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RECORDS AND
REPORTING

August 3, 1998

Mrs. Blanca S. Bayó
Director, Division of Records and Reporting
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Re: Docket No. 980696-TP (HB4785) Universal Service

Dear Ms. Bayó:

Enclosed is an original and fifteen copies of BellSouth Telecommunications, Inc.'s Direct Testimony of Dr. Randall S. Billingsley, Dr. Robert M. Bowman, D. Daonne Caldwell, G. David Cunningham, Dr. Keven Duffy-Deno and Peter F. Martin, which we ask that you file in the captioned matter.

A copy of this letter is enclosed. Please mark it to indicate that the original was filed and return the copy to me. Copies have been served to the parties shown on the attached Certificate of Service.

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Sincerely,

Nancy B. White

Nancy B. White

NBW/vf

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Billingsley Bowman Caldwell
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Cunningham Duffy-Deno Martin
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CERTIFICATE OF SERVICE
DOCKET NO. 980696-TP (HB4785)

I HEREBY CERTIFY that a true and correct copy of the foregoing was served via Federal Express this 3rd day of August, 1998 to the following:

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(+) Protective Agreements

ORIGINAL

DIRECT TESTIMONY OF

DR. RANDALL S. BILLINGSLEY

ON BEHALF OF BELLSOUTH TELECOMMUNICATIONS INC.

AND SPRINT -FLORIDA INC.

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 980696-TP

AUGUST 3, 1998

I. INTRODUCTION

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

A. My name is Randall S. Billingsley. I am a finance professor at Virginia Polytechnic Institute and State University. I also act as a financial consultant in the areas of cost of capital analysis, financial security analysis, and valuation. More details on my qualifications may be found in Billingsley Exhibit No. RSB-17. My business address is: Department of Finance, Pamplin College of Business, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061-0221.

This statement presents my independent professional opinions and is not presented by me as a representative of Virginia Polytechnic Institute and State University.

Q. Have you prepared exhibits to accompany this statement?

A. Yes, my statement and 17 exhibits were prepared by me or under my direction and supervision.

II. PURPOSE OF STATEMENT AND SUMMARY OF CONCLUSIONS

A. PURPOSE OF STATEMENT

Q. What is the purpose of your statement in this proceeding?

A. My purpose is to provide the Florida Public Service Commission (Commission) with a determination of the reasonableness of the use of an overall cost of capital of 11.25% in the cost studies of BellSouth Telecommunications Corporation (BST) and Sprint-Florida, Incorporated (Sprint-FL). In so doing, I estimate the companies' forward-looking costs of capital. This provides evidence useful in preparing universal service fund cost studies in the state of Florida.

B. SUMMARY OF BST AND SPRINT-FL COST OF CAPITAL ANALYSES

Q. Please describe the approaches that you use to determine the costs of equity capital for BST and Sprint-FL and summarize your conclusions.

A. My analysis uses objective market data to determine costs of equity capital for BST and Sprint-FL from three distinct but complementary approaches. Since BST is a subsidiary of BellSouth Corporation and Sprint-FL is ultimately a subsidiary of Sprint Corporation, neither company has equity trading in the market. Thus, there is no direct market evidence on the two firms' costs of equity capital. It is consequently necessary

to infer the costs of equity for BST and Sprint-FL using available market data.

In the first approach I apply the DCF model to a group of firms identified as comparable in risk to BST and apply the model to another group of firms identified as comparable in risk to Sprint-FL. Average costs of equity capital are calculated by applying the DCF model to each of these two separate groups of comparable firms in order to provide objective, market-determined costs of equity capital for BST and Sprint-FL. In the second approach, I use the CAPM to estimate the cost of equity capital for the group of publicly traded firms that is comparable in risk to BST and also for the publicly traded group of firms that is comparable in risk to Sprint-FL. Finally, I conduct a risk premium analysis.

The cost of equity for BST is in the range of 15.26% to 15.28% using the comparable firm group DCF model approach. Under the same approach, the cost of equity for Sprint-FL is in the range of 14.88% to 15.07%. The CAPM approach indicates that BST's cost of equity capital is in the range of 14.61% to 14.64% and that Sprint-FL's cost of equity is in the range of 14.32% to 14.35%. The risk premium approach indicates that the expected return on the overall equity market, as measured by the S&P 500, is currently between 13.63% and 14.86%. Billingsley Exhibit No. RSB-1 explains how my analytical approaches are consistent with well-accepted regulatory and economic standards in cost of capital analysis. From these analyses, I conclude that the current cost of equity capital for BST is within the range of 14.61% to 15.28% and that the current cost of equity for Sprint-FL is within the range of 14.32% to 15.07%.

Q. Please describe how you evaluate the reasonableness of using an overall cost of capital of 11.25% in the cost studies of BST and Sprint-FL and summarize your findings.

A. Two indirect tests of the reasonableness of each company's use of an 11.25% overall cost of capital are performed. A direct test of reasonableness is also used to evaluate this rate. The first indirect test uses each company's reported book value capital structure and embedded cost of debt. BST's reported capital structure is 58.50% equity and 41.50% debt and its embedded cost of debt is 6.33%. Sprint-FL's reported book value capital structure is 60.89% equity and 39.11% debt and its embedded cost of debt is 7.21%. An overall cost of capital of 11.25% using these parameters implies a cost of equity of 14.74% for BST and 13.84% for Sprint-FL. The second test uses an equity ratio for BST of 60%, an associated debt ratio of 40%, and a current forward-looking cost of debt of 6.65%. The second test for Sprint-FL uses an equity ratio of 59.58% and a debt ratio of 40.42% but uses Sprint-FL's current forward-looking cost of debt of 7.02%. An overall cost of capital of 11.25% implies a cost of equity of 14.32% for BST and 14.12% for Sprint-FL. These two indirect tests logically imply costs of equity that are lower than or within my estimated range for BST's cost of equity capital of 14.61% to 15.28% and lower than my estimated range for Sprint-FL's cost of equity of 14.32% to 15.07%.

As a direct test of reasonableness, I rely on my estimated forward-looking equity and debt costs along with the market value-based capital structures of each company to estimate an overall cost of capital for BST in the range of 13.83% to 14.44% and an overall cost of capital for Sprint-FL in the range of 13.39% to 14.05%. This indicates that the use of an 11.25% rate in its cost studies understates BST's forward-looking

overall cost of capital by 258 to 319 basis points and underestimates Sprint-FL's forward-looking overall cost of capital by 214 to 280 basis points. Therefore, the use of an 11.25% cost of capital in the cost studies of BST and Sprint-FL is reasonable and quite conservative.

III. CURRENT STATUS OF COMPETITION IN THE TELECOMMUNICATIONS INDUSTRY

Q. What is the current status of competition in the telecommunications industry?

A. Competition in the telecommunications industry has increased dramatically in recent years. The sources of that increased competition include a greater threat of new entrants in the industry, a significant increase in the number and strength of existing competitors, a greater threat of substitute telecommunications products and services, more intense rivalry among existing competitors in the industry, and enhanced regulatory risk at both the state and the federal levels. Thus, both actual and potential competition have increased and the business risk of the industry has consequently increased. What investors believe about the future competition that the local exchange companies (LECs) will face is critical to cost of capital analysis. Investors' expectations of competition and its impact on risk are reflected in the capital costs faced by Sprint-FL and BST.

Q. Specifically how has competition increased in recent years?

A. The interLATA, intraLATA, and local exchange markets have become much more

competitive in recent years. Large businesses have been able to bypass the LECs' private line and access services using fiber optic networks, microwave transmission and very small aperture terminals (VSAT). The growth of competitive access providers (CAPs) such as Metropolitan Fiber Systems (MFS) and the Teleport Communications Group (TCG) has allowed large business customers in major cities to connect with long distance carriers (interexchange carriers or IXCs) without paying access charges to LECs.

It is clear that investors believe that major CAPs, IXCs, and cable television (CATV) companies are positioning themselves to compete vigorously for customers in the local exchange market. BST and Sprint-FL face heightened potential competition that poses additional risk to their operations and their ability to recoup extensive infrastructure investments. Investors see such competition coming from wired, wireless, and Internet sources. Consider the representative recent observations on competition in **Business Week** ("Zooming Down The I-Way," Andy Reinhardt, Peter Elstrom, and Paul Judge, April 7, 1997, pp. 76-87):

> [O]utside the boardrooms of telecom's giants, innovation is sweeping the wired and wireless world - bubbling up from the bottom. Hundreds of alternative carriers and nimble startups are leaping head-first into the newly deregulated environment (p. 76).
>
> =
>
> The Internet is also giving rise to new products that could undermine traditional phone services. The one that sends shivers down the spines of telecom execs: software that lets you place phone calls over the net (p. 77).

> The Internet is not the only threat to the telephone companies. A slew of startups are finding ways to eat into traditional telephone usage ... PCs are becoming telephone command centers for video conferencing and unified messaging that combines e-mail, fax, and voicemail (p. 78).

The provision of wireless services such as personal communication systems by CAPs, CATV operators, and electric utilities also enhances the ability of customers to completely bypass local exchange services. Wireless services are becoming a viable consumer alternative to LEC services. These alternatives will only increase the competitiveness of that environment and thus magnify the business risk of LEC operations. This growing risk is increasing the costs of raising capital for Sprint-FL and BST.

Q. Has the business risk of the telecommunications industry increased in recent years and is it expected to continue increasing in the future, especially due to the passage of and uncertainties in implementing the Telecommunications Act of 1996?

A. Yes. The passage of the Telecommunications Act and responses to its passage dramatically indicate that business risk has been increasing and will increase even more in the future. The Act, which was signed into law by President Clinton on February 8, 1996, essentially allows local, long-distance, and cable companies to get into one another's businesses. While market pressures have been eroding these limits in recent years, the various competitors are now moving forward rapidly. However, open competition brings a significant increase in risk.

The passage of the Telecommunications Act is apparently viewed as risky by investors, competing telecommunications firms, and by the Federal Communications Commission (FCC). Indeed, the FCC has observed:

> ... [I]ncumbent LECs face potential competition as a result of the Act that they did not face previously. This potential competition could increase the risks facing the incumbent LECs, and thus increase their cost of capital, thus mitigating, to some extent, the factors suggesting that incumbent LECs' cost of capital has decreased since 1990 (Notice of Proposed Rule Making, Third Report and Order, And Notice of Inquiry, FCC 96-488, December 24, 1996, p. 101, paragraph 228).

The implication is that investors are requiring higher rates of return to compensate for the higher investment risk resulting from the new competitive environment fostered by the implementation of the Telecommunications Act.

Q. How have recent mergers and acquisitions changed the nature of competition in the telecommunications industry?

A. Numerous recent mergers and acquisitions have significantly increased the degree of competition among telecommunications firms and consequently have increased the risks faced by industry investors. This implies that investors must increase their return requirements to be adequately compensated for the increased riskiness of holding telecommunications stocks.

Consider the following recently announced key mergers and acquisitions in the

industry: WorldCom / MCI Communications, SBC Communications / Southern New England Telephone (SNET), SBC Communications / Ameritech, Alltel / 360° Communications, and AT&T / Tele-Communications (TCI). The planned acquisition of TCI by AT&T is a significant recent source of greater investment risk. The following comments support the enormous perceived significance of the deal, as reported in **Business Week** ("At Last, Telecom Unbound," Peter Elstrom, Catherine Arnst, and Roger Crockett, July 6, 1998, pp. 24-27):

> ... [I]n an ironic twist, AT&T, the company that has perhaps missed the most opportunities in the new world of digital communications, has come up with the deal that, if it works, will take advantage of all these trends – and could be the catalyst for other deals and business plans that break the bottleneck and finally deliver on the promise of digital convergence. "This is the deal that's going to get competition going," says former FCC Commissioner Reed Hundt. "This is exactly what regulators envisioned – consumers having choice." (p. 24).

The increasing risk that telecommunications investors face results not only from the competitive implications of pending mergers and acquisitions but from the additional uncertainty associated with the often lengthy regulatory approval process. For example, the MCI / WorldCom merger has been reviewed by European and U.S. regulators for months. Indeed, in July of 1998, the European Commission approved the merger subject to the divestiture of MCI's Internet business while the U.S. Department of Justice only approved the merger as MCI agreed to sell its Internet backbone facilities and wholesale and retail Internet businesses to Cable & Wireless PLC. The MCI / WorldCom combination, though widely expected, still awaits final approval by the Federal Communications Commission. Such regulatory uncertainty enhances

investment risk in the industry.

Q. Is there any capital market evidence that LEC investors believe that the AT&T / TCI deal has increased competition and investment risk in the telecommunications industry?

A. Yes. The announcement of the deal was associated with a significant drop in the stock prices of some key LECs. This adverse reaction to the deal is described in a report by Bloomberg's business information site on the Internet (http://www.bloomberg.com), "Baby Bell Shares Fall as AT&T Targets Local Market," June 24, 1998):

> Shares of Bell Atlantic Corp., BellSouth Corp. and other local telephone companies fell after AT&T Corp., the largest U.S. long-distance telephone company, launched an assault on their market
>
> The Standard & Poor's Telephone Index, which tracks the performance of the local phone company stocks, dropped 23.60 points, or 3.8 percent, to 599.79, the biggest one-day decline since Oct. 27 last year...
>
> AT&T's move would give it direct access to TCI's 10 million customers in the U.S. and break the Baby Bell's stranglehold on the $100 billion-a-year local phone market. "This basically puts AT&T on their doorstep," said Mitchell Weisberg, an information technology consultant who, as an AT&T employee in the early 1980s, helped put together the company's divestiture plan. "There's significant revenue at risk" for the Baby Bells, Weisberg said.

> The local phone companies stand to lose in two ways under the AT&T-TCI combination. Customers in regions where TCI operates cable systems will have the option of using AT&T for local calls, which means lost revenue for that region's Baby Bell. ... What's more, AT&T now has to pay access charges to the Baby Bells for using their network to complete long-distance calls. That won't be the case for calls routed through the TCI network. "It's a certainty this will slow down the earnings growth" of the Baby Bells, said Paul Wright, a telecommunications analyst at Loomis, Sayles & Co., which owned shares of Bell Atlantic and BellSouth as of the end of March. ... The [LEC's] stocks also dropped after Merrill Lynch analyst Daniel Reingold cut his rating on Bell Atlantic, SBC and Ameritech. AT&T's move "increases the perception that the (Baby Bells) will face competitive risk from local entry on both the business and consumer sides," Reingold wrote in a report.

The fact that LEC share prices fell in response to the announcement of the purchase of TCI by AT&T is strong, concrete capital market evidence that investors believe that LEC risk has increased significantly. The above Bloomberg report documents the primary source of concern to be a significant loss in both local call and access charge revenues. The investment community apparently views the deal as the advent of significantly greater competition in the consumer and business segments of the local telephone market.

IV. DCF MODEL ESTIMATES OF EQUITY CAPITAL COSTS FOR BST AND SPRINT-FL

A. FORM OF THE DCF MODEL USED IN THE ANALYSIS

Q. What form of the DCF model do you use to estimate equity capital costs for BST and Sprint-FL?

A. I use the constant growth form of the DCF model that assumes an indefinite or infinite holding period. Since most U.S. firms pay dividends quarterly, I use the quarterly form of the DCF model under the realistic assumption that such dividends are changed by firms once a year, on average in the middle of the year. Specifically, the cost of equity K is calculated as:

$$K = \left[D^{q}_{0}(1 + G) / P_{mkt} \right] + G = \left[D^{q}_{1} / P_{mkt} \right] + G,$$

where G is the most recent average five-year earnings per share growth rate projected by analysts, as reported by either Zacks Investment Research Inc. (Zacks) or by the IBES, and P_{mkt} is the average of the three most recent months (April to June 1998) of high and low prices for the equity. D_0^q and D_1^q reflect the most recent annual and the anticipated next year amount of quarterly dividends, respectively. D_1^q is calculated as:

$$D_1^q = d_1 (1 + K)^{.75} + d_2 (1 + K)^{.5} + d_3 (1 + K)^{.25} + d_4,$$

where d_1 and d_2 are the quarterly dividends paid prior to the assumed yearly change in dividends and d_3 and d_4 are the two quarterly dividends paid after the given change in the amount paid by a firm. Thus, dividend D_1^q captures the quarterly payment of dividends that grow at rate G.

In order to reflect the significant effect of flotation costs on the cost of equity, I directly reduce the market price P_{mkt} used in my analysis by a conservative 5 percent. Billingsley Exhibit No. RSB-2 elaborates on the nature and applicability of the DCF model in estimating the cost of capital in regulatory proceedings. It also discusses the importance of adjusting for both the payment of quarterly dividends and for flotation costs.

B. SPECIFIC APPLICATION OF THE DCF MODEL TO ESTIMATE EQUITY COSTS FOR BST AND SPRINT-FL

Q. Specifically how do you apply the above DCF model to BST and Sprint-FL, since neither company has equity trading in the marketplace?

A. Because BST is owned by its parent holding company, BellSouth Corporation, and Sprint-FL is ultimately owned by its parent holding company, Sprint Corporation, neither of the companies have equity trading in the market. It is consequently necessary to infer the equity costs of BST and Sprint-FL by applying the DCF model to each of the two groups of firms identified as comparable in risk to BST and Sprint-FL, respectively.

Q. What method is used to identify firms of comparable risk to BST and firms of comparable risk to Sprint-FL?

A. I use a cluster analysis model to identify firms that are comparable in risk to each firm.

The model is applied first to identify firms that are, as a group, comparable in risk to BST and then it is applied separately to identify firms that are comparable in risk, as a group, to Sprint-FL. Thus, BST and Sprint-FL may be viewed as two distinct "target" firms in a comparative risk analysis of a large sample of firms.

Two dimensions of risk are used to compare firms. First, the financial risk of firms is measured and used as a basis of comparison. Second, business or operating risk is compared among firms. These dimensions are, in effect, averaged in a manner that generates a comprehensive risk profile. Thus, firms are not just compared on a characteristic-by-characteristic basis, they are compared in light of those chosen characteristics and the relationship among those characteristics.

A summary measure expresses the distance between each firm and BST and each firm and Sprint-FL. Two groups of the 20 firms that are closest to each target firm, BST or Sprint-FL, in terms of this summary distance measure are chosen for analysis. A more detailed discussion of this cluster analysis is contained in Billingsley Exhibit No. RSB-5.

Q. How do the individual measures of riskiness relate to the comparability of the group of firms in the clusters in terms of overall riskiness?

A. It may be tempting to single out one company in a cluster of comparable firms and incorrectly compare its various risk measures individually to those of BST or individually to those of Sprint-FL. However, none of the individual companies identified in the BST-comparables portfolio are precisely like BST in every respect nor

are any of the individual companies identified in the Sprint-FL-comparables portfolio exactly like Sprint-FL in every way. The firms are alternative investment opportunities that, in the aggregate, have overall risk similar to that of the given target firm, BST or Sprint-FL.

In summary, none of the individual firms in a cluster are precisely like the given target firm in terms of each individual measure of risk. A cluster should be viewed as a portfolio of firms that, as a group, is comparable in risk to a given target firm, BST or Sprint-FL.

C. DCF MODEL COST OF EQUITY ESTIMATES FOR BST AND SPRINT-FL

Q. What cost of equity capital do you estimate for BST using the DCF model?

A. Billingsley Exhibit No. RSB-3 lists the portfolio of 20 firms that are comparable in risk to BST and reports the average cost of equity for the portfolio using both IBES and Zacks growth rate forecasts. The evidence indicates that the cost of equity for BST is in the range of 15.26% to 15.28%.

Q. What cost of equity capital do you estimate for Sprint-FL using the DCF model?

A. Billingsley Exhibit No. RSB-4 lists the portfolio of 20 firms that are comparable in risk to Sprint-FL and reports the average cost of equity for the portfolio using both IBES and Zacks growth rate forecasts. The evidence indicates that the cost of equity

for Sprint-FL is in the range of 14.88% to 15.07%.

V. CAPITAL ASSET PRICING MODEL ESTIMATES OF EQUITY CAPITAL COSTS FOR BST AND SPRINT-FL

Q. What form of the CAPM do you use to estimate equity capital costs for BST and Sprint-FL?

A. I use the common form of the model, which calculates the risk-adjusted rate of return K as:

$$K = R_f + B [R_m - R_f],$$

where R_f is the expected return on a risk-free security like a U.S. Treasury bond, B is the expected beta or systematic risk of the equity security, and R_m is the expected return on a broad index of equity market performance , the S&P 500.

Q. How and where do you obtain the beta coefficient data needed to estimate each company's cost of equity capital using the CAPM?

A. Since BST is a subsidiary of BellSouth Corporation and Sprint-FL is a subsidiary of Sprint Corporation, neither company has its own equity trading in the market and therefore neither company has the beta coefficient required by the CAPM. Thus, as discussed above in my DCF analysis, it is necessary to identify a group of firms that is comparable in risk to each target firm that does have traded equity and therefore

measurable beta coefficients. Consequently, the beta coefficients for the two groups of firms used in my DCF analyses that are identified in Billingsley Exhibit No. RSB-3 for BST and Billingsley Exhibit RSB-4 for Sprint-FL are relied on to estimate equity capital costs. Specifically, the average beta of 0.88 for the portfolio of firms comparable in risk to BST and the average beta of 0.85 for the portfolio of firms comparable in risk to Sprint-FL are each used in the CAPM equation presented above.

The beta coefficients used in my CAPM analyses are the most recent prospective measures supplied by BARRA, a widely recognized provider of data and decision support systems for institutional investors. Billingsley Exhibit No. RSB-6 elaborates on the nature and significance of using prospective rather than historical beta estimates.

Q. How do you estimate the risk-free rate of return needed in the CAPM equation?

A. In order to be consistent with the expectational emphasis of the CAPM, I use the 6.13% average expected yield implied by the prices of the U.S. Treasury bond futures contracts quoted during June of 1998. The prices of these contracts reflect the market's consensus forecast for 20-year U.S. Treasury bonds, the longest maturity with futures data available. Billingsley Exhibit No. RSB-7 describes the futures contracts used in the analysis in more detail and shows the calculations necessary to derive the implied expected future risk-free rate of return.

Q. How do you estimate the expected return on a broad index of equity market performance for use in the CAPM?

A. I use expectational data to estimate the return of the S&P 500 as my proxy for overall equity market performance. Billingsley Exhibit No. RSB-8 elaborates on how the DCF model is applied to estimate the expected return on the S&P 500 using both Zacks and IBES growth rate forecasts. The expected return during the most recent month (June 1998) for which data is available is used in the CAPM analysis.

Q. What cost of equity capital do you estimate for BST under the CAPM approach?

A. Summarizing the results of the above analysis, I use a risk-free rate of return of 6.13%, an average beta of 0.88 for firms comparable in risk to BST, and IBES and Zacks growth rate estimates that imply an expected return on the S&P 500 of 15.77% and 15.80%, respectively. These objective, market-determined data indicate that BST's cost of equity capital is 14.61% using the IBES growth rate and 14.64% using the Zacks growth rate forecast.

Q. What cost of equity capital do you estimate for Sprint-FL under the CAPM approach?

A. I use the same risk-free rate and expected rates of return on the S&P 500 as above and an average beta of 0.85 for the group of firms comparable in risk to Sprint-FL. These assumptions yield a forward-looking cost of equity estimate for Sprint-FL of 14.32% using the IBES growth rate and 14.35% using the Zacks growth rate forecast.

VI. MARKET RISK PREMIUM ANALYSIS OF THE COST OF EQUITY CAPITAL

A. NATURE OF THE APPROACH

Q. What is the market risk premium approach?

A. The market risk premium approach quantifies the risk/return trade-off discussed in detail in Billingsley Exhibit No. RSB-1 on the economic standards used in cost of equity analysis. The equity market risk premium is defined as the difference between the return on a broad basket of equity securities (the "market") and the return on a low-risk or "riskless" benchmark security or portfolio. The return on long-term U.S. Treasury bonds and the return on utility bonds are common benchmarks.

B. SPECIFIC TYPE OF RISK PREMIUM ANALYSIS USED

Q. What specific form of the risk premium approach do you use?

A. I examine the relationship between expected returns on the S&P 500, as estimated by the DCF model using IBES growth rate forecasts, and the current market yields on public utility bonds from October of 1987 to June of 1998. Two public utility bond benchmarks are used: 1) the yields on Aaa-rated bonds, which are used because this is the bond rating on BST's debt, and 2) the yields on A-rated bonds, which are used because this is the bond rating on Sprint-FL's debt. Additional detail on the issues and the techniques associated with calculating the expected return on the market is presented in Billingsley Exhibit No. RSB-8.

Billingsley Exhibit No. RSB-9 shows that the average expected risk premium relative

to Aaa-rated public utility bonds from 1987 to mid-1998 is 6.74%. The average yield on Aaa-rated public utility over the most recent three months (April to June of 1998) is 6.89%. Thus, the average risk premium of 6.74% is added to the recent average Aaa-public utility bond return of 6.89% to yield an expected cost of equity return on the S&P 500 of 13.63%.

Billingsley Exhibit No. RSB-10 shows that the average expected risk premium relative to A-rated public utility bonds from 1987 to mid-1998 is 6.57%. The average yield on A-rated public utility over the most recent three months (April to June of 1998) is 7.12%. Thus, the average risk premium of 6.57% is added to the recent average A-public utility bond return of 7.12% to yield an expected cost of equity return on the S&P 500 of 13.69%.

In summary, risk premium analyses using both Aaa- and A-rated public utility bond return reference points indicate that the expected return on the broad equity market, as measured by the S&P 500, is between 13.63% and 13.69%.

C. ADJUSTMENT FOR POTENTIAL CHANGES IN THE RISK PREMIUM OVER TIME

1. EVIDENCE OF CHANGES IN THE RISK PREMIUM

Q. Can any changes in the risk premium be adjusted for so as to increase the confidence in its representativeness?

A. Yes. As elaborated on in Billingsley Exhibit No. RSB-8, studies of the historical

behavior of the equity risk premium indicate that it varies considerably over time. Importantly, there is evidence that the equity risk premium is related inversely to the returns on low-risk benchmark debt securities. Thus, when interest rates decline, the equity risk premium, tends to widen and when interest rates rise, the equity risk premium tends to narrow.

Research on this phenomenon by professors R. S. Harris and F.C. Marston, published in **Financial Management** in 1992, finds that the equity risk premium moves an average of -.651 of contemporaneous changes in the return on a benchmark low-risk security (index). In other words, if interest rates decline by 100 basis points, the equity risk premium will increase by an average of about 65 basis points.

2. SPECIFIC ADJUSTMENT FOR CHANGES IN THE EQUITY RISK PREMIUM OVER TIME

Q. What specific adjustment do you make to your risk premium analysis in light of the above evidence on the inverse relationship between the risk premium and the level of interest rates?

A. During the period of Harris and Marston's study, the average risk premium was 6.47% and the average yield on long-term U.S. Treasury bonds was 9.84%. As noted above, the equity market risk premium is expected to change an average of -.651 of changes in the level of long-term Treasury bond yields. Given that the current average yield on 30-year Treasury bonds is 5.69% (June 1998), the appropriate current risk premium is 9.17%. This is calculated by multiplying the 4.15% decline in rates since the time

period of Harris and Marston's study by -.651 and adding back the average risk premium of 6.47% to the indicated change of 2.70%. This alternative approach consequently provides an expected return on the S&P 500 of 14.86%, which is the current average level of 30-year Treasury yields of 5.69% added to the adjusted risk premium of 9.17%.

Q. What is your conclusion with regard to the equity capital costs of BST and Sprint-FL?

A. Based on my cost of equity analyses, I believe that BST's cost of equity is in the range of 14.61% to 15.28% and Sprint-FL's cost of equity is in the range of 14.32% and 15.07%.

VII. DEBT CAPITAL COSTS OF BST AND SPRINT-FL

Q. How do you determine the current debt capital costs faced by BST and Sprint-FL?

A. The costs of debt capital are estimated using current forward-looking market data.

Q. How can a company's forward-looking cost of debt be empirically estimated?

A. A firm's forward-looking cost of debt can be estimated by adding the current yield to maturity on 30-year U.S. Treasury bonds to the average spread (difference) between the yields on such bonds and the yields on benchmark bonds issued by firms similar in risk to the target firm. As discussed above in my broader risk premium analyses, two benchmarks are used to capture the different debt market circumstances faced by BST

and Sprint-FL. Thus, the yields on Aaa-rated bonds are used as one benchmark because this is the bond rating on BST's debt and the yields on A-rated bonds are used as another benchmark because this is the bond rating on Sprint-FL's debt.

For the period from April to June of 1998, 30-year U.S. Treasury bonds yielded an average of 5.83%. As shown in Billingsley Exhibit RSB-11, the spread between Aaa-rated public utility bonds and 30-year Treasury bonds averaged 0.80% from October of 1987 through June of 1998. Adding the average spread of 0.80% to the above recent average Treasury bond yield to maturity of 5.83% produces a yield of 6.63%, which does not reflect the material effect of flotation costs.

As shown in Billingsley Exhibit RSB-12, the spread between A-rated public utility bonds and 30-year Treasury bonds averaged 1.15% from October of 1987 through June of 1998. Adding the average spread of 1.15% to the above-noted recent average Treasury bond yield to maturity of 5.83% produces a yield of 6.98%, which does not reflect the material effect of flotation costs.

Q. What are your estimates of the forward-looking costs of debt for BST and Sprint-FL?

A. Based on my analyses, I believe that BST's forward-looking cost of debt is 6.65% and that Sprint-FL's forward-looking cost of debt is 7.00%.

VIII. REASONABLENESS OF USING AN 11.25% COST OF CAPITAL IN THE COST STUDIES OF BST AND SPRINT-FL

Q. How do you test the reasonableness of using an overall cost of capital of 11.25% in the cost studies of BST and Sprint-FL?

A. I conduct indirect tests using two different sets of assumptions; one using the reported book value capital structures and embedded costs of debt, and the other using the capital structure and the forward-looking costs of debt for BST and Sprint-FL used in their cost studies. In addition to these indirect assessments of the reasonableness of each firm's use of an 11.25% overall cost of capital, I directly estimate each firm's overall cost of capital using the results of my above analyses and the market value of equity-based capital structures for each of the firms. The comparison of my estimated overall costs of capital for BST and Sprint-FL with the 11.25% rate used in the companies' respective cost studies sheds light on the reasonableness of that assumed rate.

Q. Please describe the first test of the reasonableness of each firm's use of an 11.25% overall cost of capital.

A. As shown in Billingsley Exhibit RSB-13, as of March 31, 1998, BST's reported book value capital structure was 58.50% equity and 41.50% debt and its embedded cost of debt was 6.33%. An overall cost of capital of 11.25% implies a cost of equity of 14.74%. As shown in Billingsley Exhibit RSB-14, as of March 31, 1998, Sprint-FL's reported book value capital structure was 60.89% equity and 39.11% debt and its embedded cost of debt was 7.21%. An overall cost of capital of 11.25% implies a cost of equity of 13.84%.

Q. Please describe the second test of the reasonableness of using an 11.25% overall cost of capital in the cost studies of BST and Sprint-FL.

A. Assuming the capital structure that is used in the cost studies of both firms and the current forward-looking costs of debt for each firm (6.65% for BST and 7.02% for Sprint-FL), an 11.25% overall cost of capital implies a cost of equity of 14.32% for BST and 14.12%for Sprint-FL.

Q. How do you estimate BST's and Sprint-FL's overall cost of capital?

A. I use my estimated costs of equity and debt along with the average market value-based capital structures for each of the two groups of 20 firms shown to be comparable in risk to BST and Sprint-FL. The analysis uses a cost of debt of 6.65% and a cost of equity of from 14.61% to 15.28% for BST. As shown in Billingsley Exhibit RSB-15, the average market value-based capital structure is 90.24% equity and 9.76% debt. These data indicate that BST's overall forward-looking cost of capital is in the range of 13.83% to 14.44%.

The analysis of Sprint-FL uses a cost of debt of 7.00% and a cost of equity of from 14.32% to 15.07%. As shown in Billingsley Exhibit RSB-16, the average market value-based capital structure is 87.31% equity and 12.69% debt. These data indicate that Sprint-FL's overall forward-looking cost of capital is in the range of 13.39% to 14.05%.

Q. What conclusions do you draw concerning the reasonableness of using an 11.25%

overall cost of capital in the cost studies of BST and Sprint-FL?

A. Based on the above tests, the use of an 11.25% overall cost of capital by BST is reasonable and quite conservative. Specifically, the two indirect tests indicate that an overall cost of capital of 11.25% implies a cost of equity between 14.32% and 14.74%. These implied rates are below or within my estimated range for BST's cost of equity of between 14.61% and 15.28%. My overall cost of capital estimate for BST is in the range of 13.83% and 14.44%, which is between 258 and 319 basis points above the 11.25% rate used in the company's cost studies.

Similarly, the use of an 11.25% overall cost of capital by Sprint-FL is reasonable and quite conservative. The two indirect tests indicate that an overall cost of capital of 11.25% implies a cost of equity between 13.84% and 14.12%. These implied rates are below my estimated range for Sprint-FL's cost of equity of between 14.32% and 15.07%. My overall cost of capital estimate for Sprint-FL is in the range of 13.39% and 14.05%, which is between 214 and 280 basis points above the rate used in the firm's cost studies.

Q. Are you aware that the Commission has not previously recognized the need to adjust cost of equity estimates for flotation costs or the quarterly payment of dividends?

A. Yes, I am aware of this. I have estimated the costs of equity for BST and Sprint-FL with adjustments for both flotation costs and the quarterly payment of dividends because I believe that these factors affect equity costs. The economic rationales for these adjustments are elaborated in Billingsley Exhibit RSB-2.

Q. What are your revised estimates of the equity capital costs for BST and Sprint-FL assuming annual dividend payments and no flotation costs?

A. An annual DCF model that ignores flotation costs produces a cost of equity for BST of 15.19% using IBES growth rate forecasts and 15.18% using Zacks growth forecasts. The same revised DCF model produces a cost of equity for Sprint-FL of 14.79% using IBES growth rate forecasts and 14.99% using Zacks growth forecasts. The revised CAPM approach indicates that BST's cost of equity is in the range of 14.63% to 14.66% and that Sprint-FL's cost of equity is in the range of 14.34% and 14.37%. Thus, under the assumption of annual compounding and no flotation costs the revised estimate of BST's cost of equity is within the range of 14.63% to 15.19% and Sprint-FL's cost of equity is within the range of 14.34% and 14.99%.

Q. Do you believe that it would be reasonable for BST and Sprint-FL to use an overall cost of capital of 11.25% in their cost studies if flotation costs and quarterly compounding adjustments are omitted from your estimates?

A. Yes. The revised cost of equity capital estimates for BST are in the range of 14.63% to 15.19% and are in the range of 14.34% and 14.99% for Sprint-FL. The same two indirect tests of reasonableness used above imply costs of equity that are below or within the range of these revised cost of equity estimates for both firms. Further, calculation of the overall costs of capital for each firm in the same manner as described above but using the above revised cost of equity ranges yields a range from 13.85% to 14.36% for BST and produces a range from 13.41% to 13.98% for Sprint-FL. Thus,

the use of an 11.25% cost of capital by BST or Sprint-FL in their cost studies is quite conservative even in the absence of adjustments for flotation costs and the quarterly payment of dividends.

Q. Does this conclude your direct testimony?

A. Yes, it does.

REGULATORY AND ECONOMIC STANDARDS USED IN COST OF CAPITAL ANALYSIS

I. Regulatory Standards

Two important Supreme Court decisions, commonly referred to as **Bluefield** and **Hope**, provide the essential standards that are applied in the regulation of a public utility's allowed rate of return. The first standard is that a public utility should be allowed earnings opportunities sufficient to enable it to attract capital on reasonable terms. The second standard is that a public utility should be allowed the opportunity of earning at a level comparable to other firms of corresponding risk.

The **Bluefield** case establishes the regulatory standard that a public utility's allowed rate of return should be sufficient to permit it to attract the capital that it needs to meet its responsibilities. In order to maintain the ability to attract capital, a public utility must assure that its financial integrity is not compromised.

The **Hope** case establishes the standard that a public utility's allowed rate of return will not be appropriate unless it is comparable to the returns on investments of comparable risk. In terms of the current proceeding, this standard requires that the target firm's discount rate used in universal service fund cost studies be commensurate with the expected rate of return associated with the risk faced by investors in firms of comparable risk.

II. Economic Standards

A. Overview

Several fundamental economic standards are used to determine the cost of equity capital. These standards are implied by the concepts of opportunity cost, the risk/return trade-off, and market efficiency. If the process used to establish the cost of equity is inconsistent with those standards, then the resulting estimate will be biased. Such a cost of equity would not treat ratepayers fairly and could damage the ability of the regulated firm to raise funds. This could compromise the firm's capacity to continue providing appropriate telecommunications services.

B. Opportunity Cost

Investors have the opportunity to put their money to work in a variety of different investments. The decision to put money in one investment implies that another investment opportunity must be given up. Thus, the opportunity cost of making an investment is the opportunity (expected return) foregone on the next best alternative.

The opportunity afforded by an investment must be measured in light of the time value of money. This acknowledges that the value of a dollar to be received in a year is not worth a dollar today. This is because investors have the opportunity to invest less than a dollar today at some positive expected return in order to generate a dollar a year from today. Money has a time value that reflects the benefits of an investor's other competing investment alternatives.

The cost of equity capital is an opportunity cost from the equity investor's viewpoint. When an investor considers investing money in a stock, care is taken to evaluate the expected return on the next best alternative investment that must be foregone if that stock is bought. An investor has a target required rate of return that is influenced by that opportunity cost. If an investor does not expect a stock to meet the target or minimally acceptable return, then that investor will not purchase the stock. In order to meet investors' return expectations, the firm must reinvest the funds supplied by those investors at an expected rate of return no less than that expected by investors.

The standard that emerges for cost of equity capital analysis is that any estimate should consider the opportunity costs faced by equity investors. The cost of equity capital cannot be determined in isolation. It must reflect equity investors' other investment alternatives. In the case of a regulated public utility, the company's authorized rate of return must meet investors' return requirements, as reflected in the cost of equity capital, or investors will not supply the firm with their capital. This would effectively deny the utility access to the capital market on reasonable terms. Thus, the standards established by **Hope** and **Bluefield** would be violated.

C. Risk/Return Trade-Off

The risk/return trade-off is a description of how investors behave given what they like and what they dislike about investments. Investors generally prefer higher to lower returns and prefer less to more risk. Investors will not take on additional risk unless

they expect to earn higher returns. This is because investors must trade-off what they like (higher expected returns) against what they dislike (higher risks) in making investment decisions. In everyday terms, investors cannot get more of what they like unless they are willing to take on more of what they dislike.

In competitive capital markets, the risk/return trade-off will generally prevail. If an investment's expected return is not commensurate with its risk, investors will look elsewhere for investment opportunities. Investors seeking to measure opportunity costs must develop some criterion for judging what makes investments comparable so that they can identify the "next best alternative foregone," as discussed above. The primary criterion is risk. Investors will evaluate investments of comparable risk and seek the investment yielding the highest expected return for a given level of risk. Thus, opportunity costs can only be measured accurately when the riskiness of competing investments is taken into consideration.

The standard for cost of capital analysis implied by the risk/return trade-off is that a firm must meet the return requirements that equity holders impose after having evaluated other investments of comparable risk. If a firm does not meet investors' risk-adjusted expected returns, investors will move their money to alternative investments of similar risk that offer expected higher returns. This standard asserts that a regulated firm should have the opportunity to earn a return that is commensurate with its risk and, by implication, comparable to the expected returns of other firms of comparable risk.

D. Implications of Opportunity Costs and the Risk/Return Trade-Off

The joint presence of opportunity costs and the risk/return trade-off implies the standard that investments of comparable risk are expected to generate comparable returns. If they do not, investors will purchase the stocks of firms yielding higher expected returns and will sell the stocks of firms yielding lower expected returns until the returns reflected by the prices are the same. This standard is the result of many investors measuring their opportunity costs by comparing investments with full knowledge that relevant alternatives are defined largely on the basis of comparable riskiness.

This standard implies that groups of firms comparable in risk to a target firm should have average costs of equity capital that are comparable to that target firm's cost of

equity capital. This is the basis for the common practice of applying the discounted cash flow (DCF) model to a group of comparable firms.

E. Market Efficiency

In its most general form, an efficient market is one in which all information that is relevant to security price (expected return) formation is reflected quickly in prices (expected returns). Market efficiency is not an all or nothing proposition, but rather is a matter of degree. Financial research finds evidence of a high degree of efficiency in contemporary U.S. financial markets. Thus, security prices are on average unbiased, objective estimates of what the investment community expects to happen to a security. Indeed, prices reflect the market's assessment of what a security is expected to yield given its riskiness relative to comparable investments. The implication of a high degree of market efficiency for cost of equity capital analysis is that the equity prices for firms of comparable risk are reliable sources of objective information about capital costs.

NATURE AND APPLICABILITY OF THE DISCOUNTED CASH FLOW MODEL IN COST OF EQUITY CAPITAL ANALYSIS FOR REGULATORY PROCEEDINGS

I. Nature of the Discounted Cash Flow (DCF) Model

The DCF model is a formal statement of common sense and basic financial theory. The model asks an investor's most basic question: How much is this stock worth? Common sense dictates that the answer depends on what investors expect to get out of the stock and when they expect to get it. The "what" is the expected cash flow stream generated by the stock and the "when" is the projected timing of those expected cash flows.

Determining how much a stock is worth depends on one more critical consideration: the riskiness or probability that investors associate with their forecast of what they will receive from the stock. In this context, risk is the possibility that investors' expectations will be frustrated. Thus, risk is reflected by the probability that investors' actual returns will differ from their expected returns. The DCF model assumes that the average investor dislikes risk and consequently will accept higher risk only if there is a higher expected return.

The DCF model recognizes two types of expected cash flows: the periodic payment of cash dividends and the (possible) future sale of the stock. If an investor facing an opportunity cost of K percent expects to get dividends D_t annually for the next N years and then sells the stock at the end of year N for a price of P_N, then the appropriate current price P_0 is:

$$P_0 = \frac{D_1}{(1+K)^1} + \frac{D_2}{(1+K)^2} + \ldots + \frac{D_N + P_N}{(1+K)^N}$$

In summary, the appropriate price of a stock is the present value of all of the cash benefits that an investor expects to get from owning it.

II. Applicable Form of the DCF Model

A. Issues

The above form of the DCF model is typically modified in at least two ways. First, a regulatory commission is presumably not concerned with determining how

much a stock should sell for. Its goal is to determine what rate of return a regulated firm's equity investors should reasonably expect to receive for bearing the firm's risk. Thus, a regulator is concerned with what the price is rather than with what it should be. The actual price P_{mkt} should consequently be used to infer investors' required rate of return.

Second, the form of the DCF presented above makes no explicit assumption concerning the expected rate of growth in dividends and the stock's price over time, nor any assumption concerning the length of an investor's expected holding period. The so-called constant growth form of the DCF model assumes that dividends and price grow at a constant rate G over time, that the growth rate is less than the required rate of return, and that investors have an infinite or indefinite holding period.

It is important to remember that the fundamental source of a stock's value to investors in the DCF model is its expected dividend stream. Why would investors be willing to trade a stock among themselves if the stock was nothing more than a piece of paper that would never pay any money? If the current price of a stock is the present value of all expected future cash flows, then the price at any point in time should be the present value of the expected cash flows beyond that point in time.

While an infinite holding period may not seem to apply to any one investor, this assumption is an accurate way of portraying the behavior of investors collectively. This is because investors must determine all prices, present and future, by projecting a seemingly endless series of future dividends. They must make such dividend projections since any expected future price is dependent on the dividends that are expected to be paid on that stock after it is purchased.

The constant growth form of the DCF model makes these two adjustments and can be expressed as:

$$K = \frac{D_0 (1 + \bar{G})}{P_{mkt}} + G = \frac{D_1}{P_{mkt}} + G,$$

where D_0 is the most recent dividend paid, G is the expected growth rate, D_1 is the next anticipated dividend, and the rest of the variables are defined as above.

Two additional modifications to the DCF model are necessary. First, it should be recognized that dividends are paid by most companies on a quarterly, not an annual basis. The second adjustment to the general DCF model presented above considers the flotation costs borne by the firm in raising equity funds.

B. Adjustment for Quarterly Dividends

1. Rationale

The annual form of the DCF model assumes that investors receive dividends only once a year and that they have the opportunity to reinvest those cash flows in investments of the same risk. The required rate of return implied by the annual form of the DCF model will be biased downward if investors actually receive their dividend payments in quarterly rather than in annual installments. This bias results because equity investors have the opportunity to start earning a return on their reinvested dividends sooner when these dividends are received quarterly than when the dividends are received only annually.

Investors determine prices that are consistent with the returns that they expect to earn. Thus, investors pay prices that reflect that they expect dividends quarterly rather than annually. Failure to make this adjustment to the DCF model will understate the cost of equity capital. This adjustment should be made in order to determine an economically correct cost of equity for a regulated firm.

2. Specific Adjustment

There are two basic ways in which quarterly dividends can be handled. The first approach makes the simplifying assumption that dividends are paid quarterly and grow quarterly as well. While this approach has the virtue of simplicity, it is not realistic because most firms adjust their dividend payments only once a year, not quarterly.

The second approach assumes that firms pay dividends quarterly but that those dividends are only changed by a firm annually. Thus, quarterly reinvestment opportunities are recognized and the more realistic pattern of annual dividend growth is accounted for as well. This is the approach that I use in my analysis of a regulated firm's cost of equity. Further, I assume that firms on average adjust the level of their dividends in the middle of the year.

The adjusted DCF model calculates a revised dividend, D_1^*:

$$D_1^q = d_1 (1+K)^{.75} + d_2 (1+K)^{.5} + d_3 (1+K)^{.25} + d_4.$$

where d_1 and d_2 are the two quarterly dividends paid prior to the assumed yearly change in dividends and d_3 and d_4 are the two quarterly dividends paid after the given change in the amount paid by a firm. This dividend, D_1^q, revised to recognize the quarterly payment of dividends that grow at rate G once a year (on average for all firms in the middle of the next 12 months), is substituted in the place of D_1 in the basic form of the DCF model as follows:

$$K = \frac{D_1^q}{P_{max}} + G.$$

In my analysis, the market price is the average of the monthly high and low stock prices for the most recent three months for which data are available.

C. Adjustment for Flotation Costs

1. Rationale and Specific Adjustment

The cost of equity capital must reflect what a firm needs to earn on its funds in order to meet the return requirements of its investors. Flotation costs reduce the amount of funds that a firm has to invest and thereby increase the return that a firm must earn on those remaining funds if it is to continue attracting investors. If a utility was allowed to recover all of its flotation costs at the time of issuance, there would be no need for this adjustment. Otherwise, it is important to subtract the flotation costs from the price used in the DCF model in order to capture the fact that a utility does not receive the full proceeds of an equity issue.

Two empirical studies indicate that a 5% flotation cost is realistic. Research by C. W. Smith, Jr. (*Journal of Financial Economics*, 1977, pp. 273-307) finds that explicit flotation costs amount to between 4% and 5% of the amount of an equity issue. Focusing on the utility industry, research by R. H. Petway (*Public Utilities Fortnightly*, May 10, 1984, pp. 35-39) finds that the sale of equity securities generally also involves implicit flotation costs in the form of a 2% to 3% decline in the price of the stock that results from market pressure.

While the above studies deal with both utilities and industrial firms, they are also relevant to the estimation of telecommunications companies' flotation costs. As the

telecommunications industry becomes more competitive, such firms are increasingly being viewed more like industrials than as "pure" public utilities. Equity investors taking a long-term view in their valuations recognize this. Thus, the firm's cost of equity should reflect this expected transition. Therefore, given actual costs of approximately 4-5% and market pressure of 2-3%, I include a conservative 5% flotation cost adjustment that is implemented as a 5% reduction to the stock prices used in my DCF analysis.

2. Relevance of Flotation Costs Despite the Absence of Actual Equity Sales

The fact that a regulated firm does not actually sell equity by virtue of an affiliation with a parent company does not invalidate the need to adjust for flotation costs. Taken to its logical extreme, it could be argued that such a regulated subsidiary firm has no cost of equity capital at all since it does not sell shares of stock on the open market. Yet such regulated firms bear such equity costs and should be compensated accordingly.

The omission of a flotation cost adjustment is incorrect and is equivalent to comparing mortgage rates without adjusting for "points." A regulated firm will not get fair treatment if it is only permitted to earn a return that does not cover all of its reasonable costs, which include flotation costs.

3. Estimation of Growth for Use in the DCF Model

Investors are forward-looking. Investment decisions are made on the basis of how investors expect a stock to perform in the future. While how a stock has performed in the past may well influence an investor's expectations concerning future performance, there is no guarantee that the future will be a simple extension of the past. Thus, it is important that the estimated growth rate used in the DCF model be a prospective or expected, not a historical, rate.

Financial research indicates that the consensus growth rate forecasts of financial analysts are the most unbiased, objective, and accurate measure of investors' growth expectations for a stock. Thus, I use the growth rate estimates published by the Institutional Brokers Estimate System (IBES) and Zacks Investment Research, Inc. (Zacks). Both IBES and Zacks are used widely within the investment profession and are revised frequently enough to remain relevant to investors evaluating the growth prospects of stocks. Further, the use of both sources provides broad-based measures of long-term growth rate expectations.

DCF AND CAPM DATA FOR BST COMPARABLE FIRM PORTFOLIO

	DCF RESULTS		
Portfolio of Comparable Firms	**IBES**	**ZACKS**	**BARRA Beta Coefficients**
Alltel	13.82%	13.13%	0.76
Anheuser Busch	12.66%	11.17%	0.68
Becton Dickinson	14.81%	15.04%	0.88
Campbell Soup	14.75%	14.99%	0.77
Chevron	11.18%	11.97%	0.57
Clorox	14.62%	14.51%	0.83
Coca Cola	17.29%	18.22%	1.01
DuPont & Co.	12.99%	13.36%	1.04
Frontier	17.25%	16.37%	0.73
Hershey Foods	12.88%	13.05%	0.82
Kellogg	12.88%	12.86%	0.73
Kimberly Clark	14.69%	14.88%	0.86
Eli Lilly	17.64%	17.70%	0.97
McDonalds	14.31%	12.98%	0.99
Motorola	18.99%	19.42%	1.27
Pfizer	19.00%	20.01%	1.13
Proctor & Gamble	14.62%	14.35%	0.96
Texaco	12.92%	13.40%	0.47
Wal-Mart Stores	14.69%	14.06%	1.17
Warner-Lambert	23.56%	23.82%	1.00
AVERAGE	**15.28%**	**15.26%**	**0.88**

DCF AND CAPM DATA FOR SPRINT-FL COMPARABLE FIRM PORTFOLIO

	DCF RESULTS		
Portfolio of Comparable Firms	**IBES**	**ZACKS**	**BARRA Beta Coefficients**
Alltel	13.82%	13.13%	0.76
Anheuser Busch	12.66%	11.17%	0.68
Avon Products	17.45%	17.71%	0.91
Becton Dickinson	14.81%	15.04%	0.88
Carnival Corporation	17.54%	17.84%	0.99
Century Telephone Enterprises	14.36%	15.17%	0.79
Cincinnati Bell	19.23%	19.16%	0.91
Clorox	14.62%	14.51%	0.83
Walt Disney Company	18.59%	18.63%	1.13
DuPont & Co.	12.99%	13.36%	1.04
Frontier	17.25%	16.37%	0.73
Hershey Foods	12.88%	13.05%	0.82
Leggett & Platt	15.59%	16.79%	0.87
PepsiCo	17.70%	16.42%	0.92
Phillips Petroleum	12.81%	12.81%	0.65
PPG Industries	12.52%	12.95%	0.89
Rohm & Haas	11.77%	11.88%	0.89
Southwest Airlines	12.99%	12.81%	1.06
Sprint Corporation	15.04%	19.16%	0.85
Texaco	12.92%	13.40%	0.47
AVERAGE	**14.88%**	**15.07%**	**0.85**

COMPARABLE FIRM IDENTIFICATION CRITERIA AND METHODOLOGY

I. Introduction

Since BellSouth Telecommunications (BST) does not have equity trading independently of BellSouth Corporation and Sprint-Florida Incorporated (Sprint-FL) does not have equity trading independently of Sprint Corporation, no direct market prices of equity can be used to infer the companies' costs of equity. Thus, it is necessary to identify portfolios of firms that are comparable in equity investment risk to each of the target firms. The discounted cash flow (DCF) model is applied to each of the portfolio's members and an average cost of equity capital is determined for the BST-comparables group and then for the Sprint-FL-comparables group. Given that each portfolio of firms is of comparable risk to its target firm, BST or Sprint-FL, each of these average costs of equity is an objective, reasonable estimate of each target firm's cost of equity. The next section identifies the sources of investment risk and the specific proxies used to identify comparable firms.

II. Risk Criteria

The following sources of investment risk are measured and used to identify a group of firms that is comparable in risk to each of the target firms under analysis:

A. Financial Risk

1. Relative Amount of Debt

Financial risk is dependent, in part, on the amount of total debt employed by a firm relative to its equity base. Other things being equal, higher debt per dollar of equity implies higher risk. This source of risk is measured by a firm's equity-to-total capital ratio. The most recent annual value (1996) of this ratio is used.

2. Ability to Service Debt

Apart from the above descriptive measure of a firm's relative indebtedness, it is important to evaluate the ability of a firm to service its total debt. This is assessed by examining the amount of interest (I) that a firm owes relative to the resources (net cash flow (NCF), or net income plus non-cash expenses plus interest expense) it has available to meet that

commitment. This is measured by the cash flow-based interest coverage ratio, NCF/I. Other things being equal, an increase in this ratio reflects greater ability to service debt and consequently implies lower riskiness. The most recent annual value (1996) of this variable is used.

3. Bond Rating

Bond ratings reflect a rating agency's evaluation of the relative probability of default on a firm's given debt security. Ratings are readily accessible to investors and are commonly used to appraise the risk of a firm. Bond ratings are assigned numerical (i.e., dummy variable) values for the purposes of the present analysis.

B. Business Risk

1. Variability of Cash Flows

The variability of a firm's cash flows characterize the riskiness of a firm's chosen line of business. Cash flows represent a firm's command over goods and services. The risk implications of a given level of cash flows are easiest to interpret when related to an economically meaningful base such as total assets. This source of risk is measured by the standard deviation of the ratio of a firm's operating cash flows-to-total average assets. Higher values of the measure are associated with greater risk. The variable is calculated using the most recent five years of annual data (1992-1996).

2. Operating Return on Assets

The operating return on assets, as measured by the ratio of a firm's operating cash flow-to-total average assets, reflects the business risk associated with generating income in a given line of business. Operating cash flow is used because it does not include the risk effects captured in measures that include financing and investing choices. This variable is calculated using the most recent annual data (1996).

III. Methodology Used in the Comparable Firms Identification Process

A portfolio of comparable firms is identified using a modified cluster analysis model. Classical cluster analysis techniques develop natural groupings of objects based on the relationships among a

given set of descriptive variables. The goal is to determine how the object should be assigned to groups so that there will be as much similarity within groups and as much difference among groups as possible. No predetermined reference object is offered to organize the grouping effort. The modified cluster analysis used in this analysis differs from the classical techniques by identifying a target object (firm) characterized by several descriptive (financial) measures. The goal of this application is to find a group of firms that is as similar as possible to the target firm in terms of the identified measures of investment risk. Unlike classical cluster analysis, the goal of maximizing the differences among groups is irrelevant since all dissimilar groups are discarded. Specifically, in this context, only those firms that are identified as comparable to the given target firm are retained for use in inferring its cost of equity capital.

As in classical cluster models, similarity is determined by measuring the Euclidian distance between the descriptive variables in a manner that considers the multivariate nature of the problem. The distance D_i of each firm i in the sample from the target firm T, assuming the five descriptive variables V_{ij} discussed above, is calculated as:

$$D_i = \sqrt{\sum_{j=1}^{5} (V_{ij} - V_{Tj})^2}.$$

The distance measure uses the squared differences of a given firm's descriptive variable from that of the target firm T in order to measure distance irrespective of whether it is above (positive) or below (negative) the respective value for the target firm. The portfolio of firms considered to be similar to the target, BST or Sprint-FL, is identified by balancing the goals of minimizing the distance D_i of a firm from the target with the desire to have a sample of sufficient size to assure confidence in its representativeness.

IV. Issues in Applying Cluster Analysis

Only firms available on the COMPUSTAT data source also having an IBES and Zacks consensus growth rate forecast based on at least two analysts' estimates are retained for analysis. Foreign, financial, and limited partnership firms are eliminated. Outliers are identified on a variable-by-variable basis. Those firms with variable values greater than two standard deviations above or below the mean value of the population for each variable are deleted. All outliers are eliminated before standardizing the variables to prevent biasing the means and standard deviations. The final population consists of 380 firms.

Since the proxies of investment risk discussed above are denominated in different units of measurement, they consequently need to be standardized. A Z-statistic is calculated using the mean of V_j and the standard deviation σ_j of each variable across all of the firms as:

$$Z_{ij} = \frac{V_{ij} - \overline{V_j}}{\sigma_j}$$

The squared difference between the Z-value for each firm's given variable and the value of the Z-statistic for the target firm for the same given variable across all descriptive variables is then calculated. After generating Z-values for every variable for each firm, squared differences for each firm are summed. The distance measure D_i is determined by taking the square root of the sum of the squared differences.

The final step in the analysis is the identification of the portfolio of the 20 firms that are the least distance from BST or Sprint-FL. Billingsley Exhibit No. RSB-3 lists the final group of comparable firms for BST and Billingsley Exhibit No. RSB-4 lists the final group of comparable firms for Sprint-FL. A correlation coefficient matrix for the variables used to identify firms is provided on the following page.

CLUSTER ANALYSIS CORRELATION MATRIX

	Common Equity to Total Capital	Operating Cash Flow to Assets Standard Deviation	Operating Cash Flow to Assets	Cash Flow Interest Coverage
Bond Rating	-0.394	0.237	-0.332	-0.455
Common Equity to Total Capital		0.153	0.351	0.666
Operating Cash Flow to Assets Standard Deviation			0.005	0.003
Operating Cash Flow to Assets				0.419

CAPITAL ASSET PRICING MODEL ANALYSIS OF THE COST OF EQUITY CAPITAL

I. Description of the Approach

The capital asset pricing model (CAPM) is a theory of the relationship between the risk of a security or a portfolio of securities and the expected rate of return that is commensurate with that risk. The theory is based on the assumption that security markets are efficient and dominated by risk averse investors. In other words, the CAPM argues that investors are willing to take on more risk only if they can reasonably expect a higher return.

The CAPM accepts the risk/return trade-off economic principle and quantifies that trade-off. Further, the model assumes that most investors diversify their investment holdings so as to not put "all of their eggs in one basket." Indeed, the tendency for investors to diversify their investment portfolios implies that, in a CAPM context, the only type of risk that is rewarded or relevant in the risk/return trade-off is systematic or market-related risk. Thus, the additional risk created by not diversifying among investments is not rewarded by the securities markets under the CAPM.

The measurable relationship between risk and expected return in the CAPM is summarized by the following expression:

$$R_i = R_f + Bi\,[\,R_m - R_f\,],$$

where R_i is the expected return on security or portfolio i, R_f is the return on a risk-free security like a U.S. Treasury bond, B_i is the beta of security or portfolio i, and Rm is the expected return on a broad index of equity market performance like the Standard & Poor's Composite 500 Index (S&P 500).

II. Economic Rationale for the Approach

The rationale for the CAPM equation is the common sense observation that investors must be coaxed to move their money from riskless assets like U.S. Treasury bonds into risky assets. Consider an everyday example wherein investors can obtain about a 7% return on a Treasury security. Investors will not invest in a broad market portfolio of risky securities unless they can expect a significant return premium for accepting the risk in

excess of the riskless security. In terms of the above example, investors would want an expected return that is greater than 7% if material risk is present. The usefulness of the CAPM is in measuring how much of an expected return premium is appropriate for investments in light of their riskiness relative to the risk of a benchmark broad market index.

The economic interpretation of the CAPM equation is as the base risk-free rate of return [Rf] plus the market-wide risk premium of [R_m - R_f] that is required to coax investors away from exclusive investment in risk-free securities. The beta coefficient measures the riskiness of a given security or portfolio relative to the overall market benchmark. Beta expresses how much the given investment's returns tend to vary as the returns on the benchmark market index vary over the business cycle. Beta therefore may be viewed as the appropriate weight to apply to the market-wide risk premium [R_m - R_f]. The beta of the market portfolio must, by definition, be equal to 1.

Consider an example of how the CAPM estimates the appropriate risk-adjusted expected return on an investment. Assume that the risk-free rate of return on a U.S. Treasury bond is 7%, the expected return on the market is 15%, and that an investor wants to determine the appropriate expected rate of return on a stock with a beta of 1.5. The market-wide risk premium is [15% - 7%] or 8%. This implies that investors will not allocate money to investments with market-like riskiness unless they can expect to get at least an 8% premium over the risk-free rate of 7%. However, a 8% premium will be insufficient if an investment is more variable (i.e., riskier) than the overall market. The returns on a stock with a beta of 1.5 tend to vary 1.5 times more than the return on the overall market. The market-wide risk premium of 8% must therefore be increased 1.5 times to 12% in order to attract investors. Thus, a stock with a beta of 1.5 should generate an expected return of 19% in order to adequately compensate investors for the above-market risk of the investment.

III. Consistency of the Approach with Regulatory and Economic Standards

The CAPM is consistent with the appropriate public utility regulatory and economic standards. Specifically, the CAPM is consistent with the regulatory principle set forth in the **Hope** case that the allowed return of a public utility should be "...commensurate with the returns on investments in other enterprises having corresponding risk." The CAPM is also consistent with the regulatory standard that emerged from the **Bluefield** decision, which states that the "... return should be reasonably sufficient to assure confidence in the

financial soundness of the utility and ...enable it to raise the money necessary for the proper discharge of its public duties."

In terms of the appropriate economic standards, the CAPM produces return estimates that should meet investors opportunity costs, satisfy the demands of the risk/return trade-off, and is consistent with the empirical evidence that supports a high degree of efficiency in U.S. financial markets.

IV. Usefulness of the CAPM in Estimating the Cost of Equity Capital

The primary usefulness of the CAPM is as a conceptual tool for systematically relating expected returns to risk. The model requires market-based data inputs that are largely objective and relatively easy to obtain. The shortcoming of the CAPM is that available empirical evidence indicates that the beta coefficient may not fully capture all of the sources of market risk. This implies that CAPM-based estimates of the cost of equity should be supplemented with alternative approaches that use other measures of risk. For this reason, my cost of equity analysis does not rely solely on the CAPM but also uses the DCF model and the risk premium approach to corroborate the reasonableness of my cost of equity estimates for the target regulated firm.

V. Data for CAPM Analysis

A. Beta Coefficients

Since the target firms, BST and Sprint-FL, are ultimately wholly-owned subsidiaries of their holding companies, BellSouth Corporation and Sprint Corporation, neither firm has its own equity trading in the market and therefore neither have the beta coefficients required by the CAPM. Thus, as discussed above in the DCF analysis section of my statement, it is necessary to identify a group of firms that has traded equity and is comparable in risk to each target firm. Consequently, the beta coefficients for the two groups used in my DCF analyses that are identified in Billingsley Exhibit No. RSB-3 and Billingsley Exhibit No. RSB-4 are relied on to estimate the costs of equity for BST and Sprint-FL, respectively.

Importantly, the beta coefficients presented in Billingsley Exhibit No. RSB-3 and Billingsley Exhibit No. RSB-4 are not historical betas like those commonly quoted by Value Line, Standard & Poor's, or Merrill Lynch. While frequently used, such historical estimates of beta are inconsistent with the CAPM's reliance on prospective

beta coefficients. Historical estimates only reflect the past riskiness of an equity security that need not be representative of the future riskiness that is relevant to equity investors. The CAPM is formulated in terms of investor expectations, which clearly transcend exclusive reliance on historical measures of riskiness like betas based solely on the past return performance of stocks. The beta coefficients used in my CAPM analysis are prospective measures supplied by BARRA, a widely recognized provider of data and decision support systems for institutional investors.

BARRA describes its predicted beta as follows:

> In the BARRA E2 multiple-factor model, factors are estimated for 13 risk indices and for 55 industry groups...each risk index is built from a number of underlying fundamental data items that capture elements of risk. By combining them, we produce a multifaceted measure of risk that best characterizes the single concept we are trying to measure. The individual data items are called descriptors. The combined descriptors make up the risk index (*BARRA U.S. Equity Beta Book*, January 1997).

B. Risk-Free Rate of Return

In order to be consistent with the expectational emphasis of the CAPM, I use the average expected yield implied by the prices of the U.S. Treasury bond futures contracts quoted during the most recent month for which data are available. These future contracts are obligations to either take or make delivery of 8% coupon, 20-year Treasury bonds for a fixed price (yield) at a specified future date. The prices of these contracts reflect the market's objective consensus forecast of long-term, low-risk interest rates. The rate on long-term Treasury securities is chosen to be consistent with the long-time horizon of equities. A more detailed explanation of the data and calculations is provided in Billingsley Exhibit No. RSB-7.

C. Expected Return on the Equity Market

In order to focus on the prospective nature of the CAPM, I use expectational data to estimate the return on the S&P 500 as my proxy for overall equity market performance. Billingsley Exhibit No. RSB-8 elaborates on how the DCF model is applied to estimate the expected return on the S&P 500 using both IBES and Zacks growth rate forecasts. The returns on the S&P 500 used in the CAPM analysis are for the most recent month for which data are available (June of 1998).

CALCULATION OF U. S. TREASURY BOND FUTURES' IMPLIED INTEREST RATE

The interest rate implied by the price of a U.S. Treasury Bond futures contract cannot be directly taken from **The Wall Street Journal**. Rather, it must be calculated as follows:

$$(\textit{Price of Contract}) \times 10 = \frac{\$40}{(1+i)^1} + \frac{\$40}{(1+i)^2} + \ldots + \frac{\$40}{(1+i)^{40}} + \frac{\$1{,}000}{(1+i)^{40}},$$

where i = the semi-annual rate of return.

The implied annual rate of return on U.S. Treasury bond futures is calculated as:
Annual Rate of Return = $(1 + i)^2 - 1$.

The U.S. Treasury Bond futures contract prices shown below are averaged, by contract maturity, using the Friday settlement prices for June of 1998.

U.S. TREASURY BOND FUTURES CONTRACT DATA

Contract Maturity	06/05/98	06/12/98	06/19/98	06/26/98	Average Price	Implied Yield
09/98	121.8750	123.6875	123.6875	123.5313	123.1953	6.08%
12/98	121.6875	123.5000	123.0313	123.2813	122.8750	6.11%
03/99	121.4063	122.2500	122.7813	123.0313	122.3672	6.15%
06/99	121.1563	122.0000	122.5625	122.4688	122.0469	6.17%
AVERAGE IMPLIED YIELD						**6.13%**

MARKET RISK PREMIUM APPROACH TO ESTIMATING THE COST OF EQUITY CAPITAL

I. Nature and Economic Justification for the Market Risk Premium Approach

The market risk premium approach is a systematic way of quantifying the risk/return trade-off concerning the economic standards used in cost of equity analysis. The market risk premium is defined as the difference between the return on a broad basket of equity securities (the "Market") and the return on a far less risky benchmark security or portfolio. The return on long-term U.S. Treasury bonds and the return on utility bonds are common benchmarks. The economic justification for examining the difference between the return on the market and a benchmark security's return is to measure the premium that is necessary to coax investors to move from investing in a "risk-free" or lower risk security into a higher risk equity investment. This premium is often referred to as the equity risk premium.

My analysis identifies a market risk premium on public utility bonds and then adds that premium to the current expected return on such bonds. This determines a reasonable expected rate of return on the equity market.

II. Estimation of the Equity Market Risk Premium

A. Overview of Approaches

There are two fundamental approaches to estimating the equity risk premium. The first approach is prospective and the second approach is historical. The equity risk premium can be estimated by surveying investors' expectations concerning the premium's magnitude. Similarly, a prospective approach like the DCF model can be used to estimate the equity risk premium that is implied by the relationship among analysts' consensus growth forecasts for the market, the general level of the market, and the expected return on a low-risk benchmark security. Alternatively, the historical relationship between earned returns on the equity market and earned returns on a low-risk benchmark security can be measured, thereby revealing an average historical (earned) equity risk premium.

While it is clear that investors trade on the basis of expectations (i.e., prospective factors), these expectations are not directly observable. However, there cannot be any confidence that historical return patterns will be repeated in the future.

B. Specific Estimation Approach

1. General Description

Since the DCF model is prospective in nature, I also use a prospective approach to estimate the equity risk premium. I examine the relationship between expected returns on the Standard & Poor's Composite 500 Index (S&P 500), as estimated by the DCF model using Institutional Brokers Estimate Service (IBES) growth rate projections and the current market yield on public utility bonds over a recent period. This average expected risk premium is added to the average yield that has prevailed on appropriately-rated public utility bonds over the most recent three months for which data are available (April - June 1998).

2. Estimation of the Expected Market Return

In recognition of the fact that most firms pay dividends on a quarterly basis, the quarterly form of the DCF model is used to estimate the expected market return on the S&P 500. As in the discussion of the DCF analysis in Billingsley Exhibit No. RSB-2, it is assumed that dividends grow at a given rate over a year with the yearly change in the amount paid by a firm occurring on average after the second quarter of each year.

3. Source of the Expected Growth Rate

The expected growth rate used in the quarterly version of DCF model is the consensus mean market value-weighted five-year earnings per share estimate published by IBES for the S&P 500. Dividend yield data as obtained from Standard & Poor's **Outlook**, restated on a quarterly basis.

4. Interest Rate Reference Point

An index of public utility bond yields is used as the relevant security benchmark in the analysis. As discussed in my statement, both Aaa- and A-rated bond yields are used as benchmarks for the appropriate target firms. A three-month average (April – June 1998) of each interest rate benchmark is used in the calculation of the expected market risk premium.

5. Computational Procedure

The expected risk premium E(RP) as of point t in time is calculated as the simple arithmetic difference between the expected return on the S&P 500 at time t [$E(S\&P500_t)$], produced by applying the DCF model to the S&P 500, and the given average monthly public utility bond yield at time t [$R(UBOND_t)$]. Thus, risk premiums are calculated as:

$$E(RP_t) = E(SP500_t) - R(UBOND_t)$$

The average expected risk premium E(RP) for the time period spanning N months is calculated as:

$$E(RP) = \sum_{t=1}^{n} \frac{E(RP_t)}{N}$$

The current expected return on the S&P 500 is estimated by adding the average expected risk premium E(RP) to the average yield prevailing on the chosen public utility bonds over the three month period from April to June of 1998.

It is important to note that the resulting cost of equity estimates for the overall equity market are not adjusted for flotation costs. They are consequently a conservative reference point for estimating the cost of equity in the overall market.

6. Time Period of the Analysis

The statistical analysis uses data on expected market risk premiums and public utility bond yields over the period from October of 1987 through June of 1998. This time period is dictated by the availability of consistent IBES expected growth rate forecast data.

III. Nature and Implications of Changes in the Risk Premium Over Time

A. Evidence of Variability

Studies of the historical behavior of the equity risk premium find that it varies considerably over time. Of particular interest is that the equity risk premium is

related inversely to returns on the traditionally used benchmark securities. These benchmarks often include U.S. government or corporate debt securities. Thus, when interest rates decline, the equity risk premium widens and when interest rates rise, the equity risk premium narrows.

The most plausible explanation for this inverse relationship is that investors' attitudes towards risk change over time. As hypothesized by the Nobel prize-winning financial economist, Professor William F. Sharpe, when investors are doing well financially, they are optimistic and require relatively low risk premiums and when investors are doing poorly, they are pessimistic and require relatively high risk premiums. Since the general level of interest rates is an indicator of where the economy is in a cycle, it is reasonable to expect an inverse relationship between interest rates and equity risk premiums.

B. Adjustments for Instability

The above observation suggests another way of using the risk premium approach to evaluate the cost of equity capital for a target firm. Research by professors R. S. Harris and F. C. Marston, published in **Financial Management** in 1992, finds evidence that the equity risk premium tends to move an average of -.651 of contemporaneous changes in the return on a benchmark low-risk security (index). That is, if interest rates decline by 100 basis points, the equity risk premium required increases by approximately 65 basis points.

In Professor Harris and Marston's work, the benchmark low-risk security index is composed of long-term U.S. Treasury Bonds and the equity market proxy is the S&P500. Therefore, adjusting for the difference between the level of the rates on the benchmark low-risk security during the sampled time period and the current level of such rates generates an equity risk premium estimate that is modified explicitly for a prominent source of its instability over time. This estimated risk premium is added to the current level (i.e., the most recent month, June of 1998) of the benchmark low-risk security's rate.

EXPECTED MARKET RISK PREMIUM: Aaa RATING BASE

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds	Market Risk Premium
10/87	14.82%	10.92%	3.90%
11/87	15.06	10.43	4.63
12/87	15.46	10.64	4.82
01/88	15.65	10.39	5.26
02/88	15.52	9.77	5.75
03/88	15.42	9.72	5.70
04/88	15.45	10.07	5.38
05/88	15.42	10.29	5.13
06/88	15.65	10.27	5.38
07/88	15.63	10.50	5.13
08/88	15.72	10.66	5.06
09/88	15.66	10.15	5.51
10/88	15.63	9.62	6.01
11/88	15.64	9.52	6.12
12/88	15.58	9.67	5.91
01/89	15.54	9.72	5.82
02/89	15.34	9.71	5.68

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds	Market Risk Premium
03/89	15.34	9.87	5.47
04/89	15.35	9.88	5.47
05/89	15.40	9.60	5.80
06/89	15.22	9.13	6.09
07/89	15.36	8.98	6.38
08/89	15.14	9.02	6.12
09/89	14.94	9.10	5.84
10/89	15.02	9.01	6.01
11/89	15.17	8.92	6.25
12/89	15.12	8.92	6.20
01/90	15.18	9.08	6.10
02/90	15.29	9.35	5.94
03/90	15.47	9.48	5.99
04/90	15.62	9.60	6.02
05/90	15.70	9.58	6.12
06/90	15.71	9.38	6.33
07/90	15.81	9.36	6.45

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds	Market Risk Premium
08/90	15.69	9.54	6.15
09/90	15.91	9.73	6.18
10/90	16.04	9.66	6.38
11/90	16.23	9.43	6.80
12/90	16.16	9.18	6.98
01/91	16.17	9.17	7.00
02/91	16.01	8.92	7.09
03/91	15.85	9.04	6.81
04/91	15.61	8.95	6.66
05/91	15.55	8.93	6.62
06/91	15.59	9.10	6.49
07/91	15.59	9.10	6.49
08/91	15.62	8.81	6.81
09/91	15.59	8.65	6.94
10/91	15.52	8.57	6.95
11/91	15.58	8.52	7.06

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds	Market Risk Premium
12/91	15.65	8.38	7.27
01/92	15.60	8.22	7.38
02/92	15.71	8.30	7.41
03/92	15.57	8.39	7.18
04/92	15.53	8.36	7.17
05/92	15.54	8.32	7.22
06/92	15.45	8.26	7.19
07/92	15.44	8.12	7.32
08/92	15.46	8.04	7.42
09/92	15.57	8.04	7.53
10/92	15.53	8.06	7.47
11/92	15.56	8.11	7.45
12/92	15.57	8.01	7.56
01/93	15.29	7.94	7.35
02/93	15.07	7.75	7.32
03/93	15.00	7.64	7.36
04/93	14.71	7.50	7.21
05/93	14.81	7.44	7.37

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds	Market Risk Premium
06/93	14.73	7.37	7.36
07/93	14.61	7.25	7.36
08/93	14.59	6.94	7.65
09/93	14.43	6.76	7.67
10/93	14.50	6.75	7.75
11/93	14.52	7.06	7.46
12/93	14.50	7.06	7.44
01/94	14.55	7.05	7.50
02/94	14.59	7.19	7.40
03/94	14.66	7.60	7.06
04/94	14.69	8.00	6.69
05/94	14.77	8.11	6.66
06/94	14.89	8.07	6.82
07/94	14.95	8.21	6.74
08/94	14.78	8.15	6.63
09/94	14.82	8.41	6.41
10/94	14.80	8.65	6.15
11/94	14.95	8.77	6.18

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds	Market Risk Premium
12/94	14.96	8.55	6.41
01/95	15.01	8.53	6.48
02/95	14.95	8.33	6.02
03/95	14.95	8.18	6.71
04/95	14.89	8.08	6.81
05/95	14.93	7.71	7.22
06/95	14.89	7.39	7.50
07/95	14.92	7.51	7.42
08/95	14.95	7.66	7.24
09/95	14.95	7.42	7.47
10/95	14.89	7.23	7.59
11/95	14.90	7.23	7.68
12/95	14.82	6.94	7.79
01/96	14.68	6.92	7.66
02/96	14.79	7.11	7.59
03/96	14.79	7.45	7.34
04/96	14.80	7.60	7.20

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds	Market Risk Premium
05/96	15.01	7.73	7.28
06/96	14.99	7.83	7.16
07/96	14.97	7.78	7.19
08/96	15.10	7.59	7.51
09/96	15.22	7.76	7.46
10/96	15.21	7.50	7.71
11/96	15.24	7.21	8.03
12/96	15.31	7.33	7.98
01/97	15.22	7.53	7.69
02/97	15.16	7.47	7.69
03/97	15.11	7.70	7.41
04/97	15.36	7.88	7.48
05/97	15.49	7.72	7.77
06/97	15.56	7.55	8.01
07/97	15.62	7.29	8.33
08/97	15.62	7.39	8.23
09/97	15.66	7.33	8.33

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds	Market Risk Premium
10/97	15.61	7.18	8.43
11/97	15.57	7.09	8.48
12/97	15.48	6.99	8.49
01/98	15.54	6.85	8.69
02/98	15.63	6.91	8.68
03/98	15.56	6.96	8.52
04/98	15.57	6.94	8.55
05/98	15.69	6.94	8.67
06/98	15.77	6.84	8.86
AVERAGE	**15.28%**	8.54%	6.74%*

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* Calculated as the average of the monthly risk premiums, not as the differences of the averages for the entire time.

EXPECTED MARKET RISK PREMIUM: "A" RATING BASE

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's A Public Utility Bonds	Market Risk Premium
10/87	14.82%	11.34%	3.48%
11/87	15.06	10.82	4.24
12/87	15.46	10.98	4.48
01/88	15.65	10.76	4.89
02/88	15.52	10.10	5.42
03/88	15.42	10.09	5.33
04/88	15.45	10.54	4.91
05/88	15.42	10.81	4.61
06/88	15.65	10.79	4.86
07/88	15.63	11.04	4.59
08/88	15.72	11.17	4.55
09/88	15.66	10.61	5.05
10/88	15.63	10.01	5.62
11/88	= 15.64	9.90	5.74
12/88	15.58	10.06	5.52
01/89	15.54	10.08	5.46
02/89	15.34	10.07	5.32

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's A Public Utility Bonds	Market Risk Premium
03/89	15.34	10.23	5.11
04/89	15.35	10.18	5.17
05/89	15.40	9.99	5.41
06/89	15.22	9.64	5.58
07/89	15.36	9.50	5.86
08/89	15.14	9.52	5.62
09/89	14.94	9.58	5.36
10/89	15.02	9.54	5.48
11/89	15.17	9.51	5.66
12/89	15.12	9.44	5.68
01/90	15.18	9.56	5.62
02/90	15.29	9.76	5.53
03/90	15.47	9.85	5.62
04/90	15.62	9.92	5.70
05/90	15.70	10.00	5.70
06/90	15.71	9.80	5.91
07/90	15.81	9.75	6.06

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's A Public Utility Bonds	Market Risk Premium
08/90	15.69	9.92	5.77
09/90	15.91	10.12	5.79
10/90	16.04	10.05	5.99
11/90	16.23	9.90	6.33
12/90	16.16	9.73	6.43
01/91	16.17	9.71	6.46
02/91	16.01	9.47	6.54
03/91	15.85	9.55	6.30
04/91	15.61	9.46	6.15
05/91	15.55	9.44	6.11
06/91	15.59	9.59	6.00
07/91	15.59	9.55	6.04
08/91	15.62	9.29	6.33
09/91	15.59	9.16	6.43
10/91	15.52	9.12	6.40
11/91	15.58	9.05	6.53

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's A Public Utility Bonds	Market Risk Premium
12/91	15.65	8.88	6.77
01/92	15.60	8.84	6.76
02/92	15.71	8.93	6.78
03/92	15.57	8.97	6.60
04/92	15.53	8.93	6.60
05/92	15.54	8.87	6.67
06/92	15.45	8.78	6.67
07/92	15.44	8.57	6.87
08/92	15.46	8.44	7.02
09/92	15.57	8.40	7.17
10/92	15.53	8.54	6.99
11/92	15.56	8.63	6.93
12/92	15.57	8.43	7.14
01/93	15.29	8.27	7.02
02/93	15.07	8.04	7.03
03/93	15.00	7.90	7.10
04/93	14.71	7.81	6.90
05/93	14.81	7.86	6.95

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's A Public Utility Bonds	Market Risk Premium
06/93	14.73	7.75	6.98
07/93	14.61	7.54	7.07
08/93	14.59	7.25	7.34
09/93	14.43	7.04	7.39
10/93	14.50	7.03	7.47
11/93	14.52	7.30	7.22
12/93	14.50	7.34	7.16
01/94	14.55	7.33	7.22
02/94	14.59	7.47	7.12
03/94	14.66	7.85	6.81
04/94	14.69	8.22	6.47
05/94	14.77	8.33	6.44
06/94	14.89	8.31	6.58
07/94	14.95	8.47	6.48
08/94	14.78	8.41	6.37
09/94	14.82	8.64	6.18
10/94	14.80	8.86	5.94

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's A Public Utility Bonds	Market Risk Premium
11/94	14.95	8.98	5.97
12/94	14.96	8.76	6.20
01/95	15.01	8.73	6.28
02/95	14.95	8.52	6.43
03/95	14.95	8.37	6.58
04/95	14.89	8.27	6.62
05/95	14.93	7.91	7.02
06/95	14.89	7.60	7.29
07/95	14.92	7.70	7.22
08/95	14.95	7.83	7.12
09/95	14.95	7.62	7.33
10/95	14.89	7.46	7.43
11/95	14.90	7.43	7.47
12/95	14.82	7.23	7.59
01/96	14.68	7.22	7.46
02/96	14.79	7.37	7.42
03/96	14.79	7.73	7.06

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's A Public Utility Bonds	Market Risk Premium
04/96	14.80	7.89	6.91
05/96	15.01	7.98	7.03
06/96	14.99	8.06	6.93
07/96	14.97	8.02	6.95
08/96	15.10	7.84	7.26
09/96	15.22	8.01	7.21
10/96	15.21	7.77	7.44
11/96	15.24	7.49	7.75
12/96	15.31	7.59	7.72
01/97	15.22	7.77	7.45
02/97	15.16	7.64	7.52
03/97	15.11	7.87	7.24
04/97	15.36	8.03	7.33
05/97	15.49	7.89	7.60
06/97	15.56	7.72	7.84
07/97	15.62	7.48	8.14
08/97	15.62	7.51	8.11
09/97	15.66	7.47	8.19

EXPECTED MARKET RISK PREMIUM

Time Period	Standard & Poor's 500 DCF Cost of Equity	Moody's A Public Utility Bonds	Market Risk Premium
10/97	15.61	7.35	8.26
11/97	15.57	7.25	8.32
12/97	15.48	7.16	8.32
01/98	15.54	7.04	8.50
02/98	15.63	7.12	8.51
03/98	15.56	7.16	8.40
04/98	15.57	7.16	8.41
05/98	15.69	7.16	8.53
06/98	15.77	7.03	8.56
AVERAGE	**15.28%**	8.71%	6.57%*

* Calculated as the average of the monthly risk premiums, not as the differences of the averages for the entire time.

Aaa vs. Treasury Bond Yields

Date	Moody's Aaa Public Utility Bond	30-Year U.S. Treasury Bond	Aaa/U.S. Treasury Bond Spread
10/87	10.92%	9.62%	1.30%
11/87	10.43%	8.91%	1.52%
12/87	10.64%	9.09%	1.55%
01/88	10.39%	8.81%	1.58%
02/88	9.77%	8.42%	1.35%
03/88	9.72%	8.59%	1.13%
04/88	10.07%	8.98%	1.09%
05/88	10.29%	9.26%	1.03%
06/88	10.27%	9.06%	1.21%
07/88	10.50%	9.22%	1.28%
08/88	10.66%	9.37%	1.29%
09/88	10.15%	9.11%	1.04%
10/88	9.62%	8.92%	0.70%
11/88	9.52%	9.02%	0.50%
12/88	9.67%	9.01%	0.66%
01/89	= 9.72%	8.94%	0.78%
02/89	9.71%	9.00%	0.71%
03/89	9.87%	9.14%	0.73%

Date	Moody's Aaa Public Utility Bond	30-Year U.S. Treasury Bond	Aaa/U.S. Treasury Bond Spread
04/89	9.88%	9.06%	0.82%
05/89	9.60%	8.90%	0.70%
06/89	9.13%	8.35%	0.78%
07/89	8.98%	8.10%	0.88%
08/89	9.02%	8.11%	0.91%
09/89	9.10%	8.17%	0.93%
10/89	9.01%	8.00%	1.01%
11/89	8.92%	7.89%	1.03%
12/89	8.92%	7.90%	1.02%
01/90	9.08%	8.24%	0.84%
02/90	9.35%	8.48%	0.87%
03/90	9.48%	8.57%	0.91%
04/90	9.60%	8.75%	0.85%
05/90	9.58%	8.73%	0.85%
06/90	9.38%	8.43%	0.95%
07/90	9.36%	8.50%	0.86%
08/90	9.54%	8.85%	0.69%
09/90	9.73%	8.99%	0.74%
10/90	9.66%	8.86%	0.80%
11/90	9.43%	8.58%	0.85%
12/90	9.18%	8.23%	0.95%

Date	Moody's Aaa Public Utility Bond	30-Year U.S. Treasury Bond	Aaa/U.S. Treasury Bond Spread
01/91	9.17%	8.20%	0.97%
02/91	8.92%	8.08%	0.84%
03/91	9.04%	8.21%	0.83%
04/91	8.95%	8.22%	0.73%
05/91	8.93%	8.24%	0.69%
06/91	9.10%	8.48%	0.62%
07/91	9.10%	8.44%	0.66%
08/91	8.81%	8.15%	0.66%
09/91	8.65%	7.96%	0.69%
10/91	8.57%	7.95%	0.62%
11/91	8.52%	7.91%	0.61%
12/91	8.38%	7.69%	0.69%
01/92	8.22%	7.61%	0.61%
02/92	8.30%	7.86%	0.44%
03/92	8.39%	8.00%	0.39%
04/92	8.36%	7.95%	0.41%
05/92	8.32%	7.89%	0.43%
06/92	8.26%	7.83%	0.43%
07/92	8.12%	7.59%	0.53%
08/92	8.04%	7.39%	0.65%

09/92	8.04%	7.34%	0.70%

Date	Moody's Aaa Public Utility Bond	30-Year U.S. Treasury Bond	Aaa/U.S. Treasury Bond Spread
10/92	8.06%	7.50%	0.56%
11/92	8.11%	7.56%	0.55%
12/92	8.01%	7.46%	0.55%
01/93	7.94%	7.34%	0.50%
02/93	7.75%	7.06%	0.69%
03/93	7.64%	6.78%	0.86%
04/93	7.50%	6.85%	0.65%
05/93	7.44%	6.92%	0.20%
06/93	7.37%	6.82%	0.17%
07/93	7.25%	6.63%	0.62%
08/93	6.94%	6.30%	0.64%
09/93	6.76%	6.03%	0.73%
10/93	6.75%	5.93%	0.82%
11/93	7.06%	6.24%	0.82%
12/93	7.06%	6.26%	0.80%
01/94	7.05%	6.29%	0.76%
02/94	7.19%	6.51%	0.68%
03/94	7.60%	6.94%	0.66%
04/94	8.00%	7.25%	0.75%

05/94	8.11%	7.32%	0.79%
06/94	8.07%	7.38%	

Date	Moody's Aaa Public Utility Bond	30-Year U.S. Treasury Bond	Aaa/U.S. Treasury Bond Spread
07/94	8.21%	7.60%	0.61%
08/94	8.15%	7.61%	0.54
09/94	8.41%	7.84%	0.57%
10/94	8.65%	8.02%	0.63%
11/94	8.77%	8.17%	0.60%
12/94	8.55%	7.91%	0.64%
01/95	8.53%	7.86%	0.67%
02/95	8.33%	7.66%	0.67%
03/95	8.18%	7.52%	0.66%
04/95	8.08%	7.43%	0.65%
05/95	7.71%	7.04%	0.67%
06/95	7.39%	6.68%	0.71%
07/95	7.51%	6.75%	0.76%
08/95	7.66%	6.92%	0.74%
09/95	7.42%	6.44%	0.98%
10/95	7.23%	6.35%	0.88%
11/95	7.13%	6.29%	0.84%
12/95	6.94%	6.05%	0.89%
01/96	6.92%	6.05%	0.87%

02/96	7.11%	6.25%	0.86%
03/96	7.45%	6.62%	0.83%

Date	Moody's Aaa Public Utility Bond	30-Year U.S. Treasury Bond	Aaa/U.S. Treasury Bond Spread
04/96	7.60%	6.76%	0.84%
05/96	7.73%	6.94%	0.79%
06/96	7.83%	6.94%	0.89%
07/96	7.78%	7.05%	0.73%
08/96	7.59%	6.88%	0.71%
09/96	7.76%	7.00%	0.76%
10/96	7.50%	6.78%	0.72%
11/96	7.21%	6.55%	0.66%
12/96	7.33%	6.56%	0.77%
01/97	7.53%	6.82%	0.71%
02/97	7.47%	6.70%	0.77%
03/97	7.70%	6.96%	0.74%
04/97	7.88%	7.13%	0.75%
05/97	7.72%	6.93%	0.79%
06/97	7.55%	6.73%	0.83%
07/97	7.29%	6.53%	0.76%
08/97	7.39%	6.58%	0.81%
09/97	7.33%	6.49%	0.84%

10/97	7.18%	6.33%	0.85%
11/97	7.09%	6.08%	1.01%
	6.99%	5.96%	1.03%

Date	Moody's Aaa Public Utility Bond	30-Year U.S. Treasury Bond	Aaa/U.S. Treasury Bond Spread
01/98	6.85%	5.83%	1.02%
02/98	6.91%	5.89%	1.06%
03/98	6.96%	5.92%	1.12%
04/98	6.94%	5.87%	1.15%
05/98	6.94%	5.98%	1.04%
06/98	6.80%	5.69%	1.22%
AVERAGE	**8.54%**	7.74%	**0.80%**

Sources: *Moody's Bond Record*
The Wall Street Journal

"A" vs. Treasury Bond Yields

Date	Moody's A Public Utility Bond	30-Year U.S. Treasury Bond	A/U.S. Treasury Bond Spread
10/87	11.34%	9.62%	1.72%
11/87	10.82%	8.91%	1.91%
12/87	10.98%	9.09%	1.89%
01/88	10.76%	8.81%	1.95%
02/88	10.10%	8.42%	1.68%
03/88	10.09%	8.59%	1.50%
04/88	10.54%	8.98%	1.56%
05/88	10.81%	9.26%	1.55%
06/88	10.79%	9.06%	1.73%
07/88	11.04%	9.22%	1.82%
08/88	11.17%	9.37%	1.80%
09/88	10.61%	9.11%	1.50%
10/88	10.01%	8.92%	1.09%
11/88	9.90%	9.02%	0.88%
12/88	10.06%	9.01%	1.05%
01/89	10.08%	8.94%	1.14%
02/89	10.07%	9.00%	1.07%
03/89	10.23%	9.14%	1.09%
04/89	10.18%	9.06%	1.12%
05/89	9.99%	8.90%	1.09%
06/89	9.64%	8.35%	1.29%

Date	Moody's A Public Utility Bond	30-Year U.S. Treasury Bond	A/U.S. Treasury Bond Spread
07/89	9.50%	8.10%	1.40%
08/89	9.52%	8.11%	1.41%
09/89	9.58%	8.17%	1.41%
10/89	9.54%	8.00%	1.54%
11/89	9.51%	7..89%	1.62%
12/89	9.44%	7.90%	1.54%
01/90	9.56%	8.24%	1.32%
02/90	9.76%	8.48%	1.28%
03/90	9.85%	8.57%	1.28%
04/90	9.92%	8.75%	1.17%
05/90	10.00%	8.73%	1.27%
06/90	9.80%	8.43%	1.37%
07/90	9.75%	8.50%	1.25%
08/90	9.92%	8.85%	1.07%
09/90	10.12%	8.99%	1.13%
10/90	10.05%	8.86%	1.19%
11/90	9.90%	8.58%	1.32%
12/90	9.73%	8.23%	1.50%
01/91	9.71%	8.20%	1.51%
02/91	9.47%	8.08%	1.39%
03/91	9.55%	8.21%	1.34%
04/91	9.46%	8.22%	1.24%

Date	Moody's A Public Utility Bond	30-Year U.S. Treasury Bond	A/U.S. Treasury Bond Spread
04/93	7.81%	6.85%	0.96%
05/93	7.86%	6.92%	0.94%
06/93	7.75%	6.82%	0.93%
07/93	7.54%	6.63%	0.91%
08/93	7.25%	6.30%	0.95%
09/93	7.04%	6.03%	1.01%
10/93	7.03%	5.93%	1.10%
11/93	7.30%	6.24%	1.06%
12/93	7.34%	6.26%	1.08%
01/94	7.33%	6.29%	1.04%
02/94	7.47%	6.51%	0.96%
03/94	7.85%	6.94%	0.91%
04/94	8.22%	7.25%	0.97%
05/94	8.33%	7.32%	1.01%
06/94	8.31%	7.38%	0.93%
07/94	8.47%	7.60%	0.87%
08/94	8.41%	7.61%	0.80%
09/94	8.64%	7.84%	0.80%
10/94	8.86%	8.02%	0.84%
11/94	8.98%	8.17%	0.81%
12/94	8.76%	7.91%	0.85%
01/95	8.73%	7.86%	0.87%
02/95	8.52%	7.66%	0.86%

03/95	8.37%	7.52%	0.85%

Date	Moody's A Public Utility Bond	30-Year U.S. Treasury Bond	A/U.S. Treasury Bond Spread
04/95	8.27%	7.43%	0.84%
05/95	7.91%	7.04%	0.87%
06/95	7.60%	6.68%	0.92%
07/95	7.70%	6.75%	0.95%
08/95	7.83%	6.92%	0.91%
09/95	7.62%	6.44%	1.18%
10/95	7.46%	6.35%	1.11%
11/95	7.43%	6.29%	1.14%
12/95	7.23%	6.05%	1.18%
01/96	7.22%	6.05%	1.17%
02/96	7.37%	6.25%	1.12%
03/96	7.73%	6.62%	1.11%
04/96	7.89%	6.76%	1.13%
05/96	7.98%	6.94%	1.04%
06/96	8.06%	6.94%	1.12%
07/96	8.02%	7.05%	0.97%
08/96	7.84%	6.88%	0.96%
09/96	8.01%	7.00%	1.01%
10/96	7.77%	6.78%	0.99%
11/96	7.49%	6.55%	0.94%
12/96	7.59%	6.56%	1.03%

Date	Moody's A Public Utility Bond	30-Year U.S. Treasury Bond	A/U.S. Treasury Bond Spread
01/97	7.77%	6.82%	0.95%
02/97	7.64%	6.70%	0.94%
03/97	7.87%	6.96%	0.91%
04/97	8.03%	7.13%	0.90%
05/97	7.89%	6.93%	0.96%
06/97	7.72%	6.73%	1.00%
07/97	7.48%	6.53%	0.95%
08/97	7.51%	6.58%	0.93%
09/97	7.47%	6.49%	0.98%
10/97	7.35%	6.33%	1.02%
11/97	7.25%	6.08%	1.17%
12/97	7.16%	5.96%	1.20%
01/98	7.04%	5.83%	1.21%
02/98	7.12%	5.89%	1.23%
03/98	7.16%	5.92%	1.24%
04/98	7.16%	5.87%	1.29%
05/98	7.16%	5.93%	1.23%
06/98	7.03%	5.69%	1.52%
AVERAGE	**8.71%**	7.56%	**1.15%**

Sources: *Moody's Bond Record*
The Wall Street Journal

BellSouth Telecommunications
Book Value Capital Structure
March 31, 1998

Source	Ratio	Rate	Weighted Cost
Equity	58.50%	14.74% **(Implied)**	8.62%
Debt	41.50%	6.33%	2.63%
Total	100.00%		11.25%

60% Equity Ratio Used in BellSouth Telecommunications Cost Studies

Source	Ratio	Rate	Weighted Cost
Equity	60.00%	14.32% **(Implied)**	8.59%
Debt	40.00%	6.65%	2.66%
Total	100.00%		11.25%

BellSouth Telecommunications
Market Value Capital Structure

Source	Ratio	Rate	Weighted Cost
Equity	90.24%	14.61%-15.28%	13.18%-13.79%
Debt	9.76%	6.65%	.65%
Total	100.00%		13.83%-14.44%

Sprint-Florida
Book Value Capital Structure
March 31, 1998

Source	Ratio	Rate	Weighted Cost
Equity	60.89%	13.84% (Implied)	8.43%
Debt	39.11%	7.21%	2.82%
Total	100.00%		11.25%

Capital Structure Used in Sprint-Florida Cost Studies

Source	Ratio	Rate	Weighted Cost
Equity	59.58%	14.12% (Implied)	8.41%
Debt	40.42%	7.02%	2.84%
Total	100.00%		11.25%

Sprint-FL Market Value Capital Structure

Source	Ratio	Rate	Weighted Cost
Equity	87.31%	14.32%-15.07%	12.50%-13.16%
Debt	12.69%	7.00%	.89%
Total	100.00%		13.39%-14.05%

Market Value Capital Structure of Portfolio of Companies Comparable in Risk to BellSouth Telecommunications
4th Quarter of 1997

COMPANY	MARKET VALUE OF COMMON EQUITY	BOOK VALUE OF TOTAL DEBT	BOOK VALUE OF PREFERRED EQUITY	DEBT / TOTAL CAPITAL[1]	EQUITY / TOTAL CAPITAL
Alltel	$7,369.88	$1,793.54	$15.65	0.1971	0.8029
Anheuser Busch	20,987.52	3,270.90	-	0.1348	0.8652
Becton Dickinson	6,166.02	695.65	20.14	0.1040	0.8960
Campbell Soup	26,134.69	1,609.00	-	0.0580	0.9420
Chevron	49,748.27	6,694.00	-	0.1186	0.8814
Clorox	7,962.03	549.24	-	0.0645	0.9355
Coca Cola	159,896.02	4,513.00	-	0.0253	0.9726
DuPont	67,876.85	8,997.00	237.000	0.1197	0.8803
Frontier	3,902.38	681.30	19.85	0.1523	0.8477
Hershey Foods	8,794.78	995.47	-	0.1017	0.8983
Kellogg	19,892.31	1,880.50	-	0.0864	0.9136
Kimberly Clark	27,504.40	2,315.10	-	0.0776	0.9224
Eli Lilly	73,537.38	3,729.40	-	0.0483	0.9517
McDonalds	31,992.19	5,523.40	164.80	0.1510	0.8490
Motorola	36,012.02	3,313.00	-	0.0842	0.9158
Pfizer	96,766.94	2,922.00	-	0.0293	0.9707
Proctor & Gamble	107,344.80	5,786.00	210.00	0.0529	0.9471
Texaco	29,173.85	5,590.00	396.000	0.1703	0.8297
Wal-Mart Stores	88,362.40	10,634.00	-	0.1074	0.8926

[1] Debt is defined as the book value of total debt plus the book value of preferred equity.

COMPANY	MARKET VALUE OF COMMON EQUITY	BOOK VALUE OF TOTAL DEBT	BOOK VALUE OF PREFERRED EQUITY	DEBT / TOTAL CAPITAL[1]	EQUITY / TOTAL CAPITAL
Warner-Lambert	32,190.49	2,299.70	-	0.0667	0.9333
Average[2]	**$45,080.72**	**$3,689.63**	**$53.172**	0.0976	0.9024

[2] The average debt and equity ratios are calculated as the average of the respective ratios for each individual company.

Market Value Capital Structure of Portfolio of Companies Comparable in Risk to Sprint-Florida
4th Quarter of 1997

COMPANY	MARKET VALUE OF COMMON EQUITY	BOOK VALUE OF TOTAL DEBT	BOOK VALUE OF PREFERRED EQUITY	DEBT / TOTAL CAPITAL[1]	EQUITY / TOTAL CAPITAL
Alltel	$7,369.88	$1,793.94	$15.65	0.1971	0.8029
Anheuser Busch	20,987.52	3,270.90	-	0.1348	0.8652
Avon Products	7,871.77	201.60	-	0.0250	0.9750
Becton Dickinson	6,166.02	695.65	20.14	0.1040	0.8960
Carnival Corporation	15,714.66	1,383.00	-	0.0809	0.9191
Century Telephone Enterprises	2,917.23	645.85	10.04	0.1836	0.8164
Cincinnati Bell	3,996..97	503.70	-	0.1119	0.8881
Clorox	7,962.03	549.24	-	0.0645	0.9355
Walt Disney Company	65,097.78	12,342.00	-	0.1594	0.8406
DuPont	67,876.85	8,997.00	237.00	0.1197	0.8803
Frontier	3,902.38	681.30	19.65	0.1523	0.8477
Hershey Foods	8,794.78	995.47	-	0.1017	0.8983
Leggett & Platt	4,059.88	411.50	-	0.0920	0.9080
PepsiCo	54,306.69	8,465.00	-	0.1349	0.8651
Phillips Petroleum	12,780.68	3,429.00	-	0.2115	0.7885
PPG Industries	10,204.98	1,482.20	-	0.1268	0.8732
Rohm & Haas	5,522.59	707.00	131.000	0.1317	0.8683
Southwest Airlines	5,391.92	662.55	-	0.1094	0.8906
Sprint Corporation	24,751.88	3,280.60	11.80	0.1174	0.8826

[1] Debt is defined as the book value of total debt plus the book value of preferred equity.

COMPANY	MARKET VALUE OF COMMON EQUITY	BOOK VALUE OF TOTAL DEBT	BOOK VALUE OF PREFERRED EQUITY	DEBT / TOTAL CAPITAL[1]	EQUITY / TOTAL CAPITAL
Texaco	29,173.85	5,590.00	396.00	0.1703	0.8297
Average[2]	$18,242.51	$2,804.37	$42.07	0.1269	0.8731

[2] The average debt and equity ratios are calculated as the average of the respective ratios for each individual company.

RANDALL S. BILLINGSLEY

August 1998

BUSINESS ADDRESSES

Billingsley Consulting
575 Wood Haven Court
Blacksburg, VA 24060
Phone: (540) 951-0854
Fax: (540) 951-0859

Department of Finance
Pamplin College of Business
Virginia Polytechnic Institute
and State University
Blacksburg, VA 24061-0221
Phone: (540) 231-7374
Fax: (540) 231-4487

APPOINTMENTS

1994 - Current: Associate Professor of Finance
Virginia Polytechnic Institute & State University

1993: Vice Presiden.
Association for Investment Management and Research
Education and Programs Department

Duties: Project director, responsible for the development and design of education technology products. Projects included videos on options and futures analysis, ethical issues in the investment profession, and financial statement analysis for investment valuation and management.

Responsible for the design and offering of continuing education programs to meet the needs of AIMR's members in particular and the investment industry in general.

Associate Professor, On Leave of Absence
Virginia Polytechnic Institute & State University

1987-1992: Associate Professor of Finance
Virginia Polytechnic Institute and State University

1981-1987: Assistant Professor of Finance

Virginia Polytechnic Institute and State University

1978-1981: Lecturer of Finance
Texas A&M University

1977-1978: Lecturer of Economics
Research Assistant in Economics
Texas A&M University

Summers 1978, 1980: Research Associate
Texas Transportation Institute
Texas A&M University

Duties: (1978) Principal researcher and author of a study concerning design of optimal subsidy techniques for public transit projects. (1980) Co-author of research proposal for study of the projected economic impact of user charges on the Texas Gulf Intra-Coastal Waterway (proposal accepted and fully funded). Performed research concerning various policy issues in transportation economics.

PROFESSIONAL DESIGNATIONS

1986: Chartered Financial Analyst (CFA)
The Institute of Chartered Financial Analysts
(Association for Investment Management and Research)

1992: Certified Rate of Return Analyst (CRRA)
= National Society of Rate of Return Analysts

EDUCATION

1982: Doctor of Philosophy in Finance, supporting field in Economics
Dissertation Title: "A Multivariate Analysis of Bank Holding Company Capital Note and Debenture Ratings"
Chairman: Dr. Donald R. Fraser
Texas A&M University

1978: Master of Science in Economics, supporting field in Statistics

Texas A&M University

1976: Bachelor of Arts in Economics
Texas Tech University

PRIMARY TEACHING AND RESEARCH INTERESTS

Teaching: Investments, Corporate Finance, Financial Institution Management.

Research: General interests include investments, valuation methods, cost of capital analysis, primary market pricing of debt instruments, and banking and public utility regulatory issues.

TEACHING HONORS

Teaching Excellence Award, The R. B. Pamplin College of Business, Virginia Polytechnic Institute and State University, 1986-1987.

Excellence In Teaching Award, MBA Association, Virginia Polytechnic Institute and State University, 1985-1986.

PUBLICATIONS

Journal Articles - Refereed

"The Benefits and Limits of Diversification Among Commodity Trading Advisors," *Journal of Portfolio Management*, Vol. 23, No. 1, Fall 1996, pp 65-80 (Author listing: R. S. Billingsley and D. M. Chance).

"Why Do Firms Issue Convertible Debt?," *Financial Management*, Vol. 25, No. 2, Summer 1996, pp. 93-99, (Author listing: R. S. Billingsley and O.M. Smith).

"Simultaneous Debt and Equity Offerings and Capital Structure Targets," *Journal of Financial Research*, Vol. 17, No. 4, Winter 1994, (Author listing: R. S. Billingsley, D. M. Smith, and R. E. Lamy).

"Regional Reciprocal Interstate Banking: The Supreme Court and the Resolution of Uncertainty," *Journal of Banking and Finance*, Vol. 16, No. 1, 1992, pp. 665-686, (Author listing: R. S. Billingsley and R. E. Lamy).

"Integration of the Mortgage Market," *Journal of Financial Services Research*, Vol. 6, 1992, 137-155, (Author listing: R. S. Billingsley, V. A. Bonomo, and S. P. Ferris).

"Units of Debt with Warrants: Evidence of the 'Penalty-Free' Issuance of an Equity-Like Security," *The Journal of Financial Research*, Vol. 13, No. 3, Fall 1990, pp. 187-199, (Author listing: R. S. Billingsley, R. E. Lamy, and D. M. Smith).

"Shareholder Wealth and Stock Repurchases By Bank Holding Companies," *Quarterly Journal of Business and Economics*, Vol. 28, No. 1, Winter 1989, pp. 3-25, (Author listing: R. S. Billingsley, D. R. Fraser and G. R. Thompson).

Abstract: *Journal of Economic Literature*, Vol. 27, No. 3, September 1989, p. 1503.

"The Regulation of International Lending: IMF Support, the Debt Crisis, and Bank Shareholders," *Journal of Banking and Finance*, Vol. 12, No. 2, 1988, pp. 255-274, (Author listing: R. S. Billingsley and R. E. Lamy).

"Put-Call Ratios and Market Timing Effectiveness," *Journal of Portfolio Management*, Vol. 15, No. 1, Fall 1988, pp. 25-28, (Author listing: R. S. Billingsley and D. M. Chance).

Citation: "Using 'Dumb' Money as a Market Guide," Earl C. Gottschalk, Jr., the *Wall Street Journal*, January 17, 1989, p. C1.

"Bankruptcy Avoidance As A Merger Incentive," *Managerial Finance*, Vol. 14, No. 1, November 1988, pp. 25-33, (Author listing: R. S. Billingsley, D. J. Johnson, and R. P. Marquette).

"The Pricing and Performance of Stock Index Futures Spreads," *Journal of Futures Markets*, Vol. 8, No. 3, June 1988, pp. 303-318, (Author listing: R. S. Billingsley and D. M. Chance).

"The Choice Among Debt, Equity, and Convertible Bonds," The *Journal of Financial Research*, Vol. 11, No. 1, Spring 1988, pp. 43-55, (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson).

"Valuation of Primary Issue Convertible Bonds," *The Journal of Financial Research*, Vol. 9, No. 3, Fall 1986, pp. 251-259, (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson).

Abridged Reprint: *The CFA Digest*, Vol. 17, No. 2, Spring 1987, pp. 18-19.

"The Reaction of Defense Industry Stocks to World Events," *Akron Business and Economic Review*, Vol. 18, No. 2, Summer 1987, pp. 40-47, (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson).

"Listed Stock Options and Managerial Strategy," *Strategy and Executive Action*, No. 4, Fall 1986, pp. 17-20, 28, (Author listing: R. S. Billingsley and D. M. Chance).

"Reevaluating Mortgage Refinancing "Rules of Thumb," *Journal of the Institute of Certified Financial Planners*, Vol. 7, No. 1, Spring 1986, pp. 37-45, (Author listing: R. S. Billingsley and D. M. Chance).

"Explaining Yield Savings on New Convertible Bond Issues," *Quarterly Journal of Business and Economics*, Vol. 24, No. 3, Summer 1985, pp. 92-104, (Author listing: R. S. Billingsley, R. E. Lamy, M. W. Marr, and G. R. Thompson).

Abstract: *Journal of Economic Literature*, Vol. 24, No. 2, June 1986, p. 1083.

"Options Market Efficiency and the Box Spread Strategy," *The Financial Review*, Vol. 20, No. 4, November 1985, pp. 287-301, (Author listing: R. S. Billingsley and D. M. Chance).

Reprint: *CFA Readings in Derivative Securities*, pp. 217-231, Charlottesville, VA: The Institute of Chartered Financial Analysts, 1988.

"Determinants of Stock Repurchases by Bank Holding Companies," *Journal of Bank Research*, Vol. 16, No. 3, Autumn 1985, pp. 128-35, (Author listing: R. S. Billingsley and G. R. Thompson).

"The Informational Content of Unrated Industrial Bonds," *Akron Business and Economic Review*, Vol. 16, No. 2, Summer 1985, pp. 53-58, (Author listing: R. S. Billingsley and R. E. Lamy).

"Split Ratings and Bond Reoffering Yields," *Financial Management*, Vol. 14, No. 2, Summer 1985, pp. 59-65, (Author listing: R. S. Billingsley, R. E. Lamy, M. W. Marr, and G. R. Thompson).

"Determinants of Bank Holding Company Bond Ratings," *The Financial Review*, Vol. 19, No. 1, March 1984, pp. 55-66, (Author listing: R. S. Billingsley and D. R. Fraser).

Abstract: *Journal of Economic Literature*, Vol. 22, No. 4, December 1984, p. 2010.

"Market Reaction to the Formation of One-Bank Holding Companies and the 1970 Bank Holding Company Act Amendment," *Journal of Banking and Finance*, Vol. 8, No. 2, 1984, pp. 21-33, (Author listing: R. S. Billingsley and R. E. Lamy).

Journal Articles - Other

"Preliminary Study Indicates Optimal Number of Advisors May Be 40 +," *Managed Account Reports*, Issue No. 185, July 1994, p. 13.

"Managing Portfolios Using Index Options," *Futures*, Vol. 14, No. 9, September 1985, pp. 70-74, (Author listing: D. M. Chance and R. S. Billingsley).

Monographs & Sponsored Research

"The Evolution of Depository Institution Regulation In The United States," in *Banking and Monetary Reform: A Conservative Agenda*, Catherine England, pp. 47-56, Washington, D. C.: The Heritage Foundation, 1985, (Author listing: R. S. Billingsley).

Fare Box and Public Revenue: How to Finance Public Transportation. State Department of Highways and Public Transportation, Texas Transportation Institute, February 1980, (Author listing: R. S. Billingsley, P. K. Guseman and W. F. McFarland).

Proceedings

"Bankruptcy Avoidance as a Merger Incentive: An Empirical Study of Failing Firms," *The Financial Review*, Vol. 18, No. 3, 1983, p. 94, (Author listing: R. S. Billingsley, D. J. Johnson, and R. P. Marquette).

"A Multivariate Analysis of the Ratings of Bank Holding Company Debt Issues," *The Financial Review*, Vol. 17, No. 2, July 1982, p. 57, (Author listing: R. S. Billingsley and D. R. Fraser).

Editor

"Corporate Decision Making and Equity Analysis," Seminar Proceedings, Charlottesville, VA: The Association for Investment Management and Research, (Author listing: R. S. Billingsley, Editor), 1995.

"Industry Analysis: The Telecommunications Industry," Seminar Proceedings, Charlottesville, VA: The Association for Investment Management and Research, (Author listing: R. S. Billingsley, Editor), 1994.

PAPERS PRESENTED AT PROFESSIONAL MEETINGS

"Further Evidence on the Gains from Diversification in Multi-Manager Programs," (Author listing: R. S. Billingsley and D. M. Chance). Presented at Managed Account Reports' conference, *Alternative Investment Strategies*, Chicago, Illinois, June 1995.

"The Gains from Diversification in a Multi-Manager Program: Some Preliminary Results," (Author listing: R. S. Billingsley and D. M. Chance). Presented at Managed Account Reports' conference, *Derivatives Investment Management*, Chicago, Illinois, July 1994.

"Estimation Bias in the Application of the Quarterly Discounted Cash Flow Model to Public Utility Cost of Capital Analysis," (Author listing: R. S. Billingsley and V. A. Bonomo). Presented at the Financial Management Association Meetings, San Francisco, California, October 1992.

"Firm Value and Convertible Debt Issues: Signalling vs. Agency Effects," (Author listing: R. S. Billingsley, R. E. Lamy, and D. M. Smith). Presented at the Eastern Finance Association Meetings, Hot Springs, Virginia, April 1991.

"The Valuation of Simultaneous Debt and Equity Offerings," (Author listing: R. S. Billingsley, R. E. Lamy, and D. M. Smith). Presented at the Financial Management Association Meetings, Orlando, Florida, October 1990.

"The Choice Between Issuing Convertible Bonds and Units of Debt with Warrants," (Author listing: R. S. Billingsley, R. E. Lamy and D. M. Smith). Presented at the Financial Management Association Meetings, New Orleans, Louisiana, October 1988. (Subsequently published in *The Journal of Financial Research*, see article citation.)

"The Choice Among Debt, Equity, and Convertible Bonds," (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson). Presented at the Financial Management Association Meetings, Las Vegas, Nevada, October 1987. (Subsequently published in *The Journal of Financial Research*, see article citation.)

"The Regulation of International Lending: IMF Support, the Debt Crisis, and Bank Shareholders," (Author listing: R. S. Billingsley and R. E. Lamy). Presented at the Conference on Bank Structure and Competition, Federal Reserve Bank of Chicago, Chicago, Illinois, May 1986. (Subsequently published in the *Journal of Banking and Finance*, see article citation.)

"Valuation of Primary Issue Convertible Bonds," (Author listing: R. S. Billingsley, R. E. Lamy and G. R. Thompson). Presented at the Financial Management Association Meetings, Denver,

Colorado, October 1985. (Subsequently published in *The Journal of Financial Research*, see article citation.)

"The Economic Impact of Split Ratings on Bond Reoffering Yields," (Author listing: R. S. Billingsley, R. E. Lamy, M. W. Marr, and G. R. Thompson). Presented at the Financial Management Association Meetings, Toronto, Canada, October 1984. (Subsequently published in *Financial Management*, see article citation.)

"The Informational Content of Unrated Industrial Bonds," (Author listing: R. S. Billingsley and R. E. Lamy). Presented at the Financial Management Association Meetings, Atlanta, Georgia, October 1983. (Subsequently published in *Akron Business and Economic Review*, see article citation.)

"Bankruptcy Avoidance As A Merger Incentive: An Empirical Study of Failing Firms," (Author listing: R. S. Billingsley, R. P. Marquette, and D. J. Johnson). Presented at the Eastern Finance Association Meetings, New York, New York, April 1983. (Subsequently published in *Managerial Finance*, see article citation.)

"A Multivariate Analysis of the Ratings of Bank Holding Company Debt Issues," (Author listing: R. S. Billingsley and D. R. Fraser). Presented at the Eastern Finance Association Meetings, Jacksonville, Florida, April 1982. (Subsequently published in *The Financial Review*, see article citation.)

PROFESSIONAL EDUCATIONAL SEMINARS PLANNED AND ORGANIZED FOR THE ASSOCIATION FOR INVESTMENT MANAGEMENT AND RESEARCH

"Investing in the "New" Telecommunications Industry," New York, NY, September 1997. Conference Moderator: L. J. Haverty, Jr.

"Managing the Investment Professional," Chicago, IL, April 1996. Conference Moderator: R. S. Lannamann.

"Effective Risk Management in the Investment Firm," Boston MA, October 1995. Conference Moderator: G. L. Gastineau.

"Equity Analysis: The Role of Corporate Financial Decision Making," Washington, D.C., January 1995. Conference Moderator: R. S. Billingsley.

"Blending Quantitative and Traditional Equity Analysis," Boston, MA, March 1994. Conference Moderator: H. R. Fogler.

"Industry Analysis: The Telecommunications Industries," New York, NY, November 1993. Conference Moderator: R. S. Billingsley.

PROFESSIONAL SERVICE

Board of Directors
Society of Utility and Regulatory Financial Analysts, Vice-President

Association for Investment Management and Research Activities
(Formally the Institute for Chartered Financial Analysts).
Professional service beyond duties performed as Vice President at AIMR.

Grading Staff, Institute of Chartered Financial Analysts, June 1987.

Candidate Curriculum Committee, Institute of Chartered Financial Analysts, Quantitative Analysis Sub-Committee, 1987-1989.

CFA Examination Analysis Team, Levels I-III, March 1988.

CFA Examination Grading Review Team, July 1988.

Faculty, CFA Refresher Course, Valuation: Equity, Charlottesville, VA, June 1992, June 1993, June 1994, UCLA, November 1994.

Faculty, Basics of Equity Analysis, Montreal, Quebec, Canada, November 1994.

Consulting Clients

Association for Investment Management and Research

Bell Atlantic

BellSouth Telecommunications

The Financial Analysts' Review of the United States

Institut Penembangan Analisis Finansial, Jakarta, Indonesia

Securities Analysts' Association, Bangkok, Thailand

Union Bank of Switzerland, Zürich

United States Telephone Association

Expert Witness Regulatory Testimony

Company	Docket No.	Year
BellSouth Telecommunications (Alabama)	ALPSC 25980	1998
BellSouth Telecommunications (Kentucky)	KPSC Adm. Case 361	1998
BellSouth Telecommunications (Mississippi)	MPSC 98-AD-035	1998
BellSouth Telecommunications (Mississippi)	MPSC 98-AD-544	1998
BellSouth Telecommunications (North Carolina)	NCPSC P-100, Sub 133B	1998
BellSouth Telecommunications (North Carolina)	NCPSC P-100, Sub 133D	1998
BellSouth Telecommunications (Tennessee)	TRA 97-00888	1998
BellSouth Telecommunications (Florida)	FLPSC 960833-TP	1997
BellSouth Telecommunications (Kentucky)	KPSC Adm. Case 360	1997
BellSouth Telecommunications (Tennessee)	TRA 97-01262	1997
BellSouth Telecommunications (South Carolina)	SCPSC 97-374-C	1997
BellSouth Telecommunications (Florida)	FPSC 960833-TP	1997
BellSouth Telecommunications (Alabama)	ALPSC 26029	1997
BellSouth Telecommunications (Georgia)	GAPSC 7061-U	1997
United States Telephone Association	FCC 96-262	1997
United States Telephone Association	FCC: AA096-28	1996
Southern Bell (South Carolina)	SCPSC 95-862-C	1995
United States Telephone Association	FCC 94-1	1994
Southern Bell (South Carolina)	SCPSC 93-503-C	1994
Southern Bell (Georgia)	GPSC 3905-4	1994
Southern Bell (Florida)	FPSC 920260-TL	1993

Manuscript Referee –

Journal of Banking and Finance

Journal of Financial Research

Journal of Futures Markets

Financial Review
Quarterly Journal of Business and Economics

Quarterly Review of Business and Economics

International Review of Economics and Finance

Japan and the World Economy

Journal of Business Research

Journal of Economics and Business

Engineering Economist

SELECTED INVITED SPEECHES/WORKSHOPS

Securities Analysts' Association, "Equity Valuation and Analysis Workshop," Bangkok, Thailand, March 1997.

Maryland - District of Columbia Utilities Association, "Telecommunications: Increasing Risk on the Horizon? An Investment Community Perspective, "71st Annual Fall Conference, Ocean City, MD, September 1995.

Bell Atlantic, "Do the 'Traditional' Cost of Equity Estimation Methods Work in the Current Environment?" National Accounting Witness Conference, Landsdowne Conference Resort, VA, April 1994.

Southeastern Electric Exchange, "Trends in Estimating the Cost of Equity for Public Utilities," St. Petersburg, FL, October 1993.

Securities Analysts' Association, "Common Problems in Valuing Equity Securities," Bangkok, Thailand, April 1992.

Virginia Bankers Association, Group Five (Credit Policy Committee), "Want to Sell Your Bank?" Interstate Banking in 1987 and Beyond," Credit Policy Conference, Radford, VA, April 1987.