ORIGINAL

BELLSOUTH TELECOMMUNICATIONS, INC.

DIRECT TESTIMONY OF

DR. RANDALL S. BILLINGSLEY, CFA

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 990649-TP

AUGUST 11, 1999

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-11. My business address is: Department of Finance, Pamplin College of Business, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061-0221.

This testimony 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

TESTIMONY?

A. Yes, my testimony and eleven exhibits were prepared by me or under my direction and supervision.

II. PURPOSE OF DIRECT TESTIMONY AND SUMMARY OF CONCLUSIONS

A. PURPOSE OF TESTIMONY

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

A. My purpose is to provide the Florida Public Service Commission (Commission) with a determination of the forward-looking costs of capital for BellSouth Telecommunications Corporation (BST). Specifically, I provide evidence concerning the firm's forward-looking costs of equity, costs of debt, and overall cost of capital. In so doing I also evaluate the reasonableness of BST's use of an overall cost of capital of 11.25% in its cost studies. I consequently provide the Commission with evidence useful in preparing and interpreting unbundled network element (UNE) cost studies for BST in the state of Florida.

B. SUMMARY OF BST COST OF CAPITAL ANALYSIS

Q. PLEASE DESCRIBE THE APPROACHES THAT YOU USE TO DETERMINE BST'S CAPITAL COSTS AND SUMMARIZE YOUR CONCLUSIONS.

A. My analysis uses objective market data to determine BST's cost of equity capital from two distinct but complementary approaches. Since BST is a subsidiary of BellSouth Corporation, it does not have equity trading in the market. Thus, there is no direct market evidence on BST's cost of equity capital. It is consequently necessary to infer BST's cost of equity using available market data for firms comparable in risk to that of BST.

In the first approach I apply the DCF model to a group of firms identified as comparable in risk to BST. An average cost of equity capital is calculated by applying the DCF model to this group of comparable firms in order to provide an objective, market-determined cost of equity capital for BST. In the second approach, I apply the CAPM to estimate BST's cost of equity capital using the same group of publicly traded firms that are comparable in risk to BST. Finally, I conduct a risk premium analysis that uses data on capital market expectations to corroborate the reasonableness of BST's estimated cost of capital.

The cost of equity for BST is in the range of 14.48% to 14.64% using the comparable firm group DCF model approach. The CAPM approach indicates that BST's cost of equity capital is in the range of 15.21% to 15.27%. The risk premium approach indicates that the expected return on the overall equity market, as measured by the Standard and Poor's Composite 500 Index (S&P

500), is currently between 14.26% and 14.98%. 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 14.48% and 15.27%.

My analysis determines the cost of debt for BST to be 6.65% and the market value-based capital structure to consist of 9.84% debt and 90.16% equity. Combining these capital structure weights and the average cost of the debt with the above cost of equity estimates produces an overall cost of capital for BST in the range of 13.71% to 14.42%.

C. REASONABLENESS OF BST'S USE OF AN OVERALL COST OF CAPITAL OF 11.25%

Q. PLEASE DESCRIBE HOW YOU EVALUATE THE REASONABLENESS OF BST'S USE OF AN OVERALL COST OF CAPITAL OF 11.25% IN ITS COST STUDIES AND SUMMARIZE YOUR FINDINGS.

A. I rely on my estimated equity and debt costs along with a market value-based capital structure to estimate an overall cost of capital for BST in the range of 13.71% to 14.42%. This indicates that the use of an 11.25% rate in its cost studies understates BST's forward-looking overall cost of capital by 246 to 317 basis points. Therefore, BST's use of an 11.25% cost of capital in its cost studies is reasonable and quite conservative.

D. ORGANIZATION OF DIRECT TESTIMONY

Q. HOW IS THE REST OF YOUR TESTIMONY ORGANIZED?

A. Section III of my testimony overviews the current status of competition in the telecommunications industry in order to provide insight into the context in which capital costs are estimated. Sections IV-VII describe the methods that I use to estimate BST's current capital costs and present my specific findings. Section VIII presents my estimate of BST's overall cost of capital and evaluates the reasonableness of its use of 11.25% as its cost of capital in its cost studies. Finally, Section IX shows the impact of ignoring the appropriate adjustments for flotation costs and the quarterly payment of dividends on BST's capital costs. It also shows the impact of incorrectly relying on a book value-based capital structure for BST.

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. Indeed, a recent study by the Federal Communications Commission (FCC) documents the significant and growing trend toward greater competition in the local telephone exchange market by observing (see *Local Competition*, Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, December 1998):

- The revenues of competitors in the local exchange market continue to increase rapidly, starting from a very small base. In 1997, the revenues of local service competitors doubled ... (p. 1).
- Local service competitors are deploying fiber in their networks at a faster rate than are ILECs [incumbent local exchange companies]. Local competitors tripled their amount of fiber in place from the end of 1995 to the end of 1997. Local competitors now have at least 11% of the total fiber optic system capacity potentially available to carry calls within local markets (p. 2).

What investors believe about the future competition that the ILECs will face is critical to cost of capital analysis. Investors' expectations of competition and its impact on risk are what are reflected in the capital costs faced by the ILECs in general and BST in particular.

Q. SPECIFICALLY HOW HAS COMPETITION INCREASED IN RECENT YEARS?

A. The intraLATA and local exchange markets have become much more competitive in recent years. Large businesses have been able to bypass the ILECs' private line and access services using fiber optic networks, microwave transmission and very small aperture terminals (VSAT). The growth of competitive access providers (CAPs) has allowed large business customers to connect with long distance carriers (interexchange carriers or IXCs) without paying access charges to the ILECs like BST.

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. The ILECs 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 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 ILEC services. Further, there is a major push to develop worldwide wireless service through satellite networks offered by organizations that include Iridium World Communications (Motorola), GlobalStar (Loral), ICO Global (Inmarsat), and Odyssey (TRW). "Traditional" wireless services and worldwide satellite networks will increasingly put competitive pressure on the providers of rural wireline telephone services. Thus, these alternatives will only increase the competitiveness of that environment and thus magnify the business risk of all ILEC operations. This growing risk is increasing the ILECs' cost of raising capital.

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, creates a mechanism that will eventually allow local, long-distance, and cable companies to get into one another's businesses. Thus, the traditional barriers that separated these industry sectors are now officially being dropped. 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 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 ongoing implementation of the Telecommunications Act.

Q. HOW HAVE RECENT MERGERS AND ACQUISITIONS CHANGED THE NATURE OF COMPETITION IN THE TELECOMMUNICATIONS INDUSTRY?

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

Consider the following key mergers and acquisitions, consummated or pending, in the industry over the last few years: US West / Qwest, Global Crossing / Frontier, AT&T / MediaOne, AT&T / Tele-Communications (TCI), Bell Atlantic / GTE, WorldCom / MCI Communications, WorldCom / MFS Communications, SBC Communications / Southern New England Telephone (SNET), SBC Communications / Ameritech, Alltel / 360° Communications, SBC Communications / Pacific Telesis, MCI Communications / Brooks Fiber Properties, WorldCom / UUnet Technologies, AT&T / McCaw Cellular, and AT&T / Teleport Communications. Further, these explicit mergers and acquisitions do not reflect the numerous strategic alliances within the telecommunications industry that have altered the competitive landscape. For example, earlier this year (February 4, 1999) MCI WorldCom announced an agreement with America Online's CompuServe to provide MCI WorldCom's subscribers with local Internet access. Thus, such subscribers will be able to get Internet access and long-distance services on one bill.

A particularly important competitive development is AT&T's strategic relationship with Time Warner to offer cable telephony. AT&T Chairman and Chief Executive Officer C. Michael Armstrong describes it as follows ("AT&T and Time Warner Form Strategic Relationship to Offer Cable Telephony," AT&T News Release, February 1, 1999):

> Together with our merger with Tele-communication, Inc. (TCI) and agreements with five TCI affiliates, the Time Warner joint venture will enable AT&T to reach more than 40 percent of U.S. households over the next four to five years. In addition, we look forward to working with Time Warner in the delivery of next-generation broadband communications services.

This joint venture gives AT&T the exclusive right to offer residential and small business telephony services over Time Warner's cable systems for the next twenty years. The **Wall Street Journal** reports that "[t]he Time Warner pact is aimed at helping AT&T sidestep the regional phone companies ..." ("AT&T, Time Warner in Cable-TV Accord," Leslie Cauley and Rebecca Blumenstein, February 2, 1999, p. A3). Thus, this strategic alliance is an important example of how the competitive position of ILECs like BST within the telecommunications industry is being eroded, thereby increasing its business risk and attendant capital costs.

The acquisition of TCI by AT&T is another 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 are facing 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 impending $62 billion SBC / Ameritech merger that was announced in May of 1998 has yet to receive final approval by regulators. Such regulatory uncertainty enhances investment risk in the industry.

Q. IS THERE ANY CAPITAL MARKET EVIDENCE THAT ILEC 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 ILECs. 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. Bell Atlantic fell most in the index, tumbling 5 5/8 to 92 ¾, while BellSouth fell 2 5/16 to 66 15/16. GTE Corp. slipped 13/16 to 56 11/16.
>
> 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 [Baby Bell'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 ILEC share prices fell in response to the announcement of the acquisition of TCI by AT&T without any apparent change in expected growth is capital market evidence that investors believe that the risk of investing in ILECs like BST 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.

Q. IS THERE ANY EVIDENCE THAT CONSUMERS ARE USING WIRELESS TECHNOLOGY TO BYPASS TRADITIONAL ILEC WIRELINE TELEPHONE SERVICES?

A. Yes. There is growing evidence that wireless is becoming a viable substitute for the traditional telephone services offered by the ILECs. Bloomberg's business

information site on the Internet (http://www.bloomberg.com, "Surveys Show Wireless Phones and Effective Substitute for Wireline Phone Service, According to BellSouth" July 2, 1998, PRNewswire) reported the following:

> Consumers looking for choice in telecommunications are using wireless technology – specifically Personal Communications Service (PCS) – as a cost-effective replacement for the conventional wired telephone at home and in the office, recent studies conclude. "For heavy users, U.S. (PCS) carriers are commonly offering rates of 10 cents to 13 cents a minute," says Herschel Shosteck, president of the wireless market research firm Herschel Shosteck Associates, Wheaton, Md. "At tariffs this low, subscribers are beginning to substitute mobile minutes for landline minutes – and, more importantly, mobile for landlines."
>
> Even AT&T recognizes PCS is a viable competitor to landline service. AT&T says in its advertising: "with rates as low as 11-cents-a-minute, this could make your wireless phone your only phone."
>
> ... The FCC found that PCS providers added over 848,000 new subscribers in 1997's fourth quarter, up 53.4 percent from the third quarter and more than double the 406,000 added in the second quarter. "A number of wireless technologies have begun to take aim at services long thought of as the sole province of wireline operators," the FCC said in its third annual report on the wireless industry June 11. "Mobile telephone operators are beginning to go one step further by using aggressive pricing to position their services as true replacements for the wire-based services of (local

exchange companies.)"

The above story by Bloomberg indicates that wireless is increasingly competing with traditional wireline telephone services as a cost-effective substitute. This implies that the ILECs face an increasing risk of revenue loss due to the bypass of their local loops through wireless telephony.

Q. DOES THE REGULATORY PROCESS POSE INVESTMENT RISKS TO THE ILEC INDUSTRY?

A. Yes. Regulatory constraints can severely limit the ability of the ILECs to adapt quickly to the increasing competition within the telecommunications industry. Further, the uncertainty about how regulations will actually be applied to the ILECs also imposes risks. For example, the uncertainties concerning how the Telecommunications Act will continue to be implemented have increased the riskiness of investing in the ILEC business. A number of regulatory issues remain unsettled at both the state and federal levels in key areas such as universal service support, separations reform, and access charge structural changes. While regulators must take the time to carefully evaluate and settle these complex regulatory issues, BST must nonetheless adapt to the uncertainties concerning what regulations it will ultimately face. Yet planning to meet such uncertainties requires expenditures that enhance investment risk.

Consider that the Supreme Court has only this year (January 25, 1999) overturned a lower court decision that the Telecommunications Act of 1996

contains unconstitutional provisions restricting the regional Bell operating companies (RBOCs) from entering the long-distance telephone market. While the judicial review of the Act has contributed to the regulatory uncertainty faced by the ILECs, the Supreme Court's decision does not end the uncertainty concerning how the FCC will proceed with its implementation of the Act. Indeed, even though the overall stock market closed higher the day that the Supreme Court decision was announced, the share prices of the RBOCs generally fell in response to the decision. For example, the shares of BellSouth fell almost 12%, Bell Atlantic fell almost 8%, SBC fell 4.26%, and Ameritech fell a bit over 1%. Further, state regulators have enacted a variety of differing regulations in light of the uncertainty at the federal level. Thus, significant uncertainty remains concerning how the ILECs will be regulated during this period of vast structural change in the telecommunications industry. Such uncertainty has contributed to the increasing business risk in the industry and has increased BST's capital costs.

In a filing before the FCC earlier this year Dr. William E. Avera explains that regulatory decisions can lead to unintended consequences for an industry. Specifically, he discusses how past regulatory policies have enhanced the risks posed to the ILECs' during the current transition to competition (see Comments of Dr. William E. Avera, CFA, CC Docket No. 98-166, Filed on Behalf of the United States Telephone Association, et. al., January 19, 1999):

As a result of past regulatory policies, those customers who are less costly to serve due to location or other characteristics subsidize the service provided to higher-cost subscribers. With the introduction of competition, the ILECs face

particularly intense rivalry for access to high-volume customers, and because of previous pricing practices, the loss of these principally business users will lead to revenue shortfalls and undermine the adequacy of the rates charged other customers.

Regulation creates another problem for the ILECs if they have a continuing obligation to serve all customers – even when it means facilitating the entry of competitors for their core business. Thus, ILECs are put into the position of having to invest in access facilities requested by potential competitors with no assurance that they will have an opportunity to recover a return on or a return of the original capital investment (pp. 16 – 17).

Thus, ILECs like BST currently face significant competitive and regulatory risks that contribute to higher capital costs.

IV. DCF MODEL ESTIMATES OF BST'S COST OF EQUITY CAPITAL

A. FORM OF THE DCF MODEL USED IN THE ANALYSIS

Q. WHAT FORM OF THE DCF MODEL DO YOU USE TO ESTIMATE BST'S COST OF EQUITY CAPITAL?

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:

$$K = [D^q_O (1 + G) / P_{mkt}] + G = [D^q_1 / P_{mkt}] + G,$$

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 1999) of high and low prices for the equity. D_o^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 BST'S COST OF EQUITY

Q. SPECIFICALLY HOW DO YOU APPLY THE ABOVE DCF MODEL TO BST, SINCE IT DOES NOT HAVE EQUITY TRADING IN THE MARKETPLACE?

A. Since BST is part of its parent holding company, BellSouth Corporation, it does not have equity trading in the market. It is consequently necessary to infer BST's cost of equity by applying the DCF model to a group of firms identified as comparable in risk to the company.

Q. WHAT METHOD IS USED TO IDENTIFY FIRMS OF COMPARABLE RISK TO BST?

A. I use a cluster analysis model to identify firms that are comparable in risk to BST. The two broad dimensions of the risk that a firm faces 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. A group of the 20 firms that are closest to BST in terms of this summary distance measure is chosen for analysis. A more detailed discussion of this cluster analysis is contained in Billingsley Exhibit No. RSB-4.

Q. HOW DO THE INDIVIDUAL MEASURES OF RISKINESS RELATE TO THE COMPARABILITY OF THE GROUP OF FIRMS IN THE CLUSTER IN TERMS OF OVERALL RISKINESS?

A. It may be tempting to single out one company in my cluster of comparable firms and incorrectly attempt to compare its various risk measures individually to those of BST. However, none of the individual companies identified in the cluster are precisely like BST in every respect. The firms are alternative investment opportunities that, in the aggregate, have overall risk similar to that of BST.

In summary, none of the individual firms in my cluster are precisely like BST in terms of each individual measure of risk. The cluster should be viewed as a portfolio of firms that, as a group, are comparable in risk to BST.

C. DCF MODEL COST OF EQUITY ESTIMATES FOR BST

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 14.48% to 14.64%.

V. CAPITAL ASSET PRICING MODEL ANALYSIS OF BST'S COST

OF EQUITY CAPITAL

Q. WHAT FORM OF THE CAPM DO YOU USE TO ESTIMATE BST'S COST OF EQUITY CAPITAL?

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 like the S&P 500.

Q. HOW AND WHERE DO YOU OBTAIN THE BETA COEFFICIENT DATA NEEDED TO ESTIMATE BST'S COST OF EQUITY CAPITAL USING THE CAPM?

A. Since BST is a subsidiary of BellSouth Corporation, it does not have its own equity trading in the market and therefore does not have the beta coefficient required by the CAPM. Thus, as discussed above in my DCF analysis, it is necessary to identify a group of firms comparable in risk to BST that do have traded equity and therefore measurable beta coefficients. Consequently, the beta coefficients for the group of firms used in my DCF analysis that are identified in Billingsley Exhibit No. RSB-3 are relied on to estimate the cost of equity for

BST. Specifically, the average beta of 0.83 for the group of firms is used in the CAPM equation presented above.

The beta coefficients used in my CAPM analysis are the most recent prospective measures supplied by BARRA, a widely recognized provider of financial data and decision support systems for institutional investors. Billingsley Exhibit No. RSB-5 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 6.69% average expected yield implied by the prices of the Treasury bond futures contracts quoted during June of 1999. The prices of these contracts reflect the market's consensus forecast of long-term, low-risk interest rates. Billingsley Exhibit No. RSB-6 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-7 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 of 1999) 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 6.69%, an average beta of 0.83 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 16.96% and 17.03%, respectively. These objective, market-determined data indicate that BST' s cost of equity capital is 15.21% using the IBES growth rate and 15.27% 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. I use the risk premium approach to confirm the reasonableness of my DCF and CAPM cost of equity estimates for BST.

B. SPECIFIC TYPE OF RISK PREMIUM ANALYSIS USED

Q. WHAT SPECIFIC FORM OF THE RISK PREMIUM APPROACH DO YOU USE?

A. I use a prospective approach to estimate the equity risk premium because the DCF model and the CAPM are prospective in nature. 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 1999. Additional detail on the issues and the techniques associated with calculating the expected return on the market is presented in Billingsley Exhibit No. RSB-7.

Billingsley Exhibit No. RSB-8 shows that the average expected risk premium from 1987 to 1999 is 7.17%. The average yield on Aaa-rated public utility bonds, which are used because this is the bond rating on BST's debt, over the most recent three months (April to June of 1999) is 7.09%. Thus, the average

risk premium of 7.17% is added to the recent average public utility bond return of 7.09% to yield an expected cost of equity return on the S&P 500 of 14.26%.

C. ADJUSTMENT FOR POTENTIAL INSTABILITY IN THE RISK PREMIUM

1. EVIDENCE ON THE INSTABILITY OF RISK PREMIUMS OVER TIME

Q. CAN ANY INSTABILITY 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-7, 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 widens and when interest rates rise, the equity risk premium narrows.

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 -0.651 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 INSTABILITY IN THE EQUITY RISK PREMIUM

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 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 yield on 30-year Treasury bonds is 6.04% (June of 1999), the appropriate current risk premium is 8.94%. This is calculated by multiplying the 3.80% 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 2.47%. This alternative approach consequently provides an expected return on the S&P 500 of 14.98%, which is the current average level of 30-year Treasury yields of 6.04% added to the adjusted risk premium of 8.94%.

Q. WHAT IS YOUR CONCLUSION WITH REGARD TO BST'S COST OF EQUITY CAPITAL?

A. Based on my cost of equity analysis, I believe BST's cost of equity is in the range of 14.48% to 15.27%. The above risk premium analysis indicates that the

expected return on the overall equity market is in the range of 14.26% to 14.98%. Thus, the risk premium analysis results corroborate the reasonableness of my estimated range for BST's cost of equity.

VII. COST OF DEBT

Q. HOW DO YOU DETERMINE BST'S CURRENT COST OF DEBT CAPITAL?

A. The cost of debt capital is estimated using current forward-looking market data.

Q. HOW CAN BST'S FORWARD-LOOKING COST OF DEBT BE EMPIRICALLY ESTIMATED?

A. BST'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 U.S. Treasury bonds and Aaa-rated public utility bonds.

For the period from April to June of 1999, 30-year U.S. Treasury bonds yielded an average of 5.80%. As shown in Billingsley Exhibit RSB-9, the spread between Aaa-rated public utility bonds and 30-year Treasury bonds averaged 0.85% from October of 1987 through June of 1999. Adding the average spread of 0.85% to the above recent average Treasury bond yield to maturity of 5.80%

produces a yield of 6.65%, which does not reflect the material effect of flotation costs that would increase the cost of debt.

Q. WHAT IS YOUR ESTIMATE OF BST'S FORWARD-LOOKING COST OF DEBT?

A. Based on my analysis, I believe that a conservative estimate of BST's forward-looking cost of debt is 6.65%.

VIII. REASONABLENESS OF BST'S USE OF A 11.25% COST OF CAPITAL

Q. HOW DO YOU TEST THE REASONABLENESS OF BST'S OVERALL COST OF CAPITAL OF 11.25% IN ITS COST STUDIES?

A. I assess the reasonableness of BST's use of an 11.25% overall cost of capital by estimating that cost using the results of my above analysis and a market value-based capital structure for BST. The comparison of my estimated overall cost of capital for BST with the 11.25% rate used in the company's cost studies sheds light on the reasonableness and conservative level of that assumed rate. It is important to recognize that the use of market value-based capital structures should be relied on exclusively in evaluating the reasonableness of BST's use of an overall cost of 11.25% in its cost studies.

Q. WHAT CAPITAL STRUCTURE, COMPONENT COSTS OF CAPITAL, AND OVERALL COST OF CAPITAL DO YOU USE IN ESTIMATING BST'S OVERALL COST OF CAPITAL DIRECTLY?

A. I use my estimated costs of equity and debt for BST along with the average market value-based capital structure for the group of 20 firms shown to be comparable in risk to BST. The analysis uses a cost of debt of 6.65% and a cost of equity of from 14.48% to 15.27%. As shown in Billingsley Exhibit No. RSB-10, the current average market value-based capital structure for the portfolio of companies comparable in risk to BST is 9.84% debt and 90.16% equity. Thus, the data and estimates in my analysis indicate that BST's overall cost of capital is in the range of 13.71% to 14.42%.

Q. WHAT PRACTICAL AND THEORETICAL ARGUMENTS SUPPORT RELIANCE ON MARKET VALUE-BASED RATHER THAN ON BOOK VALUE CAPITAL STRUCTURES IN COST OF CAPITAL ANALYSIS?

A. Book value capital structures do not recognize the reality of an ILEC like BST obtaining capital in today's financial marketplace. The use of market values is both practically as well and theoretically appropriate and consistent with establishing a prospective cost of capital for use in a proceeding such as this one. Market values should be used exclusively because they are dynamically determined in the marketplace by investors, while book values are the result of historical accounting practices. One-time accounting events that do not change market values can significantly alter book values. Additionally, the point in time

at which a company issued stock in the past can influence book values, while prospective market values are not affected. Current market values are determined by investors' most up-to-date expectations for the future. These expectations are based on a variety of factors, many of which are external to an ILEC. Book values look at a firm largely in dated isolation, while market values consider the firm's expected performance in light of its external competitive environment as well.

Over time, market values vary from book values as investors change stock prices in response to new company announcements as well as to announcements concerning their competitors for investors' dollars. If an event or announcement significantly enhances or detracts from shareholder value, that change is immediately translated into a market value change by investors, while there is likely to be no immediate change in book value. It is obvious that relying on book values is unrepresentative of the investor's perspective in today's capital markets from which BST must obtain capital. The impact of relying on book values is a downward bias in overall cost of capital estimates.

Q. WOULD YOU ELABORATE ON HOW MARKET VALUE-BASED CAPITAL STRUCTURES REFLECT INVESTORS' EXPECTATIONS AND HOW CAPITAL STRUCTURES ARE COMMONLY MEASURED IN ACCEPTED FINANCIAL PRACTICE AND THEORY?

A. Yes. Market value-based capital structures reflect the most up-to-date expectations of investors in the capital markets. In contrast, book value-based

capital structures reflect accounting conventions and historical costs. It is important to stress that capital costs inherently involve market-based expectations no matter what type of cost estimation model is used. Therefore, the capital structure that is matched with expected capital costs must also be measured in market value terms that capture investors' expectations. In order to be consistent with well-established financial practice and theory, market-determined capital costs must be matched with market-determined capital structures. Indeed, the use of market value-based capital structures in cost of capital and capital budgeting analysis is the standard approach taken in modern corporate finance textbooks (e.g., see S.A. Ross, R. W. Westerfield, and B. D. Jordan, *Essentials of Corporate Finance*, Irwin: 1996, pp. 316-317 or R.A. Brealey and S.C. Myers, *Principles of Corporate Finance*, McGraw-Hill: 1996, 5th ed., pp. 214, 517).

Many people mistakenly believe that there are three different costs of capital: historical, current, and expected. Actually there is only one relevant measure, which is the *expected* cost of capital that is based on market values. This is consistently updated every day in the financial markets and exists at any given point in time. Thus, market value-based capital structures are more appropriate than accounting-based capital structures in cost of capital analysis

Q. IS THE USE OF MARKET VALUE-BASED CAPITAL STRUCTURES IN COST OF CAPITAL ANALYSIS CONSISTENT WITH WELL-ACCEPTED LEGAL AND REGULATORY STANDARDS?

A. Yes. In addition to being consistent with well-established financial practice and theory, I believe that the use of market value-based capital structures is consistent with the universally accepted Supreme Court precedents concerning what characterizes a reasonable rate of return for a regulated public utility (see Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia, 262, U.S. 679, 692-3, (1923) and Federal Power Commission v. Hope Natural Gas Co. 320, U.S. 591, (1944)). Market value-based capital structures are also consistent with the FCC's standard of considering the expected cost of capital (see First Report & Order, FCC 96-325, released August 8, 1996, paragraph 700). Because the expected cost of capital is, by definition, based on investors' expectations, all of its components must be based on expectations. The FCC's standard implies that the ILECs' costs of debt, costs of equity, and capital structures must all rely on the expectations reflected in market values. Thus, well-accepted financial practice and theory as well as the FCC's own espoused principle indicate that market value-based capital structures are more appropriate than accounting-based capital structures in cost of capital analysis.

Q. WHAT CONCLUSIONS DO YOU DRAW CONCERNING THE REASONABLENESS OF BST'S USE OF AN 11.25% OVERALL COST OF CAPITAL IN ITS COST STUDIES?

A. Based on the above tests, the use of an 11.25% overall cost of capital by BST is reasonable and quite conservative. My overall cost of capital estimate for BST is

in the range of 13.71% and 14.42%, which is between 246 and 317 basis points above the 11.25% rate used in the company's cost studies.

IX. IMPACT OF IGNORING APPROPRIATE DCF MODEL ADJUSTMENTS AND IMPACT OF INCORRECT USE OF BOOK VALUE CAPITAL STRUCTURE

A. IMPACT OF IGNORING APPROPRIATE FLOTATION COST AND QUARTERLY PAYMENT OF DIVIDENDS ADJUSTMENTS

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 BST's cost of equity 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 BST'S COST OF EQUITY 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 14.57% using IBES growth rate forecasts and 14.40% using Zacks growth forecasts. The revised CAPM approach indicates that BST's cost of equity is in the range of 15.23% to 15.29%. 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 14.40% to 15.29%.

Q. DO YOU BELIEVE THAT IT WOULD BE REASONABLE FOR BST TO USE AN OVERALL COST OF CAPITAL OF 11.25% IN ITS COST STUDIES IF FLOTATION COSTS AND QUARTERLY COMPOUNDING ADJUSTMENTS ARE OMITTED FROM YOUR ESTIMATES?

A. Yes. The revised cost of equity capital estimates are in the range of 14.40% to 15.29%. Calculation of BST's overall cost of capital in the same manner as described above but using the revised cost of equity estimates yields a range from 13.64% to 14.44%. Thus, BST's use of an 11.25% cost of capital in its cost studies is quite conservative even in the absence of adjustments for flotation costs and the quarterly payment of dividends.

B. IMPACT OF INCORRECT USE OF BOOK VALUE CAPITAL STRUCTURE

Q. IN ORDER NO. PSC-98-0604-FOF-TP, DOCKET NO. 960833, THE COMMISSION FINDS BST'S OVERALL COST OF CAPITAL TO BE 9.90%, ITS COST OF DEBT TO BE 6.70%, ITS COST OF EQUITY TO

BE 12.00%, AND THE COMMISSION USES A CAPITAL STRUCTURE FOR THE FIRM OF 60.00% EQUITY AND 40.00% DEBT. WHAT IS YOUR ASSESSMENT OF THE COMMISSION'S DETERMINATIONS IN THE ORDER?

A. I believe that my testimony submitted in that proceeding correctly shows that BST's overall cost of at the time was in excess of 11.25%, its cost of debt was 7.25%, and that its cost of equity was in the range of 14.72% to 15.20%. Thus, I believe that the Commission's findings significantly underestimated BST's capital costs at that time.

My current testimony shows that up-to-date capital market conditions, greater competition in the telecommunications industry, and enhanced business risk support that BST's current forward-looking overall cost of capital is in the range of 13.71% and 14.42%, its cost of debt is 6.65%, and its cost of equity is in the range of 14.48% to 15.27%. Therefore, the use of the Commission's findings in the above-noted Order in the current proceeding would severely underestimate BST's current forward-looking capital costs.

Q. THE COMMISSION USES A 60.00% EQUITY AND 40.00% DEBT CAPITAL STRUCTURE FOR BST IN THE ABOVE-NOTED ORDER. WOULD THE USE OF THIS CAPITAL STRUCTURE ALONG WITH YOUR CURRENT COST OF CAPITAL ESTIMATES STILL INDICATE THAT BST'S CURRENT OVERALL COST OF CAPITAL EXCEEDS 11.25%?

A. Yes. While I disagree with the Commission's chosen capital structure, its use with my cost of capital estimates still indicates that BST's current overall cost of capital exceeds 11.25%. Specifically, using my conclusion that BST's current forward-looking cost of debt is 6.65%, its cost of equity is in the range of 14.48% to 15.27%, and the Commission's previously used 60.00% equity and 40.00% debt capital structure for BST, the firm's overall cost of capital is in the range of 11.35% to 11.82%. The mid-point of this estimated range for BST's overall cost of capital is 11.59%. Thus, the use of the Commission's previous capital structure finding along with my current cost of capital estimates for BST continues to indicate that the firm's use of an overall cost of capital of 11.25% underestimates its true cost and is quite conservative.

Q. WHY DO YOU DISAGREE WITH THE COMMISSION'S PREVIOUS FINDING THAT BST'S CAPITAL STRUCTURE IS 60.00% EQUITY AND 40.00% DEBT?

A. The Commission's adopted capital structure of 60.00% equity and 40.00% debt is based on reported book values. As discussed above in my testimony, market value-based capital structures reflect the most up-to-date expectations of investors in the capital markets. In contrast, book value-based capital structures reflect accounting conventions and historical costs. Book value-based capital structures capture the past rather than the future perspective that is required by investors in current capital markets. I consequently believe that the Commission's reliance on a book value-based capital structure for BST is inappropriate and is not forward-looking. Further, the use of market value-based

capital structures is consistent with the FCC's standard of considering the expected cost of capital in the deregulated environment developing through the on-going implementation of the Telecommunications Act of 1996 (see First Report & Order, FCC 96-325, released August 8, 1996, paragraph 700).

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:

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

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^q :

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

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:

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

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. Pettway (*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**
Abbott Labs	13.27%	13.28%	0.79
Albertsons	15.35%	15.39%	0.67
Anheuser Busch	11.43%	10.63%	0.74
Avery Dennison	15.12%	15.22%	0.85
Becton Dickinson	14.89%	15.36%	1.03
Campbell Soup	13.12%	12.40%	0.69
Cinncinnati Bell	16.59%	16.22%	0.75
Clorox	14.80%	15.10%	0.88
Disney (Walt)	16.91%	14.77%	0.98
Donnelley (R. R. & Sons)	14.46%	14.91%	0.79
Du Pont (E. I.)	11.82%	12.07%	0.88
Electronic Data Systems	15.58%	14.73%	0.91
Hershey Foods	11.83%	11.85%	0.59
Kellogg	12.58%	11.81%	0.61
Lilly (Eli)	17.24%	17.58%	0.90
Procter & Gamble	14.74%	14.46%	0.88
Rohm & Haas	11.69%	12.07%	0.99
Sysco	14.64%	14.48%	0.66
Wal-Mart Stores	14.97%	14.58%	1.02
Warner-Lambert	21.84%	22.65%	0.91
AVERAGE	**14.64%**	**14.48%**	**0.83**

COMPARABLE FIRM IDENTIFICATION CRITERIA AND METHODOLOGY

I. Introduction

Since BellSouth Telecommunications (BST) does not have equity trading independently of its parent holding company, BellSouth Corporation, there is no direct equity market evidence with which to directly measure the company's equity costs. Thus, it is necessary to identify a portfolio of firms that is comparable in equity investment risk to the target firm, which is BST. The discounted cash flow (DCF) model is applied to the portfolio's members and an average cost of equity capital is determined for the BST-comparables group. Given that this portfolio of firms is of comparable risk to BST, this average cost of equity is an objective, reasonable estimate of BST'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 the BST target 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 (1997) 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 (1997) 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 (1993-1997).

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 (1997).

C. Relationship Among Regulatory, Business, and Financial Risk

As discussed in the above direct testimony, incumbent local exchange companies (ILECs) like BST face significant regulatory risk. While this risk is important, it is cannot be measured directly. However, it is reasonable to expect that the above business and financial risk measures capture the effects of regulatory risk. In other words, business and financial risk measurements should be influenced by the regulatory environment faced by a firm. Because the business and financial risk characteristics of BST reflect its regulatory environment, the resulting sample of companies comparable in risk to BST captures its business, financial, and regulatory risk. Indeed, the influence of regulatory risk on business and financial risk measures allows the comparable risk sample to be drawn from the broadest possible sample of firms irrespective of their particular regulatory environment. In other words, it is not necessary to

limit the potential sample of companies that are comparable in risk to BST to regulated telecommunications firms because the influence of the regulatory environment is already captured in the business and financial risk measurements. Investors compare companies on the basis of expected return and risk across industry classifications and regulatory environments in making day-to-day investment decisions. Thus, the process used in the current analysis to identify a group of firms that are comparable in risk to BST relies on the common-sense logic used by investors in comparing firms.

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, 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. The sample of firms used to identify the BST-comparable portfolio removes outliers 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 377 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 the BST target. Billingsley Exhibit No. RSB-3 lists the final group of comparable firms for BST. 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	-0.4175	0.2470	-0.2834	-0.4578
Common Equity to Total Capital		0.1491	0.3462	0.6073
Operating Cash Flow to Assets Standard Deviation			0.0914	0.0257
Operating Cash Flow to Assets				0.3755

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:

$$R_t = R_f + Bi [R_m - R_f],$$

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, BST, is a wholly-owned subsidiary of BellSouth Telecommunications, there are no direct equity market price data available and therefore no 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 the target. Consequently, the beta coefficients for the portfolio used in my DCF analysis that is identified in Billingsley Exhibit No. RSB-3 is relied on to estimate the BST's cost of equity.

Importantly, the beta coefficients presented in Billingsley Exhibit No. RSB-3 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 in 1999. Contracts that are deliverable beyond 1999 specify 6% coupon, 20-year Treasury bonds. 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-6.

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-7 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 S&P 500 data used in the CAPM analysis reflect expected returns as of the most recent month for which data are available (June of 1999).

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:

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

where: C = $40 every six months for contracts deliverable in 1999 and C = $30 every six months for contracts deliverable thereafter, and 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 all contracts trading for the entire month of June in 1999.

U.S. TREASURY BOND FUTURES CONTRACT DATA

Contract Maturity	06/04/99	06/11/99	06/18/99	06/25/99	Average Price	Implied Yield
09/99	116.0625	113.8125	115.7500	113.8438	114.8672	6.76%
12/99	115.5625	113.2813	115.2500	113.3125	114.3516	6.80%
03/00	95.8125	93.6563	95.3750	93.5313	94.5938	6.59%
06/00	95.5000	93.3438	95.0625	93.2188	94.2813	6.62%
AVERAGE IMPLIED YIELD						**6.69%**

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 1999).

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 are 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 direct testimony, Aaa-rated bond yields are used as the benchmark for the BST target firm. A three-month average (April – June 1999) of the 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 1999.

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 1999. 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 1999) of the benchmark low-risk security's rate.

EXPECTED MARKET RISK PREMIUM: Aaa RATING BASE

Month	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds (%)	Market Risk Premium (%)
Oct-87	14.82	10.92	3.90
Nov-87	15.06	10.43	4.63
Dec-87	15.46	10.64	4.82
Jan-88	15.65	10.39	5.26
Feb-88	15.52	9.77	5.75
Mar-88	15.42	9.72	5.70
Apr-88	15.45	10.07	5.38
May-88	15.42	10.29	5.13
Jun-88	15.65	10.27	5.38
Jul-88	15.63	10.50	5.13
Aug-88	15.72	10.66	5.06
Sep-88	15.66	10.15	5.51
Oct-88	15.63	9.62	6.01
Nov-88	15.64	9.52	6.12
Dec-88	15.58	9.67	5.91
Jan-89	15.54	9.72	5.82
Feb-89	15.34	9.71	5.63
Mar-89	15.34	9.87	5.47
Apr-89	15.35	9.88	5.47
May-89	15.40	9.60	5.80
Jun-89	15.22	9.13	6.09
Jul-89	15.36	8.98	6.38
Aug-89	15.14	9.02	6.12
Sep-89	14.94	9.10	5.84
Oct-89	15.02	9.01	6.01
Nov-89	15.17	8.92	6.25
Dec-89	15.12	8.92	6.20
Jan-90	15.18	9.08	6.10
Feb-90	15.29	9.35	5.94
Mar-90	15.47	9.48	5.99
Apr-90	15.62	9.60	6.02
May-90	15.70	9.58	6.12
Jun-90	15.71	9.38	6.33
Jul-90	15.81	9.36	6.45
Aug-90	15.69	9.54	6.15
Sep-90	15.91	9.73	6.18

Month	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds (%)	Market Risk Premium (%)
Oct-90	16.04	9.66	6.38
Nov-90	16.23	9.43	6.80
Dec-90	16.16	9.18	6.98
Jan-91	16.17	9.17	7.00
Feb-91	16.01	8.92	7.09
Mar-91	15.85	9.04	6.81
Apr-91	15.61	8.95	6.66
May-91	15.55	8.93	6.62
Jun-91	15.59	9.10	6.49
Jul-91	15.59	9.10	6.49
Aug-91	15.62	8.81	6.81
Sep-91	15.59	8.65	6.94
Oct-91	15.52	8.57	6.95
Nov-91	15.58	8.52	7.06
Dec-91	15.65	8.38	7.27
Jan-92	15.60	8.22	7.38
Feb-92	15.71	8.30	7.41
Mar-92	15.57	8.39	7.18
Apr-92	15.53	8.36	7.17
May-92	15.54	8.32	7.22
Jun-92	15.45	8.26	7.19
Jul-92	15.44	8.12	7.32
Aug-92	15.46	8.04	7.42
Sep-92	15.57	8.04	7.53
Oct-92	15.53	8.06	7.47
Nov-92	15.56	8.11	7.45
Dec-92	15.57	8.01	7.56
Jan-93	15.29	7.94	7.35
Feb-93	15.07	7.75	7.32
Mar-93	15.00	7.64	7.36
Apr-93	14.71	7.50	7.21
May-93	14.81	7.44	7.37
Jun-93	14.73	7.37	7.36
Jul-93	14.61	7.25	7.36
Aug-93	14.59	6.94	7.65
Sep-93	14.43	6.76	7.67
Oct-93	14.50	6.75	7.75

Month	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds (%)	Market Risk Premium (%)
Nov-93	14.52	7.06	7.46
Dec-93	14.50	7.06	7.44
Jan-94	14.55	7.05	7.50
Feb-94	14.59	7.19	7.40
Mar-94	14.66	7.60	7.06
Apr-94	14.69	8.00	6.69
May-94	14.77	8.11	6.66
Jun-94	14.89	8.07	6.82
Jul-94	14.95	8.21	6.74
Aug-94	14.78	8.15	6.63
Sep-94	14.82	8.41	6.41
Oct-94	14.80	8.65	6.15
Nov-94	14.95	8.77	6.18
Dec-94	14.96	8.55	6.41
Jan-95	15.01	8.53	6.48
Feb-95	14.95	8.33	6.62
Mar-95	14.95	8.18	6.77
Apr-95	14.89	8.08	6.81
May-95	14.93	7.71	7.22
Jun-95	14.89	7.39	7.50
Jul-95	14.92	7.51	7.41
Aug-95	14.95	7.66	7.29
Sep-95	14.95	7.42	7.53
Oct-95	14.89	7.23	7.66
Nov-95	14.90	7.13	7.77
Dec-95	14.82	6.94	7.88
Jan-96	14.68	6.92	7.76
Feb-96	14.79	7.11	7.68
Mar-96	14.79	7.45	7.34
Apr-96	14.80	7.60	7.20
May-96	15.01	7.73	7.28
Jun-96	14.99	7.83	7.16
Jul-96	14.97	7.78	7.19
Aug-96	15.10	7.59	7.51
Sep-96	15.22	7.76	7.46
Oct-96	15.21	7.50	7.71
Nov-96	15.24	7.21	8.03
Dec-96	15.31	7.33	7.98

Month	Standard & Poor's 500 DCF Cost of Equity	Moody's Aaa Public Utility Bonds (%)	Market Risk Premium (%)
Jan-97	15.22	7.53	7.69
Feb-97	15.16	7.47	7.69
Mar-97	15.11	7.70	7.41
Apr-97	15.36	7.88	7.48
May-97	15.49	7.72	7.77
Jun-97	15.56	7.55	8.01
Jul-97	15.62	7.29	8.33
Aug-97	15.62	7.39	8.23
Sep-97	15.66	7.33	8.33
Oct-97	15.61	7.18	8.43
Nov-97	15.57	7.09	8.48
Dec-97	15.48	6.99	8.49
Jan-98	15.54	6.85	8.69
Feb-98	15.63	6.91	8.72
Mar-98	15.56	6.96	8.60
Apr-98	15.57	6.94	8.63
May-98	15.69	6.94	8.75
Jun-98	15.77	6.80	8.97
Jul-98	15.80	6.80	9.00
Aug-98	16.14	6.75	9.39
Sep-98	16.16	6.66	9.50
Oct-98	16.10	6.63	9.47
Nov-98	16.39	6.59	9.80
Dec-98	16.60	6.43	10.17
Jan-99	16.99	6.41	10.58
Feb-99	17.06	6.56	10.50
Mar-99	17.11	6.78	10.33
Apr-99	17.19	6.80	10.39
May-99	17.10	7.09	10.01
Jun-99	16.95	7.37	9.58
AVERAGE	**15.40**	**8.23**	**7.17***

* 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

Month	Moody's Aaa Public Utility Bond (%)	30-Year U.S. Treasury Bond (%)	Aaa/U.S. Treasury Bond Spread (%)
Oct-87	10.92	9.61	1.31
Nov-87	10.43	8.95	1.48
Dec-87	10.64	9.12	1.52
Jan-88	10.39	8.83	1.56
Feb-88	9.77	8.43	1.34
Mar-88	9.72	8.63	1.09
Apr-88	10.07	8.95	1.12
May-88	10.29	9.23	1.06
Jun-88	10.27	9.00	1.27
Jul-88	10.50	9.14	1.36
Aug-88	10.66	9.32	1.34
Sep-88	10.15	9.06	1.09
Oct-88	9.62	8.89	0.73
Nov-88	9.52	9.02	0.50
Dec-88	9.67	9.01	0.66
Jan-89	9.72	8.93	0.79
Feb-89	9.71	9.01	0.70
Mar-89	9.87	9.17	0.70
Apr-89	9.88	9.03	0.85
May-89	9.60	8.83	0.77
Jun-89	9.13	8.27	0.86
Jul-89	8.98	8.08	0.90
Aug-89	9.02	8.12	0.90
Sep-89	9.10	8.15	0.95
Oct-89	9.01	8.00	1.01
Nov-89	8.92	7.90	1.02
Dec-89	8.92	7.90	1.02
Jan-90	9.08	8.26	0.82
Feb-90	9.35	8.50	0.85
Mar-90	9.48	8.56	0.92
Apr-90	9.60	8.76	0.84
May-90	9.58	8.73	0.85
Jun-90	9.38	8.46	0.92
Jul-90	9.36	8.50	0.86
Aug-90	9.54	8.86	0.68

Month	Moody's Aaa Public Utility Bond (%)	30-Year U.S. Treasury Bond (%)	Aaa/U.S. Treasury Bond Spread (%)
Sep-90	9.73	9.03	0.70
Oct-90	9.66	8.86	0.80
Nov-90	9.43	8.54	0.89
Dec-90	9.18	8.24	0.94
Jan-91	9.17	8.27	0.90
Feb-91	8.92	8.03	0.89
Mar-91	9.04	8.29	0.75
Apr-91	8.95	8.21	0.74
May-91	8.93	8.27	0.66
Jun-91	9.10	8.47	0.63
Jul-91	9.10	8.45	0.65
Aug-91	8.81	8.14	0.67
Sep-91	8.65	7.95	0.70
Oct-91	8.57	7.93	0.64
Nov-91	8.52	7.92	0.60
Dec-91	8.38	7.70	0.68
Jan-92	8.22	7.58	0.64
Feb-92	8.30	7.85	0.45
Mar-92	8.39	7.97	0.42
Apr-92	8.36	7.96	0.40
May-92	8.32	7.89	0.43
Jun-92	8.26	7.84	0.42
Jul-92	8.12	7.60	0.52
Aug-92	8.04	7.39	0.65
Sep-92	8.04	7.34	0.70
Oct-92	8.06	7.53	0.53
Nov-92	8.11	7.61	0.50
Dec-92	8.01	7.44	0.57
Jan-93	7.94	7.34	0.60
Feb-93	7.75	7.09	0.66
Mar-93	7.64	6.82	0.82
Apr-93	7.50	6.85	0.65
May-93	7.44	6.92	0.52
Jun-93	7.37	6.81	0.56
Jul-93	7.25	6.63	0.62
Aug-93	6.94	6.32	0.62
Sep-93	6.76	6.00	0.76
Oct-93	6.75	5.94	0.81
Nov-93	7.06	6.21	0.85

Month	Moody's Aaa Public Utility Bond (%)	30-Year U.S. Treasury Bond (%)	Aaa/U.S. Treasury Bond Spread (%)
Dec-93	7.06	6.25	0.81
Jan-94	7.05	6.29	0.76
Feb-94	7.19	6.49	0.70
Mar-94	7.60	6.91	0.69
Apr-94	8.00	7.27	0.73
May-94	8.11	7.41	0.70
Jun-94	8.07	7.40	0.67
Jul-94	8.21	7.58	0.63
Aug-94	8.15	7.49	0.66
Sep-94	8.41	7.71	0.70
Oct-94	8.65	7.94	0.71
Nov-94	8.77	8.08	0.69
Dec-94	8.55	7.87	0.68
Jan-95	8.53	7.85	0.68
Feb-95	8.33	7.61	0.72
Mar-95	8.18	7.45	0.73
Apr-95	8.08	7.36	0.72
May-95	7.71	6.95	0.76
Jun-95	7.39	6.57	0.82
Jul-95	7.51	6.72	0.79
Aug-95	7.66	6.86	0.80
Sep-95	7.42	6.55	0.87
Oct-95	7.23	6.37	0.86
Nov-95	7.13	6.26	0.87
Dec-95	6.94	6.06	0.88
Jan-96	6.92	6.05	0.87
Feb-96	7.11	6.24	0.87
Mar-96	7.45	6.60	0.85
Apr-96	7.60	6.79	0.81
May-96	7.73	6.93	0.80
Jun-96	7.83	7.06	0.77
Jul-96	7.78	7.03	0.75
Aug-96	7.59	6.84	0.75
Sep-96	7.76	7.03	0.73
Oct-96	7.50	6.81	0.69
Nov-96	7.21	6.48	0.73
Dec-96	7.33	6.55	0.78
Jan-97	7.53	6.83	0.70
Feb-97	7.47	6.69	0.78

Month	Moody's Aaa Public Utility Bond (%)	30-Year U.S. Treasury Bond (%)	Aaa/U.S. Treasury Bond Spread (%)
Mar-97	7.70	6.93	0.77
Apr-97	7.88	7.09	0.79
May-97	7.72	6.94	0.78
Jun-97	7.55	6.77	0.78
Jul-97	7.29	6.51	0.78
Aug-97	7.39	6.58	0.81
Sep-97	7.33	6.50	0.83
Oct-97	7.18	6.33	0.85
Nov-97	7.09	6.11	0.98
Dec-97	6.99	5.99	1.00
Jan-98	6.85	5.81	1.04
Feb-98	6.91	5.89	1.02
Mar-98	6.96	5.95	1.01
Apr-98	6.94	5.92	1.02
May-98	6.94	5.93	1.01
Jun-98	6.80	5.70	1.10
Jul-98	6.80	5.68	1.12
Aug-98	6.75	5.54	1.21
Sep-98	6.66	5.20	1.46
Oct-98	6.63	5.01	1.62
Nov-98	6.59	5.25	1.34
Dec-98	6.43	5.06	1.37
Jan-99	6.41	5.16	1.25
Feb-99	6.56	5.37	1.19
Mar-99	6.78	5.58	1.20
Apr-99	6.80	5.55	1.25
May-99	7.09	5.81	1.28
Jun-99	7.37	6.04	1.33
AVERAGE:	**8.23**	**7.37**	**0.85***

Sources: *Moody's Bond Record.*
Board of Governors of the Federal Reserve, various statistical releases.

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

Market Value Capital Structure of Portfolio of Companies Comparable in Risk to BellSouth Telecommunications
2nd Quarter 1999[1]

COMPANY	MARKET VALUE OF COMMON EQUITY ($M)	BOOK VALUE OF TOTAL DEBT ($M)	BOOK VALUE OF PREFERRED EQUITY ($M)	DEBT / TOTAL CAPITAL[2]	EQUITY / TOTAL CAPITAL
Abbott Labs	74,287.09	3,098.77	0.00	0.0400	0.9600
Albertsons	14,987.52	1,702.87	0.00	0.1020	0.8980
Anheuser Busch	31,276.88	4,718.60	0.00	0.1311	0.8689
Avery Dennison	4,507.65	537.20	0.00	0.1065	0.8935
Becton Dickinson	10,192.54	1,150.34	24.50	0.1034	0.8966
Campbell Soup	24,192.00	2,570.00	0.00	0.0960	0.9040
Cinncinnati Bell	5,157.01	553.00	0.00	0.0968	0.9032
Clorox	9,833.21	1,086.39	0.00	0.0995	0.9005
Disney (Walt)	52,551.63	11,685.00	0.00	0.1819	0.8181
Donnelley (R. R. & Sons)	5,885.05	1,058.98	0.00	0.1525	0.8475
Du Pont (E. I.)	59,758.81	11,124.00	237.00	0.1597	0.8403
Electronic Data Systems	24,748.91	1,232.00	0.00	0.0474	0.9526
Hershey Foods	8,902.03	1,282.10	0.00	0.1259	0.8741
Kellogg	13,820.52	2,236.00	0.00	0.1393	0.8607
Lilly (Eli)	97,442.99	2,366.90	0.00	0.0237	0.9763
Procter & Gamble	121,793.21	8,046.00	205.00	0.0634	0.9366
Rohm & Haas	5,048.56	581.00	73.00	0.1147	0.8853
Sysco	8,584.61	1,024.27	0.00	0.1066	0.8934
Wal-Mart Stores	191,264.00	10,613.00	0.00	0.0526	0.9474

[1] Based on the average of the closing common stock prices for the months of April – June of 1999 and December 31, 1998 financial statements.
[2] Debt is defined as the book value of total debt plus the book value of preferred equity.

COMPANY	MARKET VALUE OF COMMON EQUITY ($M)	BOOK VALUE OF TOTAL DEBT ($M)	BOOK VALUE OF PREFERRED EQUITY ($M)	DEBT / TOTAL CAPITAL[2]	EQUITY / TOTAL CAPITAL
Warner-Lambert	61,770.85	1,516.60	0.00	0.0240	0.9760
Average[3]	**41,300.25**	**3,409.15**	**26.97**	**0.0984**	**0.9016**

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

RANDALL S. BILLINGSLEY

August 1999

BUSINESS ADDRESSES

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Virginia Polytechnic Institute
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Blacksburg, VA 24061-0221
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APPOINTMENTS

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

1993: Vice President
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).

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"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).

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"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).

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"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).

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"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).

Cases

"Merck & Company: A Comprehensive Equity Valuation Analysis," Charlottesville, VA: The Association for Investment Management and Research, (Author listing: R. S. Billingsley), 1996.

Adopted by the Candidate Curriculum Committee of the CFA Program: 1997, 1998, and 1999.

"Equity Securities Analysis Case Study: Merck & Company," *The CFA Candidate Readings II*, Charlottesville, VA: The Association for Investment Management and Research, (Author listing: R. S. Billingsley), 1994.

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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.

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"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.)

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"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

"Risk Management," Boston, MA, March 1999. Conference Moderator: B. Putnam.

"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

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

Sprint

Union Bank of Switzerland and UBS AG, Zürich and Basel

United States Telephone Association

Expert Witness Regulatory Testimony

Company	Docket No.	Year
United State Telephone Association et. al.	FCC 98-166	1999
BellSouth Telecommunications and Sprint-Florida (Florida)	FLPSC 980696	1998
BellSouth Telecommunications (Alabama)	ALPSC 25980	1998
BellSouth Telecommunications (Florida)	FLPSC 980696-TP	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.