or terminal values are unrepresentative, usually high or low, the resulting growth rate will not truly reflect the developments during the period. For example, if the terminal year happens to be one of severely depressed earnings due to inflation or acute regulatory lag, and the initial year reflects an economic boom, the indicated growth rate will be unrealistically low. On the other hand, if conditions were changed, the reverse might be true. This potential distortion can be avoided by the use of smoothed compound growth rates; instead of using single years' data as end points, the averages of the first few and last few years' data are used. The latter method is preferable because it involves less subjective judgment. For most companies, smoothed historical five-year growth rates are available in the Value Line Data Base for earnings, dividends, book value, revenues, and cash flows. Base periods used in the Value Line computation are three-year averages in order to temper cyclicality and to mitigate any potential distortion due to sensitivity to end points. I have used Value Line's

smoothed historical compound growth rates when applying the DCF method to control groups with historical growth rates.

Another method of calculating a growth rate is to fit a "lease-squares line" to the logarithms of all the data in the series. The log-linear method is theoretically more precise than the compound growth method because it includes each observation of the period rather than merely the end points. The method, however, is computationally and statistically laborious when applied to several companies.

ANALYSTS' GROWTH FORECASTS

Q. Please describe your second method of estimating growth.

A. A reasonable method of determining expected growth is to use analysts' growth forecasts. Projected long-term growth rates actually used by institutional investors to determine the desirability of investing in different securities influence investors' growth anticipations. These forecasts are made by large reputable organizations, and the data are readily available to investors and are representative of the consensus view of investors. Because of the

dominance of institutional investors in investment management and security selection, and their influence on individual investment decisions, analysts' growth forecasts influence investor growth expectations and provide a sound basis for estimating the cost of equity with the DCF model. Growth rate forecasts of several analysts are available from published investment newsletters and from systematic compilations of analysts' forecasts, such as those tabulated in Institutional Brokers' Estimate System's (IBES) or Zacks Investment Research's (Zacks) monthly publications. I have used analysts' long-term growth forecasts contained in IBES as proxies for investors' growth expectations in applying the DCF model to Southern and to the other comparable group of companies.

Q. Is there any empirical evidence that analysts' growth forecasts influence investors' growth expectations?

A. Yes. Several studies in the academic finance literature demonstrate that growth forecasts made by security analysts are reasonable indicators of investor expectations, and that investors rely on analysts' forecasts and not just on historical growth rates. Studies of historical growth rates may be

used by investors along with analysts' growth forecasts to assess the expected long-run growth rate of future dividends, insofar as they affect investor anticipations.

DCF RESULTS: THE SOUTHERN COMPANY

Q. How did you determine the expected growth term in implementing the DCF model to Southern market data?

A. As stated previously, studies of historical growth rates may be used by investors to assess the expected long-run growth rate of future dividends, insofar as they affect investor anticipations. Page 1 of Schedule 3 shows the pattern of Southern's per share earnings and dividends in recent years. Value Line reports a smoothed historical growth rate in dividends over the past five years for Southern of 5.00 percent.

Although historical information provides a primary foundation for expectations, investors use additional information to supplement past growth rates. Extrapolating past history alone without consideration of historical trends and anticipated economic events would assume either that past rates will persist over time or that investors' expecta-

tions are based entirely on history. I have, therefore, examined two other methods to determine Southern's expected growth: analysts' growth forecasts and the sustainable growth method.

I reviewed the 5-year earnings growth estimates by financial analysts compiled by IBES. For Southern, the November 1989 issue of IBES reports a consensus median expected earnings growth rate of 3.03 percent over the next five years.

An alternate method sometimes used to predict future growth is to multiply the fraction of earnings expected to be retained by the company, "b", by the expected return on book equity, "r". That is,

$g = b \times r$

where

g = expected growth rate in earnings

b = expected retention ratio

r = expected return on book equity

To apply the sustainable growth formula, two quantities are required, the expected retention ratio (b) and the expected return on equity (r). As an estimate for "r", I have used 13 percent, which is Value Line's projected long-term return on common equity. For the expected retention ratio, I have used 27.69 percent, which is Value Line's expected

ratio for Southern over the next several years. The implied growth rate is obtained by multiplying the expected return on book equity of 13.0 percent by the retention ratio of 27.69 percent to produce a growth rate of 3.60 percent.

It should be pointed out that proper implementation of the sustainable growth method requires that the fraction of earnings expected to be retained by the company be multiplied by the expected return on book equity. The implementation of this technique would be flawed if historical realized book returns on equity rather than expected returns on equity were used.

It should also be emphasized that the sustainable method of predicting growth is only accurate under the assumptions that the return on book equity (ROE) is constant over time and that no new common stock is issued by the company, or if so, it is sold at book value. Moreover, the sustainable growth method contains a potential logical trap: the method requires an estimate of ROE to be implemented. But is the ROE input required by the model differs from the recommended return on equity, a fundamental contradiction in logic follows.

A last cautionary note with respect to the

method is in order. The empirical finance literature demonstrates that the sustainable growth method of determining growth is not as significantly correlated to measures of value, such as stock price and price/earnings ratios, as other historical growth measures or analysts' growth forecasts.

Combining the historical growth figure of 5.0 percent, analysts' growth forecasts of 3.03 percent and the sustainable growth estimate of 3.60 percent, I obtained a simple average of 3.88 percent. I have used the latter as proxy for Southern's expected growth rate in dividends in the DCF model.

Q. What expected return on equity does this growth estimate imply for Southern?

A. Application of the DCF formulation is shown on page 2 of Schedule 3. The growth rate of 3.88 percent (Column 7) is combined with the expected dividend yield in the first year (Column 6), to produce an estimate of the cost of common equity (Column 8). The stock price (Column 2) used, $27.81, is the average closing stock price for the last ten trading days in the month of November 1989, which was the period during which I prepared my testimony. Closing stock prices were obtained from the Dow Jones

Historical Quote Service. As explained previously, the expected dividend is obtained by multiplying the current indicated quarterly dividend rate (Column 3) of 4 x $0.535 = $2.13 by a growth factor, which depends on how long the current quarterly dividend rate has been in effect and on the timing of the anticipated dividend increase (Column 4). Since, at the time of preparing my testimony, the current quarterly rate has been in effect for four quarters, an investor buying Southern stock expects to receive in the next year four dividends at the new rate of $0.535 (1 + g), according to the tenets of the DCF model. The expected dividend without the quarterly timing adjustment is, therefore, computed by multiplying the current indicated dividend by an appropriate growth factor, here (1 + g).

The expected growth rate (Column 7) of 3.88 percent is combined with the expected dividend yield (Column 6) of 7.99 percent to produce the cost of capital estimate of 12.23 percent (Column 8). The latter is obtained by solving iteratively the quarterly version of the DCF model presented in Schedule 2. To solve the latter equation, the following input data for Southern:

$$D_{10} = \$0.5350(1 + .0388)$$

D_{20} = \$0.5350(1 + .0388)

D_{30} = \$0.5350(1 + .0388)

D_{40} = \$0.5350(1 + .0388)

P_0 = \$27.81

g = 3.88 percent

The data are substituted in the appropriate format into the appropriate form of equation No. 2 of Schedule 2 using the dividend sequence assumed for Southern, and the latter equation is solved iteratively by successive approximations for K_e, the cost of equity Here, K_e, = 12.23 percent.

As discussed later, the cost of equity capital estimate of 12.23 percent must be translated into a fair return on equity by allowing for flotation costs. This is accomplished by dividing the dividend yield component of the cost of equity figure by 0.95. In Column 9 of Schedule 3, I have, therefore, applied a conservative allowance of 5 percent to the dividend yield component by dividing by 0.95 (100 percent - 5 percent) to produce a fair DCF rate of return on equity of 12.67 percent.

In summary, based on a stock price of \$27.81, an expected dividend yield of 7.99 percent, and a growth rate of 3.88 percent, my DCF estimate of a fair return on equity for Southern is 12.67 percent,

following adjustment for quarterly timing and flotation cost.

DCF COMPARABLE GROUPS

Q. Have you applied the discounted cash flow approach to other companies as a means of comparison?

A. Yes. As explained previously, the basic notion underlying the cost of common equity capital is that at any point in time, securities are priced so that all securities of equivalent risk offer the same expected rate of return. For Gulf, the basic problem is thus to determine the expected rate of return for its particular risk class.

My group of comparable risk companies is drawn from a large selection of electric utilities which are primarily in the same industry and which face similar investment risks as Gulf. The initial sample consisted of the 100 electric utilities monitored in Salomon Brothers' Electric Utility Monthly. The companies also had to be included in the Value Line Data Base and in the IBES summary of analysts' growth forecasts. Companies which have suspended dividends were eliminated from the sample. The master list of surviving companies then consisted of 88 electric

utilities, for which data were available in all the aforementioned data sources. The sample of companies is shown in Schedule 4.

Q. How did you select a sample of companies comparable to Gulf from the master list of electric utilities?

A. I use the beta measure of risk to identify electric utilities with investment risks similar to those of Gulf.

The beta coefficient aims at assessing the volatility of a security's return relative to that of the market. The beta coefficient compares the volatility and direction of movement of the return on investment with those of the market as a whole. Specifically, the beta coefficient of a particular stock measures the degree to which the return on the stock follows the trend of the market. It indicates that change in the rate of return on a stock associated with a one percentage point change in the rate of return on the market. The beta coefficient thus measures the degree to which that stock shares the same risk as the market as a whole. Beta risk measures are readily available from investment services and are in wide use by the investment community.

Technically, the beta coefficient for a stock is a measure of the covariance of the return on the stock with the return on the market as a whole so that it measures the dispersion or volatility in the stock's return which cannot be reduced through market diversification. In a large diversified portfolio, the dispersion or the volatility in the rate of return on the entire portfolio is closely related to the beta coefficients of the constituent stocks. Most institutional stock is held in such larger diversified portfolios. A significant fraction of individuals' holdings would also be held in similarly diversified portfolios. It should be pointed out that the objective of using beta is to ascertain the relative values of beta for different firms rather than estimating the precise absolute value of beta. It is reasonable to suppose that the relative ranking of the betas are less sensitive to the computational details in estimating beta than would the absolute values of beta.

The final group of companies consisted of all those electric utilities from the master list of Schedule 4 whose beta is the same as Southern's beta, the latter as a proxy for Gulf's beta.

The betas for the various electric utilities on

the master list range from a high of 0.85 to a low of 0.50, with a mean of 0.69. Since Southern's beta is 0.75, my group of companies consisted of those 19 companies with the same beta of 0.75. The 19 companies are shown in Schedule 5. Although there may be substantial differences in characteristics between these companies, which may result in varying risk assessments by investors, they are all subject to similar kinds of economic and regulatory risk influences, and the average risk of the group can be considered comparable to Gulf.

As additional checks on the risk comparability of the companies in the group, over and above beta, I examined the common equity ratio and the bond ratings of the companies in the group. The average common equity ratio for the 19 companies in the group is 0.44, which is higher, hence less risky, than Gulf's common equity ratio of approximately 0.40, attesting to the conservatism of the group based on this criterion.

Salomon Brothers' Electric Utility Monthly classifies electric utilities into the following six rating categories, based on Moody's/Standard & Poors' bond ratings:

Aaa/AA

Aa/AA
Aa/A or A/AA
A/BBB or Baa/A
Baa/BBB
Below Baa/BBB

Using numerical scores from 1 (Aaa/AA) to 6 (Baa/BBB) for each of the six bond rating classes above, the average bond rating for the companies is slightly less than A at 4.11. This compares with Gulf's bond rating of A, which is 4 on the numerical scale, or about the same as the group average.

Q. How did you apply your DCF formulation to these comparable companies?

A. Application of the DCF formulation to each of the companies in the reference group proceeds in an identical manner to that of the previous application to Southern. Schedule 5 displays the DCF analysis for each company using Value Line's 5-year historical dividend growth rate on page 1 and the IBES median growth forecast by analysts on page 2 as proxies for expected growth. Proceeding for each company in the group exactly as before in the DCF analysis of Southern, the average cost of common equity estimate for the group is 13.58 percent using historical growth,

and 11.82 percent using growth forecasts. The average of the two estimates is 12.70 percent. These results are adjusted for flotation costs and quarterly dividend payments.

In summary, my DCF analysis of Southern data produced a cost of equity estimate of 12.67 percent and that of comparable risk electrics yielded an almost identical estimate of 12.70 percent. At this point, I reemphasize the cautions which I discussed earlier on the applicability of the DCF model to Southern data and to utility stocks in general at this time.

II. FLOTATION COST ADJUSTMENT

Q. Please explain the flotation cost adjustment which you have used in all your DCF analyses.

A. Flotation costs are very similar to the closing costs on a home mortgage. In the case of issues of new equity, flotation costs represent the discounts that must be provided to place the new securities. Flotation costs have a direct and an indirect component. The direct component is the compensation to the security underwriter for his marketing/consulting services, for the risks

involved in distributing the issue, and for any operating expenses associated with the issue (printing, legal, prospectus, etc.). The indirect component represents the downward pressure on the stock price as a result of the increased supply of stock from the new issue. The latter component is frequently referred to as "market pressure."

Investors must be compensated for flotation costs on an ongoing basis to the extent that such costs are not expensed in the past and, therefore, that the adjustment must continue for the entire time that these initial funds are retained in the firm. Appendix A discusses flotation costs and provides numerical illustrations which clearly show that, even if a utility does not contemplate any further common stock offerings, a flotation cost adjustment is still permanently required. This is analogous to the flotation costs associated with past bond issues, which continue to be amortized over the life of the bond, even though no new bond issues are contemplated.

By analogy, in the case of a bond issue, flotation costs are not expensed but are

amortized over the life of the bond, and the annual amortization charge is embedded in the cost-of-service. The flotation adjustment is also analogous to the process of depreciation, which allows the recovery of funds invested in utility plant. The recovery of bond flotation expense continues year after year, irrespective of whether the company issues new debt capital in the future, until recovery is complete, in the same way that the recovery of past investments in plant and equipment through depreciation allowances continues in the future even if no new construction is contemplated. In the case of common stock which has no finite life, flotation costs are not amortized. Therefore, the recovery of flotation cost requires an upward adjustment to the allowed return on equity.

According to empirical studies, underwriting costs and expenses average at least 4 percent of gross proceeds for utility stock offerings. (See Logue & Jarrow: "Negotiation vs Competitive Bidding in the Sale of Securities by Public Utilities," Financial Management, Fall 1978). A recent study of 641 common stock issues by 95 electric utilities identified a flotation cost

allowance of 5.5 percent (see Borum & Malley: "Total Flotation Cost for Electric Company Equity Issues," Public Utilities Fortnightly, February 20th, 1986).

As far as the market pressure effect is concerned, empirical studies suggest an allowance of 1 percent. Logue and Jarrow found that the absolute magnitude of the relative price decline due to market pressure was less than 1.5 percent. Bower and Yawitz examined 278 public utility stock issues and found an average market pressure of 0.72 percent (see Bower & Yawitz, "The Effect of New Equity Issues on Utility Stock Prices," Public Utilities Fortnightly, May 22, 1980).

Eckbo & Masulis ("Rights vs. Underwritten Stock Offerings: An Empirical Analysis," Univ. of British Columbia, Working Paper No. 1208, Sept. 1987) found an average flotation cost of 4.175 percent for utility common stock offerings. For the market pressure effect, they found that the relative price decline due to market pressure in the days surrounding the announcement amounted to slightly more than 1.5 percent. Adding the two effects, the indicated total flotation cost allowance is above 5.5 percent, corroborating the

results of earlier studies. Therefore, based on empirical studies, total flotation costs including market pressure conservatively amount to 5 percent of gross proceeds.

Appendix A shows why it is necessary to apply an allowance of 5 percent to the dividend yield component of equity cost by dividing that yield by 0.95 (100 percent - 5 percent) to obtain the fair return on equity capital. The appendix also demonstrates that even if no further stock issues are contemplated, the flotation adjustment is still permanently required to avoid confiscation. Flotation costs are only recovered if the rate of return is applied to total equity, including retained earnings, in all future years. The flotation cost adjustment is not a one-time adjustment, but rather a permanent requirement to keep shareholders whole. Failure to include an allowance for flotation costs results in a downward-biased estimate of equity costs of approximately 30-40 basis points.

III. RISK PREMIUM ESTIMATES

Q. Please describe the risk premium method for

determining the cost of common equity.

A. Given the cautions I expressed earlier on the applicability of the DCF model at a point in time for a given company, I have performed several Risk Premium tests. The Risk Premium method of determining the cost of equity recognizes the fundamental principle that common equity capital is more risky than debt from an investor's standpoint, and that investors require higher returns on stocks than on bonds to compensate for the additional risk. The general approach is relatively straightforward: First, one must determine the historical spread between the return on debt and the return on equity. Second, this spread must be added to the current debt yield to derive an estimate of current equity return requirements.

The risk premium approach to estimating the cost of equity derives its usefulness from the simple fact that, while equity return requirements cannot be readily quantified at a given point in time, the returns on bonds can be assessed precisely at every instant in time. If the magnitude of the risk premium between stocks and bonds is known, this information can be

utilized to determine the cost of common equity.

Q. Please describe your risk premium analysis.

A. To quantify the actual risk premium for Gulf, I have performed five risk premium studies. The first two studies deal directly with Southern data, and the third deals with the electric utility industry. The remaining two studies deal with aggregate stock market risk premium evidence, and are based on modern financial theory.

Q. Could you discuss the results of your first risk premium study?

A. A forward-looking risk premium for Southern was estimated with a time-series analysis over the 1979-1988 period. This analysis is depicted in Schedule 6. Fundamentally, the risk premium was estimated by computing the cost of equity capital for each year over the 1979-1988 period using the DCF methodology, and then subtracting the yield on Moody's Utility Bond index for that year.

The upper panel of Schedule 6 shows the history of dividends per share and the log-linear growth rate for each year, using successive

five-year base periods. The lower panel displays the year-by-year analysis of expected equity returns and bond yields over the period 1979-1988. Equity returns are computed using the quarterly DCF model. The average spot dividend yield for each year obtained from Value Line (Column 1) is transformed into an expected dividend yield (Column 2) by multiplying by (1 + 0.5g), assuming that two quarterly dividends have already been received at the old rate. The growth rate each year (Column 3) is the 5-year log-linear growth rate, computed from the corresponding historical dividend data on the upper panel portion of the exhibit. The fair return on equity for each year (Column 4) is obtained by summing the expected dividend yield and the growth rate. The expected dividend yield component is divided by 0.95 to allow for flotation costs, and 40 basis points are added to account for quarterly dividend payments, as previously discussed. In column (5), the yield on Moody's A-rated Utility bonds for each year are subtracted from the cost of equity figures for the same year to arrive at the risk premium.

The average risk premium over the 10-year

period for Southern was 3.08 percent over A-rated utility bonds. If the abnormal 1981-1982 results are omitted from the computation, the average risk premium was 3.78 percent. However, on a year to year basis over the period, the risk premium has fluctuated in a manner inversely related to interest rates. As interest rates decrease, the yield spread of stocks over bonds widens, owing to the falling interest rate risk faced by bond investors, and conversely. This inverse relationship between the risk premium and interest rates is depicted graphically on page 2 of Schedule 6. The functional relationship between the two can be determined by statistical regression techniques. The statistical relationship between interest rates and the risk premium from 1979 to 1988 is as follows, as shown on page 3 of Schedule 6:

RISK PREMIUM = 0.1366 - (0.8402 * INTEREST RATE)

Given that utility A-rated bonds such as Gulf Power's are currently yielding about 9.50 percent as of November 1989, the risk premium implied by the above relationship is

5.68 percent, that is 0.1366 - 0.8402 x .0950. Adding the bond yield of 9.50 percent to the risk premium of 5.68 percent produces a cost of equity of 15.18 percent.

Q. Please describe your second risk premium analysis.

A. As a check on more current conditions, a forward-looking risk premium for Southern was also estimated with a month-to-month time series analysis over the past four years. The analysis is depicted in Schedule 7. The risk premium was estimated by computing the cost of equity capital for each month from November 1984 to October 1989 using the quarterly DCF model, and then subtracting the yield on Moody's A-rated Utility Bond index for that month. The DCF analysis was performed as before, except that the expected growth was obtained for each month from the analysts' consensus forecast reported in IBES for that month, instead of relying on historical growth rates. The average risk premium over the period was 3.62 percent, adjusted for flotation cost.

On a month-to-month basis over the period,

however, the risk premium has fluctuated in a manner inversely related to interest rates, as was the case in the previous decennial analysis. As interest rates increase, the yield spread of stocks over bonds narrows, owing to the increasing interest rate risk faced by bond investors, and conversely. This inverse relationship between the risk premium and interest rates is depicted graphically on page 2 of Schedule 7. The functional relationship between the two can be determined by statistical regression techniques. The exact statistical relationship between interest rates and the risk premium from November 1984 to October 1989 is as follows, as shown on page 3 of Schedule 7:

RISK PREMIUM = 0.0643 - (0.2663 * INTEREST RATE)

Given that utility A-rated bonds are currently yielding about 9.50 percent as of November 1989, the risk premium implied by the above relationship is 3.90 percent, that is 0.0643 - (0.2663 x 0.0950). Adding the bond yield of 9.50 percent, to the risk premium of 3.90 percent produces a cost of equity of

13.40 percent.

Q. Please describe the results of your third risk premium study.

A. The same study performed above on Southern was replicated on the electric industry as a whole, using Moody's Electric Utility Index as an industry proxy. The analysis is depicted in Schedule 8. The DCF analysis was performed as before; the spot dividend yield on Moody's Electric Utility Common Stocks Index was converted into an expected dividend yield as before, and the expected growth was obtained for each month from the analysts' consensus forecast reported in IBES for that month for the electric utility composite. The average risk premium over the period was 3.29 percent, adjusted for flotation cost.

As before, the risk premium fluctuated inversely to interest rates. The inverse relationship between the risk premium and interest rates is depicted graphically on page 2 of Schedule 8. The statistical relationship between interest rates and the risk premium is as follows, as shown on page 3 of Schedule 8:

RISK PREMIUM = 0.0640 - (0.2932 * INTEREST RATE)

Given that utility A-rated bonds are currently yielding about 9.50 percent as of November 1989, the risk premium implied by the above relationship is 3.62 percent, that is 0.0640 - (0.2932 x 0.0950). Adding the bond yield of 9.50 percent to the risk premium of 3.62 percent produces a cost of equity of 13.12 percent.

CAPM ESTIMATE

Q. Did you estimate the risk premium of common stocks using any other methodology?

A. Yes. I developed two estimates based respectively on the Capital Asset Pricing Model (CAPM), and on an empirical approximation to the CAPM (ECAPM). The fundamental idea underlying the CAPM is that risk-averse investors demand higher returns for assuming additional risk, and higher-risk securities are priced to yield higher expected returns that lower-risk securities. The CAPM quantifies the additional return, or risk premium, required for bearing incremental risk, and provides a formal risk-return relationship

anchored on the basic idea that only market risk matters, as measured by beta. According to the CAPM, securities are priced such that:

EXPECTED RETURN = RISK-FREE RATE + RISK PREMIUM

Demoting the risk-free rate by R_F and the return on the market as a whole by R_M, the CAPM is stated as follows:

$$K_e = R_F + BETA(R_M - R_F)$$

This is the seminal CAPM expression to be applied. As a proxy for the risk-free rate, I used the current yield on long-term Treasury bonds of 7.9 percent as of the end of November 1989.

As a proxy for Gulf's beta, I used Southern's beta of 0.75 as a proxy for Gulf. For the market risk premium, a range of 6.0 to 7.0 percent was used. The 7.4 percent estimate is obtained from the seminal Ibbotson-Sinquefield study of historical stock and bond returns from 1926 to 1988. The study shows that stocks have outperformed long-term government securities by 7.4 percent over long time periods. Since long-term government bonds are currently yielding

7.9 percent, the implied market return is 7.5 percent + 7.9 percent = 15.30 percent for the market.

The 6.0 percent market risk premium is consistent with a simple annual DCF analysis applied to the market as a whole. The dividend yield on the aggregate market is currently 3.0 percent (Value Line Investment Survey's median of estimated yields, 11/17/89), and the mean consensus growth for the IBES universe of common stocks is of the order of 11.5 percent. Adding the two components together produces an expected return on the aggregate equity market of close to 14.5 percent, or a risk premium in excess of 6 percent over long-term Treasury bonds. Since long-term government bonds are currently yielding 7.9 percent, the implied market return is 6.0 percent + 7.9 percent = 13.90 percent for the market.

Using those input values, my CAPM estimates of equity costs ranged from 12.40 percent to 13.45 percent, with a midpoint of 12.93 percent. For example, using a beta of 0.75 and a market risk premium of 7.4 percent, the CAPM equation becomes:

K_e = 7.9% + 0.75 x (15.3% - 7.9%) = 13.45%

I then added a conservative allowance of 30 basis points to the midpoint estimate of 12.93 percent to reflect flotation costs. The resulting CAPM-derived estimate for Gulf's common equity cost is 13.23 percent.

EMPIRICAL CAPM ESTIMATE

As is well known in the academic finance literature, the CAPM model produces a downward-biased estimate of equity cost for companies with a beta of less than 1.00. Expanded CAPM models have been developed which relax some of the more restrictive assumptions underlying the traditional CAPM responsible for this bias, and which enrich its conceptual validity. These expanded CAPM models typically produce a risk-return relationship that is flatter than the traditional CAPM's prediction, consistent with the empirical findings of the finance literature. This literature is summarized in Copeland & Weston, Financial Theory Corporate Policy, Addison Wesley, 3rd ed., 1988, Chapter 7. The following equation provides a

viable and conservative approximation of the cost of equity capital estimate suggested by these expanded CAPM's:

$$K_e = R_F + 0.25\ (R_M - R_F) + 0.75\ BETA\ (R_M - R_F)$$

If the same input data ranges are inserted that were used with the traditional CAPM, the above equation produces estimates ranging from 12.78 percent to 13.91 percent, with a midpoint of 13.34 percent. Adding a 30 basis points flotation allowance yields an ROE estimate of 13.64 percent.

Q. Please summarize your risk premium estimates of Gulf'S cost of equity.

A. The table below summarizes the return on equity results from my five risk premium studies:

Study	Implied Equity Return
Southern Company long-term	15.18%
Southern Company short-term	12.67%
Electric Utility Industry	13.12%
CAPM	13.23%
Empirical CAPM	13.64%

I did not place any weight on the risk premium estimate derived from the long-term analysis of

Southern market data, as it is upward-biased relative to the other four results.

IV. SUMMARY AND RECOMMENDATIONS

Q. Please summarize the results of your analyses regarding the cost of Gulf's cost of equity.

A. The table below summarizes the estimates of cost of common equity obtained from the various methods. The average rate of return on equity based on all the techniques is 13.13 percent, and the truncated mean, obtained by removing the high and low estimates from the computation of the average, is 13.11 percent.

It is important to point out that these results must be viewed as a whole rather than selectively. It would be appropriate to select any one particular number from the table and infer Gulf's equity costs from that number alone. No one individual result provides an infallible estimate of a fair return, but each result provides useful evidence from a different perspective. I also reiterate my earlier caveat concerning the applicability of the standard DCF model in the current environment of increasing

relative market valuation and volatile stock prices.

Southern Company's cost of equity reflects the weighted average risk of its constituent subsidiaries. Since four of its five operating subsidiaries do not have nuclear risk exposure, while Georgia Power, which represents approximately one-half of Southern Company's assets, does experience substantial nuclear risk exposure, the expected equity return of 13.11 percent applicable to Gulf Power, to the extent that it was partially derived from market data based on Southern Company risk and return data, is slightly upward-biased. But as stated earlier, to the extent that the fair return was partially derived from market data based on electric utilities which have less financial risk than Gulf Power, the fair return is slightly downward-biased, partially offsetting the former effect.

It should be pointed out that Gulf Power's non-utility operations represent a negligble proportion of its total operations and, therefore, have no effect on the cost of capital estimates I have developed; investors perceive

Gulf Power as an electric utility operation at this time. If such operations were to be segregated, it should not be imputed to the equity cost but rather to the weighted average of the capital structure.

Based on the results of all my analyses, it is my opinion that a just and reasonable return on the common equity of Gulf Power at this time is 13 percent.

COST OF EQUITY

SUMMARY OF RESULTS

DCF METHODS	Return
Southern Company	12.67%
Comparable Risk Electrics	12.70%
RISK PREMIUM METHODS	
Southern Company	13.40%
Electric Utility Industry	13.12%
CAPM	13.23%
ECAPM	13.64%
AVERAGE	13.13%
TRUNCTUATED AVERAGE	13.11%

Q. If interest rates or risk premiums change significantly between the date of filing your direct testimony and the date oral testimony is presented, would this cause you to revise your estimated cost of equity?

A. Yes. Interest rates do change over time, and risk premiums change also, although much more sluggishly. If substantial changes were to occur between filing time and the time the record is closed, they should be reflected in the order.

Q. Does this conclude your testimony?

A. Yes, it does.

AFFIDAVIT

STATE OF FLORIDA)

COUNTY OF ESCAMBIA)

Before me the undersigned authority personally appeared Dr. Roger A. Morin, who first being duly sworn, says that he is the witness named in the testimony to which the Affidavit is attached; that he prepared said testimony and any exhibits included therein on behalf of Gulf Power Company in support of its petition for an increase in rates and charges in Florida Public Service Commission Docket No. 891345-EI; and that the matters and things set forth herein are true to the best of his knowledge and belief.

Dated at Pensacola, Florida this 8Th of December, 1989.

Roger A Morin

Dr. Roger A. Morin

Sworn to and subscribed before me
this 8 day of December, 1989.

Judy L. Williams

Notary Public

Notary Public, Forsyth County, Georgia
My Commission Expires Jan. 17, 1991

APPENDIX A

FLOTATION COST ALLOWANCE

Flotation costs are just as real as costs incurred to build utility plants. Fair regulatory treatment absolutely must permit the recovery of these costs. An analogy with bond issues is useful to understand the treatment of flotation costs in the case of common stocks.

In the case of a bond issue, flotation costs are not expensed but are rather amortized over the life of the bond, and the annual amortization charge is embedded in the cost of service. This is analogous to the process of depreciation, which allows the recovery of funds invested in utility plant. The recovery of bond flotation expense continues year after year, irrespective of whether the company issues new debt capital in the future, until recovery is complete, in the same way that the recovery of past investments in plant and equipment through depreciation allowances continues in the future even if no new construction is contemplated. In the case of common stock which has no finite life, flotation costs are not amortized. Therefore, the recovery of flotation cost requires an upward adjustment to the allowed return on equity. Morin, R.A. Utilities Cost of Capital, Public Utility Reports Inc. 1984, provides numerical illustrations which show that even if a utility does not contemplate any further common stock offerings, a flotation cost adjustment is still permanently required. The examples also demonstrate that the allowance applies to retained earnings as well as to the original capital.

From the standard DCF model, the investor's required return on equity capital is expressed as:

$$K_e = D1/Po + g$$

If Po is regarded as the proceeds per share actually received by the company from which dividends and earnings will be generated, that is, Po equals Bo, the book value per share, then the company's required return is:

$$r = D1/Bo + g$$

Denoting the percentage flotation costs 'f', proceeds per share Bo are related to market price Po as follows:

$$P - fP = Bo$$

$$P(1 - f) = Bo$$

Substituting the latter equation into the above expression for return on equity, we obtain:

$$r = D1/P(1-f) + g$$

which is the utility's required return adjusted for underpricing. For flotation costs of 5%, dividing the expected dividend yield by 0.95 will produce the adjusted cost of equity capital. For a dividend yield of 6% for example, the magnitude of the adjustment is 32 basis points: .06/.95 = .0632.

In deriving my DCF estimates of fair return on equity, it was therefore necessary to apply a conservative allowance of 5% to the dividend yield component of equity cost by dividing that yield by 0.95 (100% - 5%) to obtain the fair return on equity capital.

Even if no further stock issues are contemplated, the flotation adjustment is still permanently required to keep shareholders whole. Flotation costs are only recovered if the rate of return is applied to total equity, including retained earnings, in all future years, even if no future financing is contemplated. This is demonstrated by the numerical example contained in Exhibit RAMAPPEND-1. Moreover, even if the stock price, hence the DCF estimate of equity return, fully reflected the lack of permanent allowance, the company always nets less than the market price, whatever the level of market price set by the market. Only the net proceeds from an equity issue are used to add to the rate base on which the investor earns. A permanent allowance for flotation costs must be authorized in order to insure that in each year the investor earns the required return on the total amount of capital actually supplied, including that amount that does not appear in net proceeds, or rate base.

The illustration in Exhibit RAMAPPEND-1, adapted from Brigham. E.F, et. al., "Common Equity Flotation Costs and Rate Making", Public Utilities Fortnightly, May 2, 1985, shows the flotation cost adjustment process using illustrative market data. The assumptions used in the computation are shown on the first page. The stock is selling in the market for $25, investors expect the firm to pay a dividend of $2.25 which will grow at a rate of 5% therafter. The traditional DCF cost of equity is thus $k = D/P + g = 2.25/25 + .05 = 14\%$. The firm sells one share of stock, incurring a flotation cost of 5%. The traditional DCF cost of equity adjusted for flotation cost is thus $ROE = D/P(1-f) + g = .09/.95 + .05 = 14.47\%$

As shown on Page 1, the initial book value (rate base) is the net proceeds from the stock issue, which are $23.75, that is, the market price less the 5% flotation costs. The example demonstrates that only if the company is allowed to earn 14.47% on rate base will investors earn their cost of equity of 14%. Column 1 shows the initial

common stock account, Column 2 the cumulative retained earnings balance, starting at zero, and steadily increasing from the retention of earnings. Total equity in Column 3 is the sum of common stock capital and retained earnings. The stock price in Column 4 is obtained from the seminal DCF formula: D1/(k - g). Earnings per share in Column 6 is simply the allowed return of 14.47% times the total common equity base. Dividends start at $2.25 and grow at 5% thereafter, which they must do if investors are to earn a 14% return. The dividend payout ratio remains constant, as per the assumption of the DCF model. All quantities, stock price, book value, earnings, and dividends grow at a 5% rate, as shown at the bottom of the relevant columns. Only if the company is allowed to earn 14.47% on equity do investors earn 14%.

For example, as shown on Page 2, if the company is allowed only 14%, the stock price drops from $26.25 to $26.13 in the second year, inflicting a loss on shareholders. The growth rate drops from 5% to 4.53%. Thus, investors only earn 9% + 4.53% = 13.53% on their investment. It is noteworthy that the adjustment is always required each and every year, whether or not new stock issues are sold in the future, and that the allowed return on equity must be earned on total equity, including retained earnings, for investors to earn the cost of equity.

MAGNITUDE OF FLOTATION COST ALLOWANCE

According to empirical studies, underwriting costs and expenses average at least 4% of gross proceeds for utility stock offerings. (See Logue & Jarrow: "Negotiation vs Competitive Bidding in the Sale of Securities by Public Utilities," Financial Management, Fall 1978). A recent study of 641 common stock issues by 95 electric utilities identified a flotation cost allowance of 5.5% (see Borum & Malley: "Total Flotation Cost for Electric Company Equity Issues," Public Utilities Fortnightly, Feb. 20th, 1986).

As far as the market pressure effect is concerned, empirical studies suggest an allowance of 1%. Logue and Jarrow found that the absolute magnitude of the relative price decline due to market pressure was less than 1.5%. Bower and Yawitz examined 278 public utility stock issues and found an average market pressure of 0.72% (see Bower & Yawitz, "The Effect of New Equity Issues on Utility Stock Prices," Public Utilities Fortnightly, May 22, 1980)..

In a recent working paper, Eckbo & Masulis ("Rights vs. Underwritten Stock Offerings: An Empirical Analysis," Univ. of British Columbia, Working Paper No. 1208, Sept. 1987) found an average flotation cost of 4.175%

for utility common stock offerings. As far as the market pressure effect, they found that the relative price decline due to market pressure in the days surrounding the announcement amounted to slightly more than 1.5%. Adding the two effects, the indicated total flotation cost allowance is above 5.5%, corroborating the results of earlier studies. Therefore, based on empirical studies, total flotation costs including market pressure conservatively amount to 5% of gross proceeds.

It should be pointed out that the 5% flotation cost estimate is substantially understated, to the extent that these empirical studies rely on energy utilities, rather than on telecommunication companies. Energy utilities announce security offerings well in advance of coming to market, in contrast to telecommunication security offerings. Such pre-announcements cause a downward effect on the market pressure component for energy utilities. The size of the market pressure component for telephone securities issuances is likely to exceed that of energy utilities by several percentage points.

FLOTATION COST ALLOWANCE

ASSUMPTIONS:

ISSUE PRICE =	$25.00
FLOTATION COST =	5.00%
DIVIDEND YIELD =	9.00%
GROWTH =	5.00%
EQUITY RETURN = (D/P + g)	14.00%
ALLOWED RETURN ON EQUITY (D/P(1-f) + g)	14.47%

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APPLIED ON ALL COMMON EQUITY
BEGINNING OF YEAR

YEAR	COMMON STOCK (1)	RETAINED EARNINGS (2)	TOTAL EQUITY (3)	STOCK PRICE (4)	MARKET/ BOOK RATIO (5)	EPS (6)	DPS (7)	PAYOUT (8)
1	$23.75	$0.000	$23.750	$25.000	1.0526	$3.438	$2.250	65.4545%
2	$23.75	$1.188	$24.938	$26.250	1.0526	$3.609	$2.363	65.4545%
3	$23.75	$2.434	$26.184	$27.563	1.0526	$3.790	$2.481	65.4545%
4	$23.75	$3.744	$27.494	$28.941	1.0526	$3.979	$2.605	65.4545%
5	$23.75	$5.118	$28.868	$30.388	1.0526	$4.178	$2.735	65.4545%
6	$23.75	$6.562	$30.312	$31.907	1.0526	$4.387	$2.872	65.4545%
7	$23.75	$8.077	$31.827	$33.502	1.0526	$4.607	$3.015	65.4545%
8	$23.75	$9.669	$33.419	$35.178	1.0526	$4.837	$3.166	65.4545%
9	$23.75	$11.340	$35.090	$36.936	1.0526	$5.079	$3.324	65.4545%
10	$23.75	$13.094	$36.844	$38.783	1.0526	$5.333	$3.490	65.4545%
			5.00%	5.00%		5.00%	5.00%	

APPLIED ON ALL COMMON EQUITY
BEGINNING OF YEAR

YEAR	COMMON STOCK (1)	RETAINED EARNINGS (2)	TOTAL EQUITY (3)	STOCK PRICE (4)	MARKET/ BOOK RATIO (5)	EPS (6)	DPS (7)	PAYOUT (8)
1	$23.75	$0.000	$23.750	$25.000	1.0526	$3.325	$2.250	67.6692%
2	$23.75	$1.075	$24.825	$26.132	1.0526	$3.476	$2.352	67.6692%
3	$23.75	$2.199	$25.949	$27.314	1.0526	$3.633	$2.458	67.6692%
4	$23.75	$3.373	$27.123	$28.551	1.0526	$3.797	$2.570	67.6692%
5	$23.75	$4.601	$28.351	$29.843	1.0526	$3.969	$2.686	67.6692%
6	$23.75	$5.884	$29.634	$31.194	1.0526	$4.149	$2.807	67.6692%
7	$23.75	$7.225	$30.975	$32.606	1.0526	$4.337	$2.935	67.6692%
8	$23.75	$8.627	$32.377	$34.082	1.0526	$4.533	$3.067	67.6692%
9	$23.75	$10.093	$33.843	$35.624	1.0526	$4.738	$3.206	67.6692%
10	$23.75	$11.625	$35.375	$37.237	1.0526	$4.952	$3.351	67.6692%
			4.53%	4.53%		4.53%	4.53%	

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ROGER A. MORIN

RESUME

(FALL 1989)

NAME: Roger A. Morin

ADDRESS: 640 Clearlake Terrrace
Roswell, Ga. 30076

TELEPHONE: (404) 993-1266 business office
(404) 651-2674 office-university

DATE OF BIRTH: 3/5/1945

PRESENT EMPLOYER: Georgia State University
College of Business Administration
Atlanta, Ga. 30076

RANK: Professor of Finance

HONORS: Professor of Finance for Regulated Industry
Center for the Study of Regulated Industry, College
of Business, Georgia State University.

EDUCATIONAL HISTORY

1

- Bachelor of Electrical Engineering, McGill University, Montreal, Canada, 1967.
- Master of Business Administration, McGill University, Montreal, Canada, 1969.
- PhD in Finance & Econometrics, Wharton School of Finance, University of Pennsylvania, Phila., Pa., 1976.

EMPLOYMENT HISTORY

- Lecturer, Wharton School of Finance, Univ. of Pa., 1972-1973.
- Assistant Professor, University of Montreal School of Business, 1973-1976.
- Associate Professor, University of Montreal School of Business, 1976-1979.
- Professor of Finance, Georgia State University, 1979-198
- Professor of Finance for Regulated Industry, Center for the Study of Regulated Industry, College of Business, Georgia State University, 1985-198 .
- Visiting Professor of Finance, Amos Tuck School of Business, Dartmouth College, Hanover, N.H.., 1986

OTHER BUSINESS ASSOCIATIONS

- Communications Engineer, Bell Canada, 1962-1967.
- Member of the Board of Directors, Financial Research Institute of Canada, 1974-1980.
- Founder, Canadian Finance Research Foundation, 1977.
- Vice-President of Research, Garmaise-Thomson & Associates., Investment Management Consultants, 1980-1981.
- Member of Board of Directors, Techmar Jones International, 1988-1989
- Member of Board of Directors, Executive Visions Inc. 1986-89

CORPORATE CONSULTING CLIENTS

AT & T Communications

Alagasco - Energen

Alaska Anchorage Municipal Light & Power

American Water Works Company

Ameritech

B.C. Telephone

Bell Canada

Bellcore

Bell South Corp.

Bruncor (New Brunswick Telephone)

Burlington-Northern

C & S Bank

Canadian Radio and Television Commission (CRTC)

Central Illinois Light & Power Co

Central South West Corp.

Citizens Utilities

CN-CP Telecommunications

Department of Communications[3], Government of Quebec, Canada

Deerpath Group

Edmonton Power Company

Engraph Corporation

Garmaise-Thomson & Assoc., Investment Consultants

Gaz Metropolitain

General Public Utilities

Georgia Broadcasting Corp.

Georgia Power Company

CORPORATE CONSULTING CLIENTS (CONT'D)

Gulf Power Company

GTE Northwest Inc

GTE Service Corp.

GTE Southwest Incorporated

Hydro-Quebec

ICG Utilities

Illinois Public Service Commission

Island Telephone

Jersey Central Power & Light

Kansas Power & Light

Metropolitan Edison Co.

Maritime Telephone

Mississipi Power Company

Mountain States Bell

New York Telephone Co.

Newfoundland Light & Power - Fortis Inc.

NewTel Enterprises Ltd.

Northern Telephone Ltd.

Northwestern Bell

Noverco

NYNEX

Ontario Telephone Service Commission

Pacific Northwest Bell

People's Gas System Inc.

People's Natural Gas

Pennsylvania Electric Co.

Quebec Telephone - GTE

Rochester Telephone

Southern Bell

South Central Bell

The Southern Company

Touche Ross and Company

Trans-Quebec Maritime

Utah Power & Light

MANAGEMENT DEVELOPMENT AND PROFESSIONAL EXECUTIVE EDUCATION

- Canadian Institute of Marketing, Corporate Finance, 1971-73
- Hydro-Quebec, "Capital Budgeting Under Uncertainty, 1974-75
- University of Montreal Continuing Education:
  Computerized Financial Planning Seminar
  Quantitative Methods in Finance Seminar
- Institute of Certified Public Accountants, Mergers & Acquisitions, 1975-78
- Investment Dealers Association of Canada, 1977-78
- Financial Research Foundation, bi-annual seminar, 1975-79
5
- Advanced Management Research (AMR), faculty member, 1977-80
- Financial Analysts Federation, Educational chapter:
  "Financial Futures Contracts" seminar
- The Management Exchange Inc., faculty member, 1981-1989

  NATIONAL SEMINARS:
  "Financial Futures"
  "Risk and Return on Capital Projects"
  "Cost of Capital for Regulated Utilities"
  "Capital Expenditures Analysis for Utilities"
  "SEC, Accounting, Tax Changes for Utilities"
  "Capital Allocation for Utilities
- Georgia State University College of Business, Management Development Program, faculty member, 1981-1989

EXPERT TESTIMONY & UTILITY CONSULTING AREAS OF EXPERTISE

Rate of Return
Capital Structure
Generic Cost of Capital
Phase-in Plans
Incentive Regulation
Costing Methodology
Depreciation
Flow-Through vs Normalization
CWIP
Revenue Requirements Methodology
Utility Capital Expenditures Analysis
Risk Analysis
Capital Expenditures Allocation
Divisional Cost of Capital
Publicly-owned Municipals
Telecommunications, Energy, Pipeline, Water

SERVICE AS EXPERT WITNESS

Regulatory bodies:

Federal Communications Commission
Federal Energy Regulatory Commission
Georgia Public Service Commission
South Carolina Public Service Commission
North Carolina Utilities Commission
Pennsylvania Public Service Commission
Canadian Radio and Television Commission
Ontario Public Service Board
Quebec Public Service Board
Newfoundland Public Service Commission
State of Georgia Senate Committee on Regulated Industries
Alberta Public Service Board
Tennessee Public Service Commission
Oklahoma State Board of Equalization
Mississippi Public Service Commission
Arizona Corporation Commission
Minnesota Public Utilities Commission
Canadian Radio-Television and Telecomm. Commission
New Brunswick Board of Public Commissioners
Alaska Public Utility Commission
National Energy Board of Canada
Florida Public Service Commission
Montana Public Service Commission
Arizona Corporation Commission
Quebec Natural Gas Board
New York Public Service Commission
Washington Utilities & Transportation Commission

Cost of Capital & Capital Structure Expert Testimony:

Southern Bell, So. Carolina PSC, Docket #81-201C
Southern Bell, So. Carolina PSC, Docket #82-294C
Southern Bell, North Carolina PSC, Docket #P-55-816
Metropolitan Edison, Pennsylvania PUC, Docket #R-822249
Pennsylvania Electric, Pennsylvania PUC, Docket #R-822250
Georgia Power, Georgia PSC, Docket # 3270-U, 1981
Georgia Power, Georgia PSC, Docket # 3397-U, 1983
Georgia Power, Georgia PSC, Docket # 3673-U, 1987
Georgia Power, F.E.R.C., Docket # ER 80-326, 80-327
Georgia Power, F.E.R.C., Docket # ER 81-730, 80-731
Georgia Power, F.E.R.C., Docket # ER 85-730, 85-731
Bell Canada
Northern Telephone, Ontario PSC
GTE-Quebec Telephone, Quebec PSC, Docket 84-052B
Newfoundland Tel., Nfld. Brd of Public Commiss.PU 11-87
CN-CP Telecommunications, CRTC
Quebec Northern Telephone, Quebec PSC
Edmonton Power Company, Alberta Public Service Board
Kansas Power & Light, F.E.R.C., Docket # ER 83-418
NYNEX, FCC generic cost of capital Docket #84-800
Bell South, FCC generic cost of capital Docket #84-800
American Water Works - Tennessee, Docket #7226
Burlington-Northern - Oklahoma State Board of Taxes
Georgia Power, Georgia PSC, Docket # 3549-U
GTE Service Corp., FCC Docket #84-200
Mississippi Power Co., Miss. PSC, Docket U-4761
Citizens Utilities, Ariz. Corp. Comm., D # U2334-86020
Quebec Telephone, Quebec PSC, 1986 & 1987
Newfoundland Light & Power, Nfld. Brd. Publ Comm. 1987
Northwestern Bell, Minnesota PSC, #P-421/CI-86-354
Bell Canada, CRTC, 1987
GTE Service Corp., FCC Docket #87-463
Anchorage Municipal Power & Light, Alaska PUC, 1988
New Brunswick Telephone, N.B. PUC, 1988
Trans-Quebec Maritime, Nat'l Energy Brd. of Canada, '88
Gulf Power Co., Florida PSC, Docket #88-1167-EI
Mountain States Bell, Montana PSC, #88-1.2
Mountain States Bell, Arizona CC, #E-1051-88-146
Georgia Power, Georgia PSC, Docket # 3840-U, 1989
Rochester Telephone, New York PSC, Docket # 89-C-022
Noverco - Gaz Metro, Quebec Natural Gas PSC, #R-3164-89
GTE Northwest, Washington UTC, #U-89-3031

PROFESSIONAL AND LEARNED SOCIETIES

- Corporation of Engineers, 1967-1972
- Engineering Institute of Canada, 1967-1972
- Canada Council Award, recipient 1971 and 1972
- Canadian Association Administrative Sciences,1973-80
- American Association of Decision Sciences, 1974-1978
- American Finance Association, 1975-
- Financial Analysts Federation, 1978-
- Financial Management Association, 1978-
- Southern Finance Association, 1980-
- Institute of Industrial Engineers 1985-

ACTIVITIES IN PROFESSIONAL ASSOCIATIONS AND MEETINGS

- Chairman of meeting on "New Developments in Utility Cost of Capital", Southern Finance Asscociation, Atlanta, Nov. 1982

- Chairman of meeting on "Public Utility Rate of Return", Southeastern Public Utility Conference, Atlanta, Oct. 1982

- Chairman of meeting on "Current Issues in Regulatory Finance", Financial Management Association, Atlanta, Oct. 1983

- Chairman of meeting on "Utility Cost of Capital", Financial Management Association, Toronto, Canada, Oct. 1984.

- Committee on New Product Development, FMA, 1985

- Discussant, "Tobin's Q Ratio", paper presented at Financial Management Association, New York, N.Y., Oct. 1986

- Guest speaker, "Utility Capital Structure: New Developments", National Society of Rate of Return Analysts 18th Financial Forum, Wash., D.C. Oct. 1986

- Opening address, "Capital Expenditures Analysis: Methodology vs Mythology," Bellcore Economic Analysis Conference, Naples Fla., 1988.

PAPERS PRESENTED:

"An Empirical Study of Multiperiod Asset Pricing," annual meeting of Financial Management Assoc., Las Vegas Nevada, 1987.

"Utility Capital Expenditures Analysis: Net Present Value vs Revenue Requirements", annual meeting of Financial Management Assoc., Denver, Colorado, October 1985.

"Intervention Analysis and the Dynamics of Market Efficiency", annual meeting of Financial Management Assoc., San Francisco, Oct. 1982

"Intertemporal Market-Line Theory: An Empirical Study," annual meeting of Eastern Finance Assoc., Newport, R.I. 1981

"Option Writing for Financial Institutions: A Cost-Benefit Analysis", annual meeting Financial Research Foundation, 1979.

"Free-lunch on the Toronto Stock Exchange", annual meeting of Financial Research Foundation of Canada, 1978.

"Simulation System Computer Software SIMFIN", HP International Business Computer Users Group, London, 1975.

"Inflation Accounting: Implications for Financial Analysis." Institute of Certified Public Accountants Symposium, 1979. 9

OFFICES IN PROFESSIONAL ASSOCIATIONS

- President, International Hewlett-Packard Business Computers Users Group, 1977

- Chairman Program Committee, International HP Business Computers Users Group, London, England, 1975

- Program Coordinator, Canadian Assoc. of Administrative Sciences, 1976

- Member, New Product Development Committee, Financial Management Association, 1985-1986

- Reviewer, Journal of Financial Research

  Financial Management

  Financial Review

  Journal of Finance

PUBLICATIONS

"Risk Aversion Revisited", Journal of Finance, Sept. 1983

"Hedging Regulatory Lag with Financial Futures," Journal of Finance, May 1983. (with G. Gay, R. Kolb)

"The Effect of CWIP on Cost of Capital, " Public Utilities Fortnightly, July 1986.

"The Effect of CWIP on Revenue Requirements" Public Utilities Fortnightly, August 1986.

"Valuation and Capital Recovery: A Theoretical Model" Journal of Finance, under review, (with Gabriel Ramirez)

10

"An Empirical Study of Multiperiod Asset Pricing Models" Journal of Financial Research, under final review.

"Intervention Analysis and the Dynamics of Market Efficiency," Time-Series Applications, (New York: North Holland, 1983. (with K. El-Sheshai)

"Market-Line Theory and the Canadian Equity Market," Journal of Business Administration, Jan. 1982, M. Brennan, editor

"Efficiency of Canadian Equity Markets," International Management Review, Feb. 1978

"Intertemporal Market-Line Theory: An Empirical Test," Financial Review, Proceedings of the Eastern Finance Association, 1981

BOOKS

Utility Cost of Capital, Public Utilities Reports Inc., Washington, DC, 1984.

Utility Cost of Capital, Public Utilities Reports Inc., Washington, DC, Second edition under final completion, 1990.

MONOGRAPHS

Determining Cost of Capital for Regulated Industries, Public Utilities Reports, Inc., and The Management Exchange Inc., 1982. (with V.L. Andrews)

Risk and Return in Capital Projects, The Management Exchange Inc., 1980, (with B. Deschamps)

Utility Capital Expenditure Analysis, The Management Exchange Inc., 1983.

Regulation of Cable Television: An Econometric Planning Model, Quebec Department of Communications, 1978.

An Economic & Financial Profile of the Canadian Cablevision Industry. Canadian Radio & Television Commission, 1978

Computer Users' Manual: Finance and Investment Programs, University of Montreal Press, 1974, revised 1978.

Fiber Optics Communications: Economic Characteristics, Quebec Department of Communications, 1978.

"Canadian Equity Market Inefficiencies", Capital Market Research Memorandum, Garmaise & Thomson Investment Consultants, 1979.

MISCELLANEOUS CONSULTING REPORTS

"Cost of Capital Methodologies for Independent Telephone Systems", Ontario Telephone Service Commission, March 1989.

"The Effect of CWIP on Cost of Capital and Revenue Requirements", Georgia Power Company, 1985.

"Costing Methodology and the Effect of Alternate Depreciation and Costing Methods on Revenue Requirements and Utility Finances", Gaz Metropolitan Inc., 1985.

"Simulated Capital Structure of CN-CP Telecommunications: A Critique", Canadian Radio & Television Commission, 1977.

"Telecommunications Cost Inquiry: Critique", Canadian Radio & Television Commission, 1977.

"Social Rate of Discount in the Public Sector", CRTC Policy Statement, 1974.

"Technical Problems in Capital Projects Analysis", CRTC Policy Statement, 1974.

RESEARCH GRANTS

"Econometric Planning Model of the Cablevision Industry", International Institute of Quantitative Economics, CRTC, $20,000

"Application of the Averch-Johnson Model to Telecommunications Utilities", Canadian Radio-Television Commission (CRTC), $12,000

12

"Economics of the Fiber Optics Industry", Quebec Department of Communications, $50,000

"Intervention Analysis and the Dynamics of Market Efficiency", Georgia State Univ. College of Business, 1981

"Firm Size and Beta Stability, Georgia State University College of Business, 1982

"Risk Aversion and the Demand for Risky Assets", Georgia State University College of Business, 1981.

Chase Econometrics, Interactive Data Corp., Research Grant, $50,000 per annum.

DCF MODEL
QUARTERLY TIMING ADJUSTMENT

We start with the seminal notion that market price is the present value of expected future cash flows and assume for simplicity a one-year holding period. If D_{10}. D_{20}. D_{30}. D_{40} represent the dividends paid each quarter in the year preceding the purchase date. and P_0 is the stock price. P_1 the stock price one year from now. we can write:

$$P_0 = \frac{D_{10}(1+g)}{(1+k)^{1/4}} + \frac{D_{20}(1+g)}{(1+k)^{1/2}} + \frac{D_{30}(1+g)}{(1+k)^{3/4}} + \frac{D_{40}(1+g)}{(1+k)} + \frac{P_1}{1+k} \qquad (1)$$

where g = annual growth rate on earnings dividends

Noting that $P_1 = P_0 (1+g)$. we multiply the numerator and denominator of each term by the following factors so as to facilitate algebraic manipulation.

$$P_0 = \frac{D_{10}(1+g)(1+k)^{3/4}}{(1+k)^{1/4}(1+k)^{3/4}} + \frac{D_{20}(1+g)(1+k)^{1/2}}{(1+k)^{1/2}(1+k)^{1/2}} + \frac{D_{30}(1+g)(1+k)^{1/4}}{(1+k)^{1/4}(1+k)^{3/4}} + \frac{D_{40}(1+g)}{(1+k)} + \frac{P_0(1+g)}{1+k}$$

$$\left[- \frac{D_{10}(1+k)^{3/4}}{1+k} + \frac{D_{20}(1+k)^{1/2}}{1+k} + \frac{D_{30}(1+k)^{1/4}}{1+k} + \frac{D_{40}}{1+k} \right] (1+g) + \frac{P_0(1+g)}{1+k}$$

Solving for k. by multiplying through by (1+k) and dividing through by P_0. we get

$$k = \left[\frac{D_{10}(1+k)^{3/4} + D_{20}(1+k)^{1/2} + D_{30}(1+k)^{1/4} + D_{40}}{P_0} \right] (1+g) + g \qquad (2)$$

The standard DCF model by analogy is

$$K = \frac{D_0(1+g)}{P_0} + g \qquad (3)$$

Clearly, the expression in large brackets in (2) is greater than D_0 in (3) since $D_0 = D_{10} + D_{20} + D_{40}$ and k is a positive number. Consequently, if dividends are paid quarterly, the appropriate adjustment to the current dividend yield is higher than (1+g). If the adjustment is applied to the spot dividend yield, defined as 4 D_{40}, the adjustment factor is still in excess of (1+g), although reduced. This can be seen by transforming (2) as an approximation into:

$$k = \left[\frac{D_{40}}{P_0}\left[\frac{(1+k)^{3/4}}{(1+g)^{3/4}} + \frac{(1+k)^{1/2}}{(1+g)^{1/2}} + \frac{(1+k)^{1/4}}{(1+g)^{1/4}} + 1\right]\right](1+g) + g$$

Since $k > g$, the bracketed expression above multiplied by D_{40} is higher than the spot dividend rate, 4 D_{40}.

Although the above quarterly DCF model allows for the quarterly timing of dividend payments, growth in dividend payments, and recognizes that quarterly dividend payments can be constant within a given year, the model is computationally laborious. The quarterly model DCF model below is a useful approximation and is far less laborious, although it does require the assumption that the firm increases its dividend payments each quarter. If it assumed that dividends grow at a constant rate of g% every quarter starting from a base of d_0, the current quarterly rate, the firm's stock price is given by:

$$P_0 = \sum_{n=1}^{\infty} \frac{d_0(1+g)^{n/4}}{(1+k)^{n/4}}$$

which simplifies to:

$$P_0 = \frac{d_0(1+g)^{1/4}}{(1+k)^{1/4} - (1+g)^{1/4}}$$

Solving the above equation for k, the simplified DCF formula for estimating the cost of equity under quarterly dividend payments emerges as Equation (4):

$$k = \left[\frac{d_0(1+g)^{1/4}}{P_0} + (1+g)^{1/4} \right]^4 - 1 \qquad (4)$$

Note: In practical applications the expanded version of equation 2 is useful:

$$k = \left[\frac{D_{10}(1+g_{10})(1+k)^{3/4} + D_{20}(1+g_{20})(1+k)^{1/2} + D_{30}(1+g_{30})(1+k)^{1/4} + D_{40}(1+g_{40})}{P_0} \right] + g_{40} \qquad (2a)$$

DCF COST OF CAPITAL ESTIMATES
ANNUAL VS. QUARTERLY MODEL

SOUTHERN COMPANY REPRESENTATIVE DATA

Stock price	P	$27.00	$27.00	$28.00	$28.00	$29.00	$29.00
Expected growth	g	4.00%	5.00%	4.00%	5.00%	4.00%	5.00%
1st quarter dividend	D10	$0.535	$0.535	$0.535	$0.535	$0.535	$0.535
2nd quarter dividend	D20	$0.535	$0.535	$0.535	$0.535	$0.535	$0.535
3rd quarter dividend	D30	$0.535	$0.535	$0.535	$0.535	$0.535	$0.535
4th quarter dividend	D40	$0.535	$0.535	$0.535	$0.535	$0.535	$0.535
Annual dividend	D0	$2.14	$2.14	$2.14	$2.14	$2.14	$2.14
Expected dividend	D1	$2.23	$2.25	$2.23	$2.25	$2.23	$2.25
DCF Annual model	Kann	12.24%	13.32%	11.95%	13.03%	11.67%	12.75%
DCF Quarterly model	Kquar	12.62%	13.74%	12.31%	13.42%	12.01%	13.12%
DIFFERENCE		0.38%	0.42%	0.36%	0.40%	0.34%	0.37%

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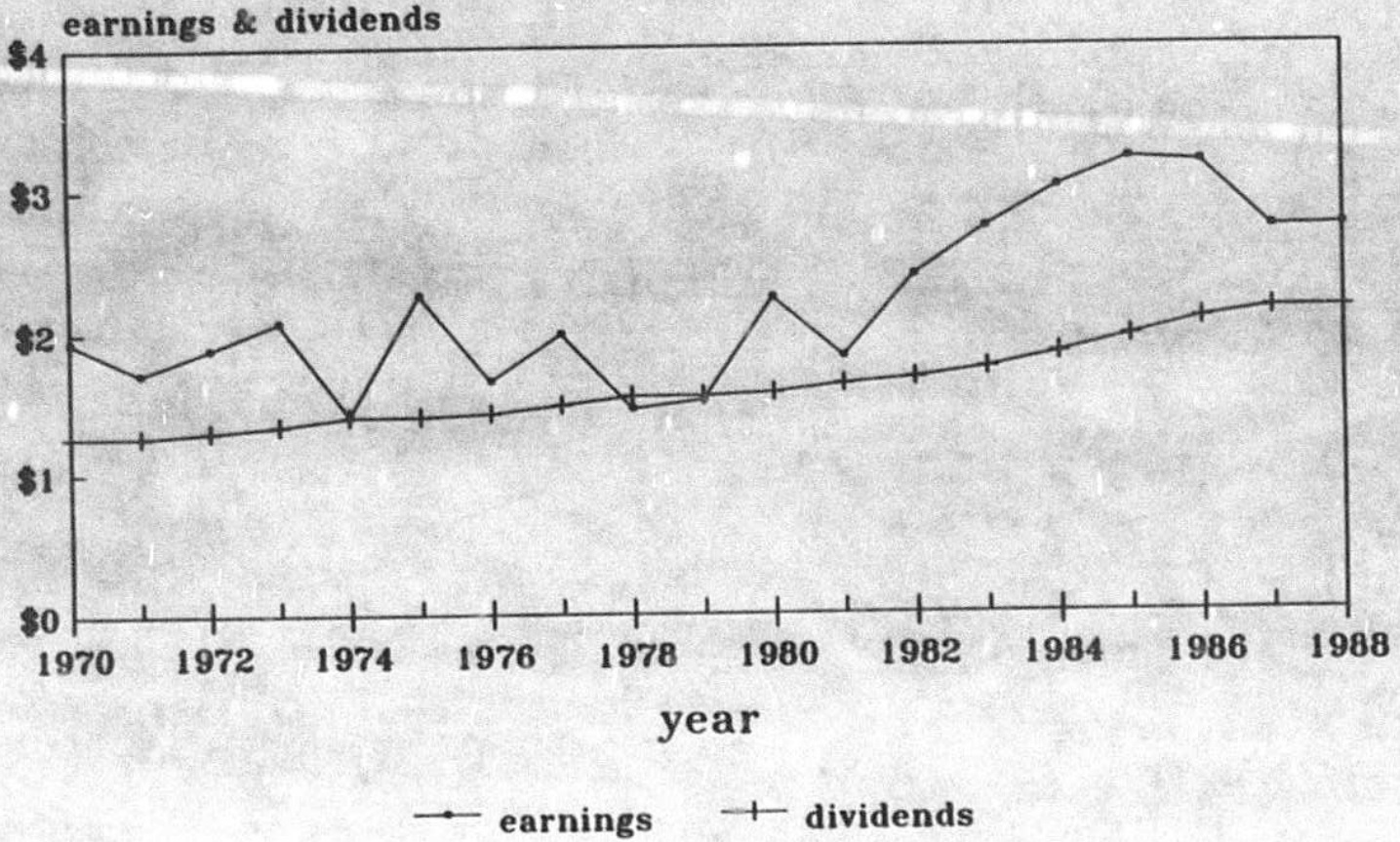
SOUTHERN COMPANY
EARNINGS AND DIVIDENDS PER SHARE



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REQUIRED MARKET RETURN
SOUTHERN COMPANY
(DCF analysis)

COMPANY	STOCK PRICE	QRTRLY DIVID	NO. OF QTRS LEFT	EXPECT DIVID	DIVID YIELD	GROWTH RATE	COST OF EQUITY	FAIR RETURN
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
SOUTHERN COMPANY	$27.81	$0.535	0	$2.223	7.99%	3.88%	12.23%	12.67%

SOURCE

Column 2: Dow Jones Historical Quotes Service, average closing prices, 10 trading days 11/16/89 – 11/30/89.
Column 3, 4: Value Line, 9/22/89
Column 5: Equals Column 3 x Column 4 plus Column 3 x (4–Column 4) x (1 + g)
where 'g' is the growth rate from Column 7.
Column 6: Equals Column 5/Column 2
Column 7: see testimony: avg. of historical, analysts' forecasts, retention ratio growth
Column 8: Solution to the quarterly timing DCF model, obtained by successive iterations
Column 9: The dividend yield component of Column 8 divided by .95, plus Column 7

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Florida Public Service Commission
Docket No. 891345-EI
GULF POWER COMPANY
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ELECTRIC UTILITIES
BOND RATING, BETA, AND COMMON EQUITY RATIO

	COMPANY	BOND RATING	BETA	COMMON EQUITY RATIO
	(1)	(2)	(3)	(4)
1	ALLEGHENY POWER	Aa/AA	0.70	0.47
2	AMERICAN ELEC POWER	A/BBB or Baa/A	0.75	0.44
3	ATLANTIC ENERGY	A/A	0.65	0.47
4	BALTIMORE GAS & ELEC	Aa/AA	0.75	0.46
5	BOSTON EDISON CO	Baa/BBB	0.70	0.30
6	CAROLINA PWR & LT CO	A/A	0.70	0.44
7	CEN HUDSON G & E	Baa/BBB	0.55	0.38
8	CENTERIOR ENERGY	Baa/BBB	0.70	0.39
9	CENTRAL ILLINOIS PS	Aaa/AA or Aa/AAA	0.70	0.51
10	CENTRAL LOUISIANA ELEC	A/A	0.65	0.48
11	CENTRAL MAINE & PWR	Baa/BBB	0.70	0.44
12	CENTRAL VERMONT PS	A/A	0.80	0.54
13	CENTRAL & SOUTH WEST	Aa/A or A/AA	0.75	0.48
14	CILCORP	Aa/AA	0.65	0.48
15	CINCINNATI G & E	Baa/BBB	0.75	0.43
16	COMMONWEALTH ED.	Baa/BBB	0.80	0.47
17	COMMONWEALTH ENERGY	Baa/BBB	0.75	0.47
18	CONSOLIDATED EDISON NY	Aa/AA	0.75	0.54
19	DELMARVA PWR & LT	A/A	0.65	0.45
20	DETROIT EDISON	Baa/BBB	0.70	0.32
21	DOMINION RES	A/A	0.70	0.40
22	DPL INC.	A/BBB or Baa/A	0.70	0.45
23	DQE Inc	Baa/BBB	0.65	0.38
24	DUKE POWER CO	Aa/AA	0.70	0.51
25	EASTERN UTILITIES	Baa/BBB	0.75	0.38
26	EMPIRE DIS. ELEC	A/A	0.50	0.49
27	FLORIDA PROGRESS CORP	Aa/A or A/AA	0.70	0.54
28	FPL GROUP	Aa/A or A/AA	0.75	0.46
29	GENERAL PUBLIC UTIL	A/A	0.70	0.47
30	GREEN MOUNTAIN PWR	A/A	0.55	0.54
31	HAWAIIAN ELECTRIC	A/A	0.65	0.46
32	HOUSTON INDUSTRIES	Baa/BBB	0.80	0.41
33	IDAHO POWER	A/A	0.65	0.48
34	IE INDUSTRIES	A/A	0.70	0.43

	COMPANY	BOND RATING	BETA	COMMON EQUITY RATIO
	(1)	(2)	(3)	(4)
35	INTERSTATE POWER	Aa/A or A/AA	0.70	0.44
36	IOWA ILL. G & E	Aa/AA	0.60	0.48
37	IOWA RESOURCES	Aa/A or A/AA	0.70	0.49
38	IOWA SOUTHERN INC	Aa/AA	0.60	0.55
39	IPALCO ENTERPRISES	Aa/AA	0.75	0.53
40	KANSAS CITY P & L	A/A	0.65	0.44
41	KANSAS G&E	Baa/BBB	0.80	0.47
42	KANSAS P & L	Aa/AA	0.70	0.52
43	KENTUCKY UTILITIES	Aa/AA	0.60	0.53
44	LOUISVILLE G & E	Aa/AA	0.65	0.46
45	MDU RES. GROUP	A/BBB or Baa/A	0.70	0.54
46	MIDWEST ENERGY	Aa/A or A/AA	0.60	0.39
47	MINNESOTA P & L	A/A	0.70	0.49
48	MONTANA POWER	Baa/BBB	0.60	0.56
49	NEVADA POWER	A/A	0.60	0.44
50	NEW ENGLAND ELECTRIC	A/A	0.70	0.41
51	NEW YORK STATE E & G	Baa/BBB	0.70	0.39
52	NIAGARA MOHAWK PWR	Baa/BBB	0.85	0.33
53	NIPSCO	Baa/BBB	0.80	0.42
54	NORTHEAST UTIL	Baa/BBB	0.75	0.36
55	NORTHERN STATES	Aa/AA	0.75	0.49
56	NORTHWESTERN PS	Aa/A or A/AA	0.70	0.53
57	OHIO EDISON	Baa/BBB	0.80	0.42
58	OKLAHOMA G & E	Aa/AA	0.65	0.48
59	ORANGE & ROCKLAND UTIL	Aa/AA	0.65	0.48
60	OTTER TAIL POWER	Aa/A or A/AA	0.70	0.52
61	PACIFIC GAS & ELEC	A/A	0.75	0.45
62	PACIFICORP	A/A	0.65	0.45
63	PENNSYLVANIA P & L	A/A	0.70	0.40
64	PHILADELPHIA ELECTRIC	Baa/BBB	0.75	0.37
65	PORTLAND GENERAL CORP	A/A	0.65	0.47
66	POTOMAC ELEC PWR CO	Aa/AA	0.65	0.49
67	PSI HOLDINGS	Baa/BBB	0.85	0.41
68	PUBLIC SVC ENT GRP	A/A	0.80	0.48
69	PUB. SVC COLORADO	A/BBB or Baa/A	0.70	0.45
70	PUGET SOUND P & L	A/A	0.75	0.44

	COMPANY	BOND RATING	BETA	COMMON EQUITY RATIO
	(1)	(2)	(3)	(4)
71	ROCHESTER GAS & ELEC CP	Baa/BBB	0.75	0.40
72	SAN DIEGO GAS & ELEC	Aa/A or A/AA	0.70	0.49
73	SCANA CORP	A/A	0.70	0.48
74	SCE CORP	Aa/AA	0.75	0.46
75	SIERRA PACIFIC RESOURC	A/A	0.65	0.43
76	SO IND G & E	Aa/AA	0.60	0.51
77	SOUTHERN COMPANY	A/BBB or Baa/A	0.75	0.41
78	SOUTHWESTERN PS	Aa/AA	0.75	0.49
79	TECO ENERGY INC	Aa/AA	0.60	0.53
80	TEXAS UTILITIES	Baa/BBB	0.75	0.42
81	TNP ENTERPRISES	A/BBB or Baa/A	0.60	0.54
82	TUCSON ELEC PWR.	Baa/BBB	0.65	0.40
83	UNION ELECTRIC	A/A	0.80	0.45
84	UTILICORP	Aaa/AA or Aa/AAA	0.70	0.41
85	WASHINGTON WTR. PWR.	A/A	0.65	0.41
86	WISCONSIN ENERGY	Aaa/AA or Aa/AAA	0.65	0.54
87	WISCONSIN P. S.	Aaa/AA or Aa/AAA	0.60	0.55
88	WPL HOLDINGS	Aaa/AA or Aa/AAA	0.60	0.54
	AVERAGE		0.69	0.4561

SOURCE: Value Line, Salomon Bros. Electric Utility Monthly, IBES, Nov. 1989

REQUIRED MARKET RETURN AND MEASURES OF RISK
FOR HIGH-BETA ELECTRIC UTILITIES

	COMPANY	QUALITY RATING	BETA	COMMON EQUITY RATIO	INTER COVER	STOCK PRICE	QRTLY DIVID	NO. OF QTRS LEFT	EXPECT DIVID	DIVID YIELD	HIST GROWTH	COST OF EQUITY	FAIR RETURN
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	AMERICAN ELEC POWER	A/BBB or Baa/A	0.75	0.44		$30.00	$0.60	3	$2.40	8.01%	0.50%	8.77%	9.20%
2	BALTIMORE GAS & ELEC	Aa/AA	0.75	0.46	4.0	$33.00	$0.53	3	$2.13	6.46%	6.00%	12.76%	13.11%
3	CENTRAL & SOUTH WEST	Aa/A or A/AA	0.75	0.48	2.3	$36.00	$0.65	1	$2.73	7.57%	6.50%	14.47%	14.89%
4	CINCINNATI G & E	Baa/BBB	0.75	0.43	2.9	$30.00	$0.58	2	$2.33	7.75%	0.50%	8.50%	8.92%
5	COMMONWEALTH ENERGY	Baa/BBB	0.75	0.47	2.8	$37.00	$0.70	0	$3.00	8.10%	7.00%	15.56%	16.01%
6	CONSOLIDATED EDISON	Aa/AA	0.75	0.54	5.1	$27.00	$0.43	1	$1.87	6.94%	12.00%	19.42%	19.81%
7	EASTERN UTILITIES	Baa/BBB	0.75	0.38	1.0	$39.00	$0.63	3	$2.54	6.51%	6.00%	12.81%	13.16%
8	FPL GROUP	Aa/A or A/AA	0.75	0.46	3.1	$34.00	$0.57	2	$2.34	6.87%	5.00%	12.17%	12.55%
9	IPALCO ENTERPRISES	Aa/AA	0.75	0.53	3.9	$26.00	$0.43	1	$1.78	6.86%	5.00%	12.17%	12.54%
10	NORTHEAST UTIL	Baa/BBB	0.75	0.36	2.2	$22.00	$0.44	0	$1.87	8.52%	6.50%	15.50%	15.97%
11	NORTHERN STATES	Aa/AA	0.75	0.49	4.0	$38.00	$0.56	2	$2.31	6.08%	8.00%	14.39%	14.72%
12	PACIFIC GAS & ELEC	A/A	0.75	0.45	2.7	$20.00	$0.35	0	$1.46	7.28%	4.00%	11.59%	11.99%
13	PHILADELPHIA ELEC	Baa/BBB	0.75	0.37	2.3	$23.00	$0.55	0	$2.23	9.71%	1.50%	11.62%	12.16%
14	PUGET SOUND P & L	A/A	0.75	0.44	3.2	$22.00	$0.44	0	$1.81	8.24%	3.00%	11.59%	12.04%
15	ROCHESTER GAS & ELEC	Baa/BBB	0.75	0.40		$21.00	$0.38	0	$1.54	7.32%	2.50%	10.09%	10.49%
16	SCE CORP	Aa/AA	0.75	0.46	3.8	$38.00	$0.64	3	$2.60	6.85%	7.00%	14.20%	14.58%
17	SOUTHERN COMPANY	A/BBB or Baa/A	0.75	0.41		$28.00	$0.54	0	$2.25	8.03%	5.00%	13.42%	13.86%
18	SOUTHWESTERN PS	Aa/AA	0.75	0.49	4.4	$30.00	$0.55	0	$2.35	7.85%	7.00%	15.28%	15.72%
19	TEXAS UTILITIES	Baa/BBB	0.75	0.42	1.8	$35.00	$0.73	1	$3.06	8.75%	6.50%	15.74%	16.23%
			0.75	0.44	3.09					7.56%	5.24%	13.16%	13.58%

SOURCE

Column 1: U.S. Electric utilities with a beta of 0.75
Column 2: Moody's/Standard & Poors bond rating
Columns 3, 4, 5, 7, 8, 11: Value Line Investment Reports, Sept.- Oct. 1989
Column 6: Recent price from Value Line Investment Survey, Summary & Index, 11/17/1989,
Column 9: Equals Column 7 x Column 8 plus Column 7 x (4-Column 8) x (1 + g)
where 'g' is the growth rate from Column 11.
Column 10: Equals Column 9/Column 6
Column 12: Solution to the quarterly timing DCF model, obtained by successive iterations
Column 13: The dividend yield component of Column 12 divided by .95, plus Column 11

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REQUIRED MARKET RETURN AND MEASURES OF RISK FOR HIGH-BETA ELECTRIC UTILITIES

	COMPANY	QUALITY RATING	BETA	COMMON EQUITY RATIO	INTER COVER	STOCK PRICE	QRTLY DIVID	NO. OF QTRS LEFT	EXPECT DIVID	DIVID YIELD	ANALYSTS GROWTH FRCSTS	COST OF EQUITY	FAIR RETURN
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	AMERICAN ELEC POWER	A/BBB or Baa/A	0.75	0.44		$30.00	$0.60	3	$2.42	8.06%	3.00%	11.39%	11.84%
2	BALTIMORE GAS & ELEC	Aa/AA	0.75	0.46	4.0	$33.00	$0.53	3	$2.12	6.43%	4.00%	10.68%	11.03%
3	CENTRAL & SOUTH WEST	Aa/A or A/AA	0.75	0.48	2.3	$36.00	$0.65	1	$2.68	7.44%	4.00%	11.76%	12.16%
4	CINCINNATI G & E	Baa/BBB	0.75	0.43	2.9	$30.00	$0.58	2	$2.35	7.85%	3.00%	11.17%	11.60%
5	COMMONWEALTH ENERGY	Baa/BBB	0.75	0.47	2.8	$37.00	$0.70	0	$2.91	7.87%	4.00%	12.22%	12.66%
6	CONSOLIDATED EDISON	Aa/AA	0.75	0.54	5.1	$27.00	$0.43	1	$1.77	6.56%	4.00%	10.82%	11.18%
7	EASTERN UTILITIES	Baa/BBB	0.75	0.38	1.0	$39.00	$0.63	3	$2.55	6.54%	8.00%	14.89%	15.25%
8	FPL GROUP	Aa/A or A/AA	0.75	0.46	3.1	$34.00	$0.57	2	$2.33	6.84%	4.00%	11.12%	11.49%
9	IPALCO ENTERPRISES	Aa/AA	0.75	0.53	3.9	$26.00	$0.43	1	$1.77	6.81%	4.00%	11.09%	11.46%
10	NORTHEAST UTIL	Baa/BBB	0.75	0.36	2.2	$22.00	$0.44	0	$1.81	8.24%	3.00%	11.59%	12.04%
11	NORTHERN STATES	Aa/AA	0.75	0.49	4.0	$38.00	$0.56	2	$2.26	5.96%	4.00%	10.18%	10.50%
12	PACIFIC GAS & ELEC	A/A	0.75	0.45	2.7	$20.00	$0.35	0	$1.47	7.35%	5.00%	12.69%	13.10%
13	PHILADELPHIA ELEC	Baa/BBB	0.75	0.37	2.3	$23.00	$0.55	0	$2.22	9.66%	1.00%	11.05%	11.58%
14	PUGET SOUND P & L	A/A	0.75	0.44	3.2	$22.00	$0.44	0	$1.80	8.16%	2.00%	10.47%	10.92%
15	ROCHESTER GAS & ELEC	Baa/BBB	0.75	0.40		$21.00	$0.38	0	$1.56	7.43%	4.00%	11.75%	12.16%
16	SCE CORP	Aa/AA	0.75	0.46	3.8	$38.00	$0.64	3	$2.59	6.80%	4.00%	11.08%	11.45%
17	SOUTHERN COMPANY	A/BBB or Baa/A	0.75	0.41		$28.00	$0.54	0	$2.20	7.87%	3.00%	11.20%	11.63%
18	SOUTHWESTERN PS	Aa/AA	0.75	0.49	4.4	$30.00	$0.55	0	$2.27	7.55%	3.00%	10.85%	11.27%
19	TEXAS UTILITIES	Baa/BBB	0.75	0.42	1.8	$35.00	$0.73	1	$2.96	8.47%	2.00%	10.80%	11.27%
			0.75	0.44	3.09					7.47%	3.63%	11.41%	11.82%

SOURCE

Column 1: U.S. Electric utilities with a beta of 0.75
Column 2: Moody's/Standard & Poors bond rating
Columns 3, 4, 5, 7, 8: Value Line Investment Reports, Sept.- Oct. 1989
Column 6: Recent price from Value Line Investment Survey, Summary & Index, 11/17/1989,
Column 9: Equals Column 7 x Column 8 plus Column 7 x (1-Column 8) x (1 + g)
where 'g' is the growth rate from Column 11.
Column 10: Equals Column 9/Column 6
Column 11: IBES 11/1989 mean consensus forecast of long-term growth
Column 12: Solution to the quarterly timing DCF model, obtained by successive iterations
Column 13: The dividend yield component of Column 12 divided by .95, plus Column 11

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RISK PREMIUM ANALYSIS
SOUTHERN COMPANY
1979 - 1988

	Dividend Yield (1)	Expected Dividend Yield (2)	Expected Growth (3)	Expected Return (4)	Moody's A Utility Bond Yield (5)	Risk Premium A Utility (6)
1979	11.90%	13.10%	2.72%	15.82%	10.49%	5.33%
1980	13.00%	14.24%	2.28%	16.52%	13.34%	3.18%
1981	13.60%	14.85%	1.94%	16.79%	15.95%	0.84%
1982	12.40%	13.58%	2.01%	15.59%	15.85%	-0.26%
1983	10.80%	11.94%	2.95%	14.89%	13.66%	1.23%
1984	11.30%	12.52%	3.85%	16.37%	14.03%	2.34%
1985	9.60%	10.74%	4.58%	15.42%	12.47%	2.95%
1986	8.60%	9.71%	5.61%	15.32%	9.58%	5.74%
1987	8.90%	10.02%	5.39%	15.41%	10.10%	5.31%
1988	9.52%	10.62%	4.01%	14.63%	10.49%	4.14%
				10-YEAR AVERAGE (79-88)		3.09%
				10-YEAR AVERAGE (79-88) excluding 1981-1982		3.78%

SOURCE:

Column 1: Average annual dividend yield, Value Line, 9/22/1989

Column 2: Column 1 x (1 + g), divided by 0.95; 40 basis points are added for quarterly timing.

Column 3: 5-year historical log-linear growth rate each year, calculated from OLS Lotus 123

Column 4: Column 2 + Column 3

Column 5: Moody's average of yields on A public utility bonds

Column 6: Column 4 minus Column 5

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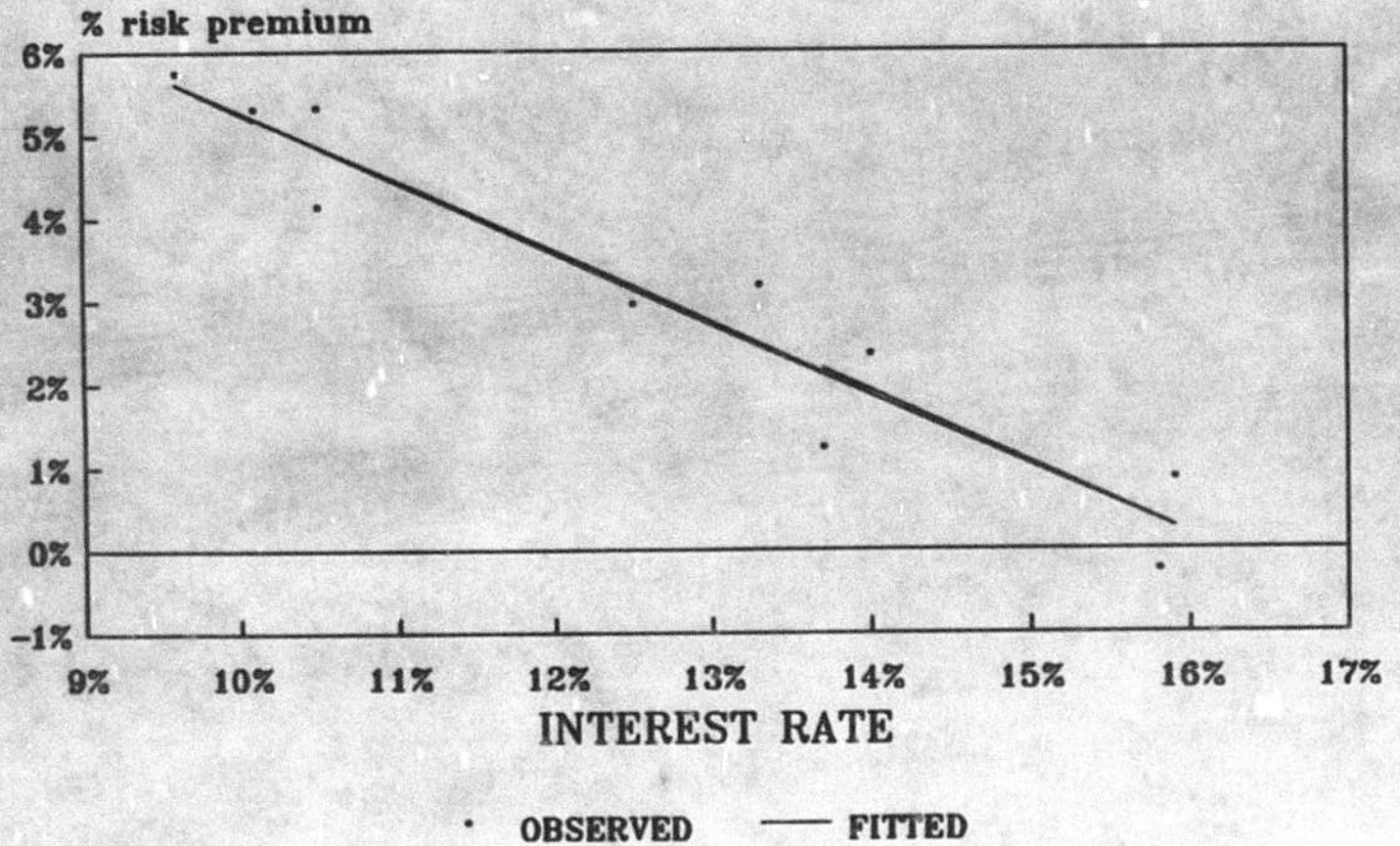
SOUTHERN COMPANY
LONG-TERM RISK PREMIUM ANALYSIS 1979-88



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RISK PREMIUM vs INTEREST RATES

Regression Output:

Constant		0.1366448
Std Err of Y Est		0.0063105
R Squared		0.9169073
No. of Observations		10
Degrees of Freedom		8
X Coefficient(s)	-0.840258	
Std Err of Coef.	0.0894307	

IF INTEREST RATES ARE =	9.50%
THEN, RISK PREMIUM =	5.68%
COST OF EQUITY =	15.18%

SOURCE: Lotus 123 regression function

RISK PREMIUM ANALYSIS
THE SOUTHERN COMPANY
1984-1989

MONTH	STOCK PRICE	QRTRLY DIVID	NO. OF QTRS LEFT	EXPECT DIVID	DIVID YIELD	ANALYSTS' GROWTH FORECASTS	COST OF EQUITY	FAIR RETURN	A-RATED UTILITY BONDS	RISK PREMIUM
	(1) (2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Nov-84	$18.13	$0.45	0	$1.89	10.42%	5.00%	16.03%	16.61%	13.23%	3.38%
Dec-84	$18.88	$0.48	3	$1.94	10.27%	4.00%	14.82%	15.39%	13.11%	2.28%
Jan-85	$18.13	$0.48	3	$1.94	10.70%	4.00%	15.29%	15.88%	12.99%	2.89%
Feb-85	$18.50	$0.48	3	$1.94	10.48%	4.00%	15.05%	15.63%	13.08%	2.55%
Mar-85	$20.00	$0.48	2	$1.97	9.84%	5.00%	15.38%	15.93%	13.87%	2.06%
Apr-85	$19.63	$0.48	2	$1.97	10.03%	5.00%	15.58%	16.14%	13.61%	2.53%
May-85	$20.75	$0.48	2	$1.97	9.48%	5.00%	14.99%	15.52%	13.12%	2.40%
Jun-85	$22.13	$0.48	1	$1.99	9.00%	5.00%	14.47%	14.97%	12.13%	2.84%
Jul-85	$20.75	$0.48	1	$1.99	9.60%	5.00%	15.12%	15.65%	12.07%	3.58%
Aug-85	$20.50	$0.48	1	$1.99	9.72%	5.00%	15.25%	15.79%	12.13%	3.66%
Sep-85	$19.50	$0.48	1	$2.02	10.34%	5.00%	15.94%	16.51%	12.13%	4.38%
Oct-85	$20.38	$0.48	0	$2.02	9.89%	5.00%	15.45%	16.00%	12.01%	3.99%
Nov-85	$21.63	$0.48	0	$2.02	9.32%	5.00%	14.83%	15.34%	11.49%	3.85%
Dec-85	$22.25	$0.51	3	$2.07	9.28%	5.00%	14.78%	15.29%	10.97%	4.32%
	"	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"	"
Jun-88	$23.13	$0.54	0	$2.20	9.53%	3.00%	12.98%	13.51%	10.79%	2.72%
Jul-88	$22.75	$0.54	0	$2.20	9.69%	3.00%	13.15%	13.69%	11.04%	2.65%
Aug-88	$21.63	$0.54	0	$2.20	10.19%	3.00%	13.70%	14.27%	11.17%	3.10%
Sep-88	$21.50	$0.54	0	$2.20	10.25%	3.00%	13.77%	14.33%	10.61%	3.72%
Oct-88	$22.38	$0.54	0	$2.20	9.85%	3.00%	13.33%	13.87%	9.97%	3.90%
Nov-88	$21.63	$0.54	0	$2.20	10.19%	3.00%	13.70%	14.27%	9.90%	4.37%
Dec-88	$22.38	$0.54	0	$2.20	9.85%	3.00%	13.33%	13.87%	10.00%	3.87%
Jan-89	$23.25	$0.54	0	$2.20	9.48%	3.00%	12.93%	13.45%	10.08%	3.37%
Feb-89	$23.25	$0.54	0	$2.20	9.48%	3.00%	12.93%	13.45%	10.07%	3.38%
Mar-89	$23.13	$0.54	0	$2.20	9.53%	3.00%	12.98%	13.51%	10.23%	3.28%
Apr-89	$23.50	$0.54	0	$2.20	9.38%	3.00%	12.82%	13.34%	10.18%	3.16%
May-89	$25.63	$0.54	0	$2.20	8.60%	3.00%	11.98%	12.45%	9.99%	2.46%
Jun-89	$26.38	$0.54	0	$2.20	8.36%	3.00%	11.72%	12.17%	9.64%	2.53%
Jul-89	$28.25	$0.54	0	$2.20	7.80%	3.00%	11.12%	11.55%	9.50%	2.05%
Aug-89	$27.50	$0.54	0	$2.20	8.02%	3.00%	11.35%	11.79%	9.52%	2.27%
Sep-89	$27.13	$0.54	0	$2.20	8.13%	3.00%	11.47%	11.91%	9.58%	2.33%
Oct-89	$27.13	$0.54	0	$2.20	8.13%	3.00%	11.47%	11.91%	9.54%	2.37%
								AVERAGE		3.61%

SOURCE

Column 1: Month
Columns 3, 4: Value Line Investment Reports, 9/1989
Column 2: Monthly closing stock price, Dow Jones Historical Quotes data base
Column 5: Equals Column 3 x Column 4 plus Column 3 x (4-Column 4) x (1 + g)
where 'g' is the growth rate from Column 7.
Column 6: Equals Column 5/Column 2
Column 7: IBES median 5-year growth forecast
Column 8: Solution to the quarterly timing DCF model, obtained by successive iterations
Column 9: The dividend yield component of Column 8 divided by .95, plus Column 7
Column 10: Moody's A Bond Yield Index
Column 11: Equals Column 9 - Column 10

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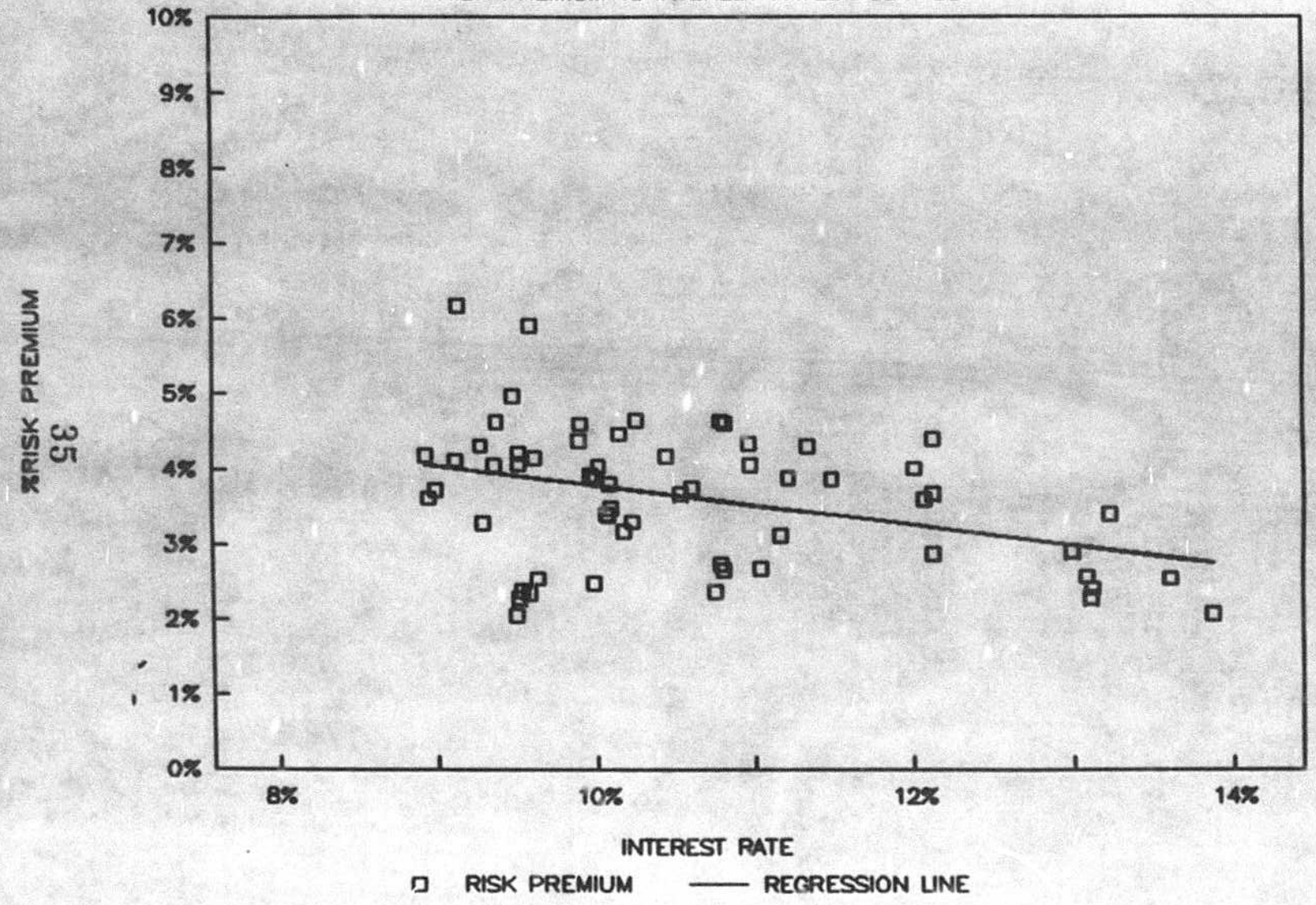
THE SOUTHERN COMPANY

RISK PREMIUM vs INTEREST RATES 1984–89



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REGRESSION RESULTS: RISK PREMIUM vs INTEREST RATES

Regression Output:		
Constant		0.06434091
Std Err of Y Est		0.00845962
R Squared		0.14479563
No. of Observations		60
Degrees of Freedom		58
X Coefficient(s)	-0.26629	
Std Err of Coef.	0.084978	

IF INTEREST RATES ARE =	9.50%
THEN RISK PREMIUM =	3.90%
COST OF EQUITY =	13.40%

SOURCE: Lotus 123 regression function

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MOODY'S ELECTRIC UTILITIES
RISK PREMIUM ANALYSIS

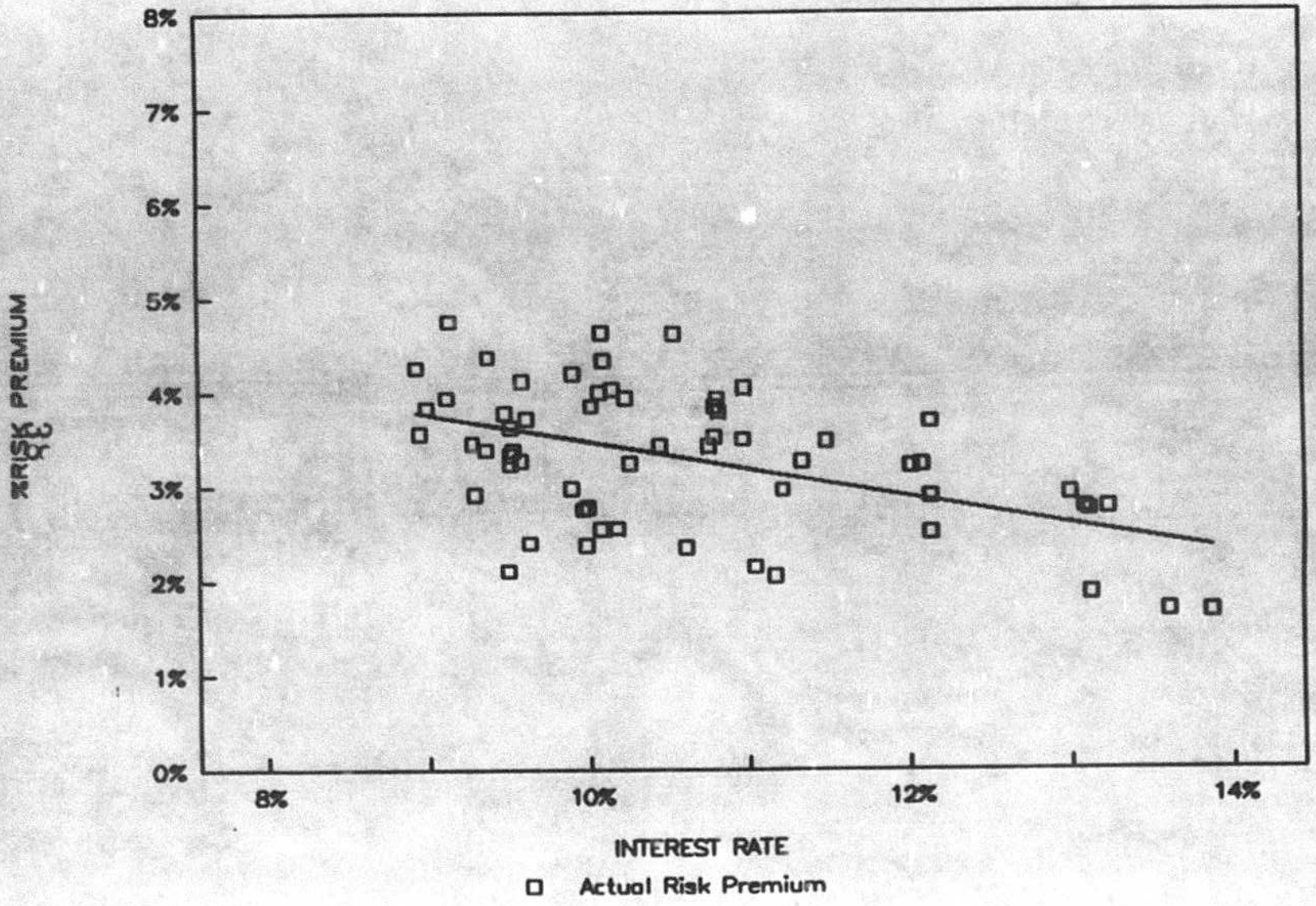
MONTH	SPOT DIVIDEND YIELD	EXPECT DIVIDEND YIELD	ANALYSTS' GROWTH FORECASTS	COST OF EQUITY	FAIR RETURN	YIELD ON A-RATED UTILITY BONDS	RISK PREMIUM
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nov-84	10.57%	10.99%	4.00%	15.38%	15.99%	13.23%	2.76%
Dec-84	10.44%	10.86%	4.00%	15.26%	15.85%	13.11%	2.74%
Jan-85	10.49%	10.91%	4.00%	15.31%	15.90%	12.99%	2.91%
Feb-85	10.44%	10.86%	4.00%	15.26%	15.85%	13.08%	2.77%
Mar-85	10.14%	10.55%	4.00%	14.95%	15.52%	13.87%	1.65%
Apr-85	9.92%	10.32%	4.00%	14.72%	15.28%	13.61%	1.67%
May-85	9.64%	10.03%	4.00%	14.43%	14.97%	13.12%	1.85%
Jun-85	9.33%	9.70%	4.00%	14.10%	14.63%	12.13%	2.50%
Jul-85	9.93%	10.33%	4.00%	14.73%	15.29%	12.07%	3.22%
Aug-85	9.68%	10.07%	4.00%	14.47%	15.02%	12.13%	2.89%
Sep-85	10.40%	10.82%	4.00%	15.22%	15.81%	12.13%	3.68%
Oct-85	9.86%	10.25%	4.00%	14.65%	15.22%	12.01%	3.21%
Nov-85	9.62%	10.00%	4.00%	14.40%	14.95%	11.49%	3.46%
Dec-85	9.17%	9.54%	4.00%	13.94%	14.46%	10.97%	3.49%
"	"	"	"	"	"	"	"
"	"	"	"	"	"	"	"
"	"	"	"	"	"	"	"
Dec-88	8.63%	8.89%	3.00%	12.29%	12.78%	10.00%	2.78%
Jan-89	8.49%	8.74%	3.00%	12.14%	12.63%	10.08%	2.55%
Feb-89	8.80%	9.15%	4.00%	13.55%	14.06%	10.07%	3.98%
Mar-89	8.90%	9.26%	4.00%	13.66%	14.16%	10.23%	3.93%
Apr-89	8.59%	8.85%	3.00%	12.25%	12.73%	10.18%	2.55%
May-89	8.25%	8.50%	3.00%	11.90%	12.37%	9.99%	2.38%
Jun-89	7.95%	8.19%	3.00%	11.59%	12.04%	9.64%	2.40%
Jul-89	7.55%	7.78%	3.00%	11.18%	11.61%	9.50%	2.11%
Aug-89	7.70%	8.01%	4.00%	12.41%	12.85%	9.52%	3.33%
Sep-89	7.70%	8.01%	4.00%	12.41%	12.85%	9.58%	3.27%
Oct-89	7.76%	8.07%	4.00%	12.47%	12.92%	9.54%	3.38%
							3.29%

SOURCE

Column 1: Month
Column 2: Moody's Electric Utility Common Stocks Monthly Dividend Yields from Moody's Public Utility News Reports
Column 3: Column (2) x (1 + g) where 'g' is the growth rate from Column (4)
Column 4: IBES median 5-year growth forecast
Column 5: Approximate solution to the quarterly timing DCF model, obtained by adding the expected dividend yield and the growth rate + 40 basis points
Column 6: The dividend yield component of Column 5 divided by .95, plus Column 4
Column 7: Moody's A Bond Yield Index
Column 8: Risk premium = Column 6 - Column 7

MOODY'S ELECTRIC UTILITIES

RISK PREMIUM vs INTEREST RATES 1984–89



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REGRESSION RESULTS: RISK PREMIUM vs INTEREST RATES

Regression Output:		
Constant		0.064025
Std Err of Y Est		0.006521
R Squared		0.256637
No. of Observations		60
Degrees of Freedom		58
X Coefficient(s)	-0.29316	
Std Err of Coef.	0.065513	

IF INTEREST RATES EQUAL =	9.50%
THEN, RISK PREMIUM =	3.62%
COST OF EQUITY =	13.12%

SOURCE: Lotus 123 regression function.