

1 Bellsouth Telecommunications Inc.

ORIGINAL

2 BEFORE THE

3 FLORIDA PUBLIC SERVICE COMMISSION

4 DOCKET NO. 990649-TP

5 REBUTTAL TESTIMONY OF

6 DR. RANDALL S. BILLINGSLEY

7 JUNE 29, 2000

8
9 I. INTRODUCTION

10
11 Q. Please state your name, occupation, and business address.

12 A. My name is Randall S. Billingsley. I am a finance professor at Virginia Polytechnic
13 Institute and State University. I also act as a financial consultant in the areas of cost of
14 capital analysis, financial security analysis, and valuation. My business address is:
15 Department of Finance, Pamplin College of Business, Virginia Polytechnic Institute and
16 State University, Blacksburg, Virginia 24061-0221.

17
18 This rebuttal testimony presents my independent professional opinions and is not
19 presented by me as a representative of Virginia Polytechnic Institute and State
20 University.

21
22 Q. Have you previously submitted testimony in this proceeding on behalf of BellSouth
23 Telecommunications Corporation (BST)?

24 A. Yes.

1 **Q. What is the purpose of your testimony in this proceeding?**

2 A. My purpose is to rebut Mr. John I. Hirshleifer's direct testimony on behalf of AT&T
3 Communications of the Southern States, Inc. (AT&T) and MCI WorldCom, Inc. (MCI
4 WorldCom). He erroneously estimates the cost of equity capital for BST to be only 8.62%
5 to 9.98% (Direct Testimony, p. 31, lines 14 - 15) and BST's overall average cost of capital
6 to be in the range of only 8.12% to 8.96% (Direct Testimony, p. 36, lines 21 - 24).

7

8 My rebuttal explains the errors and inconsistencies in Mr. Hirshleifer's discounted cash flow
9 (DCF) and capital asset pricing model (CAPM) analyses of BST's costs of equity capital, his
10 cost of debt estimation, his recommended capital structure, and his misunderstanding of the
11 nature and significance of the riskiness of investing in the telecommunications industry. His
12 errors in estimating BST's cost of equity using the DCF approach include: 1) use of a highly
13 subjective three-stage model that is not representative of the investor's perspective; 2) use
14 of growth rate forecasts that do not reflect consensus investment community expectations;
15 3) inappropriate and unsupported reliance on BellSouth, other regional Bell holding
16 companies (RBHCs), and selected independent telephone companies as comparable in risk
17 to BST; 4) failure to adjust for flotation costs, and 5) failure to use the appropriate form of
18 the DCF model that recognizes the quarterly payment of dividends.

19

20 Mr. Hirshleifer's CAPM errors in calculating BST's cost of equity include: 1) significant
21 underestimation of the equity risk premium in part due to the use of his flawed three-stage
22 model, and 2) arbitrary exclusion of all members of the Standard and Poor's Composite 500
23 Index (S&P 500) from capital cost analysis that do not have a dividend yield of at least
24 1.5%. These errors explain why his CAPM estimate of BST's cost of equity is so seriously
25 underestimated.

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My rebuttal also shows that Mr. Hirshleifer's cost of debt analyses are flawed by his reliance on dated market information from October of 1999. He also incorrectly includes debt in his analysis that was not issued to finance long-term telephone network assets. Moreover, Mr. Hirshleifer places too much reliance on book values in determining his recommended capital structure. Finally, I show that Mr. Hirshleifer's views on the risks that are relevant to assessing capital costs in the telecommunications industry are confused and inconsistent. In the same vein, I show that his argument that the business of leasing network elements is of relatively low risk is erroneous as well as unsupported.

I also rebut the unsupported cost of capital assumptions made in the rebuttal testimonies of Mr. William J. Barta, filing on behalf of the Florida Cable Telecommunications Association (FCTA) and Ms. Carol Bentley, filing on behalf of Supra Telecommunications and Information Systems, Inc. (Supra).

**II. REBUTTAL OF MR. HIRSHLEIFER'S DIRECT TESTIMONY ON
BEHALF OF AT&T AND MCI WORLDCOM**

A. ERRORS IN DCF COST OF EQUITY ANALYSIS

1. FAILURE TO REFLECT INVESTORS' PERSPECTIVE

Q. Is Mr. Hirshleifer's use of a three-stage DCF model representative of investors' valuation perspective and is it a common approach in regulatory proceedings?

A. No. Mr. Hirshleifer's three-stage model is complex, subjective, and uses growth rate forecasts that reflect his own opinions rather than those of the investment community. It is common practice in the investment community to use the single-stage version of the DCF

1 model in estimating equity capital costs. Due to these limitations, three-stage approaches are
2 not commonly used in regulatory proceedings. Mr. Hirshleifer's results do not provide
3 insight into BST's current or forward-looking cost of equity capital.

4
5 Mr. Hirshleifer's three-stage approach makes use of firm-specific investment community
6 consensus growth rate forecasts, as measured by Institutional Brokers Estimation Service
7 (IBES), for only the first stage (five years) of his analysis. After this five-year period, he
8 assumes a second stage of 15 years during which the growth rate falls from the initial IBES
9 growth rate to a projected growth rate for the overall U.S. economy by the end of the 20th
10 year. After that time, Mr. Hirshleifer assumes that the growth rate remains at that projected
11 rate for the economy indefinitely (Direct Testimony, p. 14, line 1 - p. 16, line 17).

12
13 Mr. Hirshleifer's analysis misses the mark in the current proceeding. The goal here is to
14 estimate BST's cost of meeting their equity investors' return requirements in market terms.
15 Thus, the analysis should reflect the investment analysis process and expectations of
16 investors. Mr. Hirshleifer's analysis of BST's cost of equity departs from investors'
17 perspective by substituting his expectations for those of investors for two out of the three
18 stages in his analysis.

19
20 **Q. How relevant is Mr. Hirshleifer's criticism of the constant growth DCF model on the**
21 **basis that telecommunications firms' projected growth rates are not sustainable "into**
22 **perpetuity?"**

23 **A.** Mr. Hirshleifer's criticism of the constant growth version of the DCF model is practically
24 irrelevant and misguided in the current context. He observes that:

25 ... modern telephone companies are composed of a variety of businesses, some of

1 which - such as wireless telephony and high-speed internet access - are expected to
2 grow at rates of 25 percent or more in the short run. Such high growth rates are
3 clearly not sustainable into perpetuity, so that the simple constant growth model
4 cannot be applied ... (Direct Testimony, p. 10, lines 15 – 21).

5
6 Mr. Hirshleifer's unsupported apparent concern is that "telephone companies are composed
7 of a variety of businesses" that cannot be captured by a single growth rate. However,
8 investors routinely price securities for firms composed of numerous business units by
9 evaluating the net contribution of each unit to the overall growth of the firm.

10
11 Mr. Hirshleifer's rejection of the single-stage, constant growth DCF model because he
12 assumes that telephone company growth rates are "not sustainable into perpetuity" does not
13 adequately relate valuation theory to practice in light of realistic investor concerns. While
14 the constant growth DCF model does theoretically assume a constant growth rate for
15 perpetuity, there is no evidence that investors practically consider perpetuity in their
16 valuation decisions. Simply put, the present value of the cash flows projected from an
17 investment beyond the foreseeable future is so small that it has little practical effect on
18 investors' decisions. While it is very difficult to forecast the distant future, it is also not
19 practically relevant to attempt to do so in a present value sense.

20
21 Mr. Hirshleifer breaks the single-stage model into three separate stages of growth stretching
22 out over 20 years but only uses investment community growth forecasts for the first five
23 years. However, the benefit of subjectively projecting growth for 15 years beyond the first
24 5-year stage is relatively unimportant in an overall present value sense and Mr. Hirshleifer's
25 criticism of the constant growth DCF model is misguided. His decision to replace it with a

1 three-stage DCF model only introduces a more subjective, complicated approach that
2 substitutes his growth forecasts for those of the investors who are actually putting money
3 into stocks.

4
5 **Q. What support does Mr. Hirshleifer offer for limiting the long-term growth of**
6 **telecommunications firms to the growth rate of the U.S. economy?**

7 A. He offers only his opinion that “[a] perpetual growth rate that exceeded the growth rate of
8 the economy would illogically imply that eventually the whole economy would be comprised
9 of nothing but telephone companies” (Direct Testimony, p. 14, lines 7 - 10). Mr.
10 Hirshleifer’s observation has no practical significance in assessing the usefulness of the
11 constant growth DCF model in the current proceeding. Investors could easily believe that
12 telecommunications firms’ consensus growth rate projections are sustainable beyond the
13 next five years to the foreseeable future but less than forever.

14
15 **Q. Would you provide an example that shows how unrealistic Mr. Hirshleifer’s**
16 **constraint on the long-term growth rate is?**

17 A. Yes. Consider that the IBES and Zacks current (May 2000) consensus five-year growth rate
18 forecasts for MCI WorldCom are 28.78% and 29.23%, respectively. Mr. Hirshleifer would
19 presumably argue that these rates are unsustainable beyond five years and that the use of
20 either rate for a longer period of time would imply that MCI WorldCom would eventually
21 dominate the U.S. economy. However, according to *Value Line*’s most recent report on
22 MCI WorldCom (April 7, 2000), the company’s average earnings growth rate over the past
23 ten years has been 35%, which is in excess of the Zacks or IBES consensus growth rate for
24 twice the five-year time period he considers in his argument.

25

1 From a practical perspective, I believe that most investors would relate these projections to
2 the past performance of MCI WorldCom and thereby use them to assess the company's
3 foreseeable future. It does not seem reasonable that such investors would be tempted to
4 conclude that "eventually the whole economy would be comprised of nothing but telephone
5 companies" in general or MCI WorldCom in particular.

6
7 The alleged benefits of Mr. Hirshleifer's three-stage model over a single-stage model are
8 offset by the need to make so many subjective estimates that are not supported by verifiable
9 market data and consensus investor expectations. For example, he offers no evidence to
10 support his use of a second stage that is 15 years long. Why not 10, 25, or 30 years? His
11 three-stage model is unnecessarily subjective, unrepresentative of investors' growth rate
12 expectations, contrary to investors' realistic concerns, and particularly useless in the
13 dynamic telecommunications industry. Mr. Hirshleifer's model is not informative concerning
14 BST's market-based capital costs.

15
16 **Q. In attempting to justify his use of a three-stage rather than a constant growth version**
17 **of the DCF model, Mr. Hirshleifer cites a book by Professor Aswath Damodaran as a**
18 **key reference (see pages 12-13 and footnotes 10 and 12 of his testimony). Is Mr.**
19 **Hirshleifer's decision to use a three-stage version of the model consistent with**
20 **Professor Damodaran's stated conditions under which the model is appropriate?**

21 **A. No. Mr. Hirshleifer's use of the three-stage model is inconsistent with the circumstances**
22 **described by Professor Damodaran for the best use of the model. Damodaran indicates that**
23 **"... this may be the more appropriate model to use for a firm whose earnings are growing at**
24 **very high rates ..."** (**Damodaran On Valuation**, John Wiley & Sons, 1994, p. 119).
25 **Damodaran considers a growth rate to be "very high" if it exceeds 25%.**

1
2 Attachment JH-4 shows that none of the companies to which Mr. Hirshleifer applies his
3 three-stage DCF model have growth rates over 25%. Thus, his decision to use this form of
4 the model is inconsistent with the conditions for its appropriate use described in the
5 Damodaran reference cited in his testimony.

6
7 **Q. Does this reference cited by Mr. Hirshleifer discuss any limitations in using the three-**
8 **stage version of the DCF model?**

9 **A. Yes.** In comparing the three-stage model to the other versions of the DCF model,
10 Damodaran observes that:

11 ... it requires a much larger number of inputs: year-specific payout ratios, growth
12 rates, and betas. For firms in which there is substantial noise in the estimation process,
13 the errors in these inputs can overwhelm any benefits that accrue from the additional
14 flexibility in the model (**Damodaran on Valuation**, John Wiley & Sons, 1994, pp.
15 118 -119).

16
17 Professor Damodaran's concern over the effect of "substantial noise" is particularly relevant
18 to Mr. Hirshleifer's analysis. He applies a three-stage DCF model to RBHCs, GTE, and
19 selected independent telephone holding companies. The dramatic effects of deregulation,
20 increasing competition, the implementation of the Telecommunications Act of 1996, and
21 industry consolidation certainly introduce much "noise" into the estimation of such firms'
22 equity costs. Thus, Mr. Hirshleifer's DCF model is particularly inappropriate for estimating
23 the cost of equity in proceedings such as this one. My methodological approach is more
24 reliable because it uses a group of firms that is demonstrably comparable in risk to BST.
25 This group of firms, which captures comparable firms across industry lines, is not seriously

1 affected by such "noise." Further, my approach does not require the highly subjective inputs
2 that Mr. Hirshleifer's three-stage model does.

3
4 **Q. Mr. Hirshleifer alleges that his version of the three-stage DCF model is different from**
5 **that presented by Professor Damodaran but does not explain the nature of the**
6 **difference or why it is supposedly significant. Would you explain Mr. Hirshleifer's**
7 **statement and how it relates to the sections of Professor Damodaran's book**
8 **concerning the three-stage model?**

9 **A. Yes. Mr. Hirshleifer notes in passing that what Professor Damodaran**

10 ... calls the "three-stage model" is different from the model I employ and is not
11 comparable. Damodaran's "H model" is more comparable to the model that I use.
12 (Direct Testimony, footnote 12.)

13 As noted above, Mr. Hirshleifer describes his three-stage model as follows:

14 The first stage lasts five years ... The second stage is assumed to last 15 years. During
15 this stage the growth rate falls from the high level of the first five years to the growth
16 rate of the U.S. economy by the end of year 20. From the twentieth year onward the
17 growth rate is set equal to the growth rate for the economy because rates greater than
18 that cannot be sustained into perpetuity. (Direct Testimony, p. 14, lines 1 - 7.)

19 Professor Damodaran's description of the three-stage model shows that he and Mr.
20 Hirshleifer use the same basic approach:

21 The three-stage dividend-discount model combines the features of the two-stage
22 model and the H model. It allows for an initial period of high growth, a transitional
23 period in which growth declines, and a final stable-growth phase (Damodaran on
24 Valuation, John Wiley & Sons, 1994, pp. 117).

25 For further perspective, consider Professor Damodaran's description of the H model:

1 The model is based on the assumption that the earnings growth rate starts at a high
2 initial rate (g_a) and declines linearly over the extraordinary-growth period (which is
3 assumed to last 2H periods) to a stable growth rate (g_n) (**Damodaran on Valuation,**
4 **John Wiley & Sons, 1994, pp. 115).**

5
6 It consequently appears that Mr. Hirshleifer does not realize that the three-stage model
7 described by Professor Damodaran closely fits his described model. This further draws into
8 question the overall reliability of his cost of capital analysis of BST.

9
10 **2. INCORRECT RELIANCE ON BELL SOUTH, OTHER RBHCS,**
11 **AND SELECTED INDEPENDENT TELEPHONE COMPANIES AS**
12 **COMPARABLE IN RISK TO BST**

13
14 **Q. What justification does Mr. Hirshleifer give for applying the DCF and the CAPM**
15 **approaches to BellSouth, other RBHCs, and selected independent telephone**
16 **companies as firms comparable in risk to BST?**

17 **A. Mr. Hirshleifer offers no justification for the use of the supposedly comparable firms listed in**
18 **Attachment JH-2. He only observes in passing that they are “selected as likely comparables”**
19 **(Direct Testimony, p. 15, lines 23 - 25) and that they “... were derived from the list of**
20 **telephone operating companies in Standard and Poor’s Industry Survey” (Direct Testimony,**
21 **p. 6, lines 19 - 20). Thus, Mr. Hirshleifer *assumes* that BST is comparable in risk to**
22 **BellSouth, other RBHCs, and selected independent telephone companies. He does not**
23 ***demonstrate* comparability. In fact, nothing suggests that Mr. Hirshleifer has conducted any**
24 **systematic, empirical analysis using objective screening criteria to identify firms comparable**
25 **in risk to BST.**

1
2 In contrast to Mr. Hirshleifer, in both my direct testimony (Billingsley Exhibit No. RSB-3)
3 and in my updated analysis (Billingsley Exhibit No. RSB-13) I identify comparable firms by
4 measuring risk and statistically determining risk comparability. As discussed in my direct
5 testimony (Billingsley Exhibit No. RSB-4), comparable firms are identified using a five-
6 variable model rather than by arbitrarily choosing firms as allegedly comparable to BST only
7 because they are in the same industry like Mr. Hirshleifer. My analysis shows that neither the
8 RBHCs, as a group, nor the independent telephone companies are comparable in risk to
9 BST.

10
11 **3. FAILURE TO ADJUST FOR FLOTATION COSTS**

12
13 **Q. Do you agree with Mr. Hirshleifer's opinion that it is appropriate to ignore the impact**
14 **of flotation costs in estimating the costs of equity capital for BST?**

15 **A. No. Mr. Hirshleifer attempts to justify ignoring flotation costs "... [b]ecause the price of the**
16 **companies' stock has accounted for flotation costs already ..." (Direct Testimony, p. 45,**
17 **lines 14 - 18). While his argument implicitly assumes that flotation costs materially affect**
18 **equity costs, he presents no evidence that the market has made such an adjustment. Mr.**
19 **Hirshleifer's failure to adjust for flotation costs biases his cost of equity estimates**
20 **downward.**

21
22 **4. FAILURE TO ADJUST FOR QUARTERLY DIVIDEND**
23 **PAYMENTS**

24
25 **Q. Is Mr. Hirshleifer's use of the annual form of the DCF model consistent with the**

1 **investor's perspective on valuing equity securities?**

2 A. No. Mr. Hirshleifer uses the annual form of the DCF model even though all of the members
3 of his sample of supposedly comparable firms pay dividends on a quarterly basis. The annual
4 form of the DCF model does not accurately portray the investor's perspective, and
5 consequently, significantly underestimates BST's cost of equity capital.

6
7 Consider the example of how the returns on an Individual Retirement Account (IRA) differ
8 when compounded quarterly rather than annually. The opportunity to earn a return quarterly
9 rather than annually has a significant effect on the value of an IRA to an investor. The same
10 economic principle is at work when investors value the opportunity to receive dividends on
11 a stock quarterly rather than annually.

12
13 Suppose that you invest \$2,000 in an IRA account today and expect to earn 8% per year. If
14 your money earns the 8% compounded annually, you will have about \$13,697 before taxes
15 in 25 years. Alternatively, if your money earns the 8% compounded quarterly, you will have
16 about \$14,489 before taxes in 25 years. Thus, your IRA will be worth about \$792 more if
17 your returns are compounded quarterly rather than annually. This \$792 difference is present
18 because you earn an effective rate of about 8.24% under quarterly compounding rather than
19 just 8% annually. Obviously, investors would prefer to have \$792 more in 25 years and
20 would consequently prefer that their 8% return be compounded quarterly rather than
21 annually.

22
23 When Mr. Hirshleifer argues that it is unnecessary in cost of capital analysis to consider that
24 dividends are received by investors quarterly, he essentially argues that investors are
25 indifferent to whether dividends are paid annually or quarterly. Similarly, Mr. Hirshleifer

1 essentially argues that the IRA investor in the above example would not care whether he or
2 she could earn an extra \$792. Yet the common sense of the investor's perspective in both
3 cases convincingly demonstrates that if quarterly compounding is not considered in cost of
4 capital analysis, the implied rate of return is underestimated.

5
6 **Q. Would you provide an everyday analogy that concretely shows how Mr. Hirshleifer's**
7 **failure to adjust his cost of equity estimates in light of the quarterly payment of**
8 **dividends is misguided?**

9 A. Yes. Consider whether Mr. Hirshleifer or his firm would likely prefer to be paid by AT&T
10 and MCI WorldCom for his cost of capital consulting work just once a year or at the
11 completion of each case. While it would be inappropriate for me to speculate on his personal
12 preferences, it is reasonable to believe that Mr. Hirshleifer or his firm might price the
13 services that he provides to AT&T and MCI WorldCom differently if he were paid only at
14 the end of each year. This is because being paid only at the end of the year would adversely
15 affect his ability to invest or otherwise use his earnings. By analogy, investors derive the
16 market prices of stocks in light of their ability to reinvest dividends quarterly rather than just
17 annually. Investors' implied return requirements consequently reflect the impact of quarterly
18 rather than annual dividend payments in a manner that is analogous to how Mr. Hirshleifer
19 might prefer to be paid more frequently than annually for the services that he provides to
20 AT&T and MCI WorldCom.

21
22 **Q. What updated cost of equity capital do you estimate for BST using the DCF model**
23 **presented in your previously filed direct testimony?**

24 A. Billingsley Exhibit No. RSB-13 lists the updated portfolio of 20 firms that are comparable in
25 risk to BST and reports the average cost of equity for the portfolio using both IBES and

1 Zacks growth rate forecasts. Billingsley Exhibit No. RSB-12 discusses the criteria used to
2 identify firms comparable in risk to BST. The evidence indicates that the cost of equity for
3 BST is about 15.50% under both approaches. My analysis consequently shows that Mr.
4 Hirshleifer's comparable estimate of only 8.62% greatly underestimates BST's cost of
5 equity capital (Direct Testimony, p. 16, line 24 – p. 17, line 6).

6
7 **B. ERRORS IN CAPM COST OF EQUITY ANALYSIS**

8
9 **Q. Is Mr. Hirshleifer's estimate of the expected return on the equity market using the**
10 **three-stage DCF model economically meaningful?**

11 A. No. It is not economically meaningful. Mr. Hirshleifer uses his flawed three-stage DCF
12 model to estimate an expected return on the overall equity market, as measured using
13 selected members of the S&P 500 index, of only 9.55% (see Attachment JH-6). As
14 discussed below, I provide evidence that the expected return on the market is between
15 15.02% and 15.41%. Mr. Hirshleifer's use on an artificially low estimate of the expected
16 return on the overall equity market partially explains why his CAPM-based estimate of
17 BST's cost of equity is so low.

18
19 **Q. What updated cost of equity capital do you estimate for BST under the CAPM**
20 **approach?**

21 A. Using May, 2000 data, I estimate an updated risk-free rate of return of 6.67% (see
22 Billingsley Exhibit No. RSB-14), an average beta of 0.78 for firms comparable in risk to
23 BST (see Billingsley Exhibit No. RSB-13), and IBES and Zacks growth rate estimates that
24 imply an expected return on the S&P 500 of 18.96% and 18.89%, respectively. These
25 objective, market-determined data indicate that BST's cost of equity capital is 16.26% using

1 the IBES growth rate and 16.20% using the Zacks growth rate forecast. In contrast, Mr.
2 Hirshleifer incorrectly estimates BST's cost of equity under the CAPM to be only between
3 9.85% and 10.10% (Direct Testimony, p. 30, lines 15 – 22).

4
5 **Q. What effect does Mr. Hirshleifer's exclusion of all members of the S&P 500 not paying**
6 **a dividend yield of at least 1.5% (p. 26, lines 2 - 4 of Mr. Hirshleifer's testimony) have**
7 **on his estimated market return of only 9.55%?**

8 A. Mr. Hirshleifer's arbitrary screening criterion biases downward his estimated expected
9 return on the market and thereby causes all of his CAPM calculations to underestimate
10 equity capital costs. This partially explains why his analysis underestimates BST's overall
11 capital cost as well. Indeed, the arbitrariness of this criterion is also evidenced by Mr.
12 Hirshleifer's change from excluding all members of the S&P 500 not paying a dividend yield
13 of 2% in his direct testimony filed before the Commission in Docket No.980696-TP to his
14 most current practice of excluding all such members not paying a dividend yield of 1.5%.

15
16 Consider the type of firms that pay a dividend yield of less than 1.5%. Such firms typically
17 pay lower dividend yields because they reinvest above-average amounts in their businesses.
18 Thus, lower dividend yields are associated with higher growth companies that have higher
19 equity capital costs. Mr. Hirshleifer's screening criterion consequently excludes those
20 members of the S&P 500 likely to have the highest capital costs and thereby underestimates
21 the expected returns composing the market proxy. His CAPM-based equity costs use this
22 biased measure of equity market expectations and consequently produce unrealistically low
23 capital cost estimates.

24
25 **Q. What does your updated analysis show concerning the current level of equity costs in**

1 **the overall equity market?**

2 A. Billingsley Exhibit No. RSB-15 shows that the average expected risk premium relative to
3 Aaa-rated public utility bonds from 1987 to May of 2000 is 7.42%. The average yield on
4 Aaa-rated public utility debt over the most recent three months (March to May of 2000) is
5 7.99%. Thus, the average risk premium of 7.42% is added to the recent average Aaa-public
6 utility bond return of 7.99% to yield an expected cost of equity return on the S&P 500 of
7 15.41%.

8
9 In summary, risk premium analysis using the Aaa-rated public utility bond return reference
10 point indicates that the expected return on the broad equity market, as measured by the S&P
11 500, is currently about 15.41%. This shows that Mr. Hirshleifer's estimate of only 9.55% is
12 seriously biased downward.

13
14 **Q. What specific adjustment do you make to update your risk premium analysis in light**
15 **of the evidence cited in your previously filed direct testimony on the inverse**
16 **relationship between the risk premium and the level of interest rates?**

17 A. As noted in my direct testimony, during the period of the Harris and Marston study (R. S.
18 Harris and F.C. Marston, "Estimating Shareholder Risk Premia Using Analysts' Growth
19 Forecasts," *Financial Management*, Vol. 21, No. 2, 1992, pp. 63-70), the average risk
20 premium was 6.47% and the average yield on long-term U.S. Treasury bonds was 9.84%.
21 The study finds evidence that the equity market risk premium is expected to change an
22 average of -.651 of changes in the level of long-term Treasury bond yields. Given that the
23 current average yield on 30-year Treasury bonds is 6.15% (May of 2000), the appropriate
24 current risk premium is 8.87%. This is calculated by multiplying the 3.69% decline in rates
25 since the time period of Harris and Marston's study by -.651 and adding back the average

1 risk premium of 6.47% to the indicated change of 2.40%. This alternative approach
2 consequently provides an expected return on the S&P 500 of 15.02%, which is the current
3 average level of 30-year Treasury yields of 6.15% added to the adjusted risk premium of
4 8.87%.

5
6 The above risk premium analyses indicate that the current expected return on the overall
7 equity market is between 15.02% and 15.41%, which differs significantly from Mr.
8 Hirshleifer's unrealistically low estimate of only 9.55% (Direct Testimony, p. 26, lines 12 –
9 13 and Exhibit JH-6). This corroborates the reasonableness of my above DCF- and CAPM-
10 based cost of equity estimates for BST and further indicates the inappropriateness of Mr.
11 Hirshleifer's cost of capital findings.

12
13 **Q. What is your conclusion with regard to BST's equity capital costs in light of the most**
14 **recent capital market data?**

15 **A.** Based on my updated cost of equity analyses, I believe that BST's cost of equity is in the
16 range of 15.50% to 16.26%. Mr. Hirshleifer's estimated range of only 8.62% to 9.98% is
17 unrealistically low.

18
19 **C. ERRORS IN COST OF DEBT ESTIMATION**

20
21 **Q. What mistakes does Mr. Hirshleifer make in estimating BST's cost of debt of BST?**

22 **A.** Mr. Hirshleifer fails to measure the cost of debt relevant to this proceeding. First, he
23 inappropriately relies on the costs of debt issued by a subsidiary of BellSouth Corporation
24 where the proceeds have not been used to finance telephone network assets. Specifically, in
25 Attachment JH-3a Mr. Hirshleifer inappropriately uses the costs of debt issued by BellSouth

1 Capital Funding as proxies for BST's debt costs. Second, Mr. Hirshleifer's cost of debt
2 estimates for BST relies on dated debt market information from October of 1999. Thus, Mr.
3 Hirshleifer's cost of debt analysis is unreliable because it relies on inappropriate debt
4 securities and uses historical debt market data that produces a backward-looking estimated
5 cost of debt for BST of only 7.16%. My updated analysis shows that BST's forward-
6 looking cost of debt is currently 8.00%.

7
8 **Q. How do you arrive at your updated estimate of the forward-looking cost of debt for**
9 **BST of 8.00%?**

10 A. As in my direct testimony, I use the yields on Aaa-rated bonds as the benchmark in my
11 analysis because this is the bond rating on BST's debt. For the period from March to May of
12 2000, 30-year U.S. Treasury bonds yielded an average of 6.02%. As shown in Billingsley
13 Exhibit RSB-16, the spread between Aaa-rated public utility bonds and 30-year Treasury
14 bonds averaged 1.97% over this period. Adding the average spread of 1.97% to the above
15 recent average Treasury bond yield to maturity of 6.02% produces a yield of 7.99%, which
16 does not reflect the material effect of flotation costs.

17
18 Based on my updated analysis, I believe that BST's forward-looking cost of debt is 8.00%
19 and not Mr. Hirshleifer's estimate of only 7.16%.

20
21 **D. ERRORS IN RECOMMENDED CAPITAL STRUCTURE**

22
23 **Q. Do you agree with Mr. Hirshleifer's heavy reliance on book value capital structures?**

24 A. No. Mr. Hirshleifer gives equal weight to book values and market values in producing his
25 capital structure recommendations for BST. He relies on a book value capital structure to

1 determine the low end of his recommended cost of capital range, while a market value
2 capital structure produces the high end of his range. Specifically, Mr. Hirshleifer uses book
3 value weights of 45% equity and 55% debt and market value weights of 84% equity and
4 16% debt for BST (Direct Testimony, p. 35, line 8 – p. 36, line 11). As noted above, by
5 placing equal weight on book- and market value-based capital structures, he uses an
6 effective capital structure of about 64% equity and 36% debt. However, the use of market
7 values is theoretically appropriate and consistent with establishing a forward-looking cost
8 of capital for use in a proceeding such as this one. My updated analysis below demonstrates
9 that BST's appropriate current capital structure consists of 88.84% equity and 11.16%
10 debt.

11
12 As discussed in my previously filed direct testimony (p. 30, line 17 – p. 33, line 14), market
13 values deserve higher weight because they are dynamically determined in the marketplace
14 by investors, while book values are the result of historical accounting practices. One-time
15 accounting events that do not change market values can significantly alter book values.
16 Examples of one-time events include restructuring charges, the adoption of SFAS 106 for
17 Other Post-Employment Benefits, and the discontinuance of regulatory accounting under
18 SFAS 71. Additionally, the point in time at which a company issued stock in the past can
19 influence backward-looking book values, while forward-looking market values are not
20 affected.

21
22 Over time, market values vary from book values as investors change the stock price in
23 reaction to new information. If a new event or announcement significantly enhances or
24 detracts from shareholder value, that change is immediately translated into a market value
25 change, while there is likely to be no immediate change in book value. Mr. Hirshleifer's

1 over-reliance on book values is unrepresentative of the investor's perspective and
2 introduces yet another downward bias to his cost of capital estimates.

3
4 **Q. What are the results of your updated test of the reasonableness of BST's use of an**
5 **11.25% overall cost of capital?**

6 A. Using the same approach as that in my direct testimony, I apply my updated estimates of
7 BST's cost of equity and cost of debt to the updated average market value-base capital
8 structure for the group of 20 firms shown to be comparable in risk to BST. As shown in
9 Billingsley Exhibit RSB-17, as of December 31, 1999, the average capital structure for the
10 firms comparable in risk to BST is 11.16% debt and 88.84% equity. Using an updated cost
11 of debt of 8.00% and a cost of equity from 15.50% to 16.26%, BST's implied overall cost
12 of capital is in the range of 14.66% to 15.34%. My estimates demonstrate that Mr.
13 Hirshleifer's estimated range of only 8.12% to 8.96% greatly underestimates BST's
14 forward-looking overall cost of capital. I conclude that BST's use of an 11.25% overall cost
15 of capital in its UNE cost studies is quite conservative.

16
17 **E. MISUNDERSTANDING OF THE NATURE AND SIGNIFICANCE**
18 **OF THE RISKINESS OF INVESTING IN THE**
19 **TELECOMMUNICATIONS INDUSTRY**

20
21 **Q. Do you agree with Mr. Hirshleifer's observations about the supposedly low relative**
22 **risk of "leasing" local exchange telephone network elements to retail providers?**

23 A. No. Mr. Hirshleifer only offers his unsupported opinion that "[t]his business should have
24 relatively low risk compared to many of the risky business endeavors being pursued by the
25 telephone holding companies" (Direct Testimony, p. 38, lines 23 - 25). However, he also

1 acknowledges that "... there remains some risk that consumers, particularly business users,
2 will bypass the network as other alternatives become available" (Direct Testimony, p. 40,
3 lines 8 - 10). Mr. Hirshleifer consequently recognizes the significant risk of consumers and
4 businesses bypassing BST's network but only offers his unsubstantiated opinion that this is a
5 "low risk" endeavor. Once again Mr. Hirshleifer substitutes his opinion for that of investors
6 in appraising capital costs.

7
8 **Q. Why is leasing long-term telephone network assets particularly risky?**

9 A. The leasing of long-term assets can be quite risky, especially when leasing rates are
10 regulated. In order for BST to earn reasonable returns on its network assets, the firm must
11 obtain revenues over the leasing period that cover its costs and appropriate risk-adjusted
12 profits. However, BST is partially dependent on regulators rather than solely on the market
13 to obtain such returns. Mr. Hirshleifer obviously recognizes that regulators' decisions may
14 well not be appealing to shareholders' when he notes:

15 There is still the risk of regulation itself. The rate of return a network is allowed to
16 earn depends on the outcome of proceedings such as this and remains somewhat
17 uncertain. (Direct Testimony, p. 40, lines 3 - 5.)

18
19 Because such uncertainty implies risk to investors, Mr. Hirshleifer acknowledges that there
20 is substantial risk in leasing BST's network elements. This risk implies higher required rates
21 of return and resulting capital costs. However, Mr. Hirshleifer's comments on the
22 supposedly low relative risk of network leasing are inconsistent with his recognition of high
23 regulatory risk and the significant risk of consumer and business bypass of BST's local
24 service network. Moreover, building and owning network facilities to lease to competitors is
25 particularly risky when one considers that the leases tend to be short-term in nature. A

1 competitor that builds up a sufficient number of customers can subsequently choose to build
2 its own facilities, thus stranding the incumbent local exchange company's (ILEC's) facilities.

3
4 **Q. How does technological change affect the risk of investing in long-term telephone
5 network assets?**

6 A. Network facilities reflect a given technology that often becomes obsolete quickly. BST must
7 consistently invest to keep its network elements up to date and should have the flexibility to
8 establish leasing rates accordingly. However, as noted above, they do not have this ability
9 under current regulations. This risk of technological obsolescence makes leasing network
10 elements risky. Such obsolescence imposes costs and therefore risks. The leasing of BST's
11 network assets poses significant risks to their investors that put upward pressure on its cost
12 of equity.

13
14 **Q. Do you agree with Mr. Hirshleifer's views on the risks that are reflected in capital
15 costs?**

16 A. No. Mr. Hirshleifer is incorrect and inconsistent in his testimony concerning the risks that
17 affect capital costs. For example, he emphasizes that:

18 ... the risk that a company will lose customers to competition - such as a network
19 leasing company losing business to competing facilities providers - is a diversifiable
20 risk which does not increase the risk premium according to capital market theory.

21 (Direct Testimony, p. 20, lines 6 - 10.)

22 Yet, as noted above, in discussing what he presumably considers to be the relevant risks
23 associated with the business of leasing unbundled network elements he notes that "... there
24 remains some risk that consumers, particularly business users, will bypass the network as
25 other alternatives become available" (Direct Testimony, p. 40, lines 8 - 10).

1 the full array of practical risks facing investors, which Mr. Hirshleifer fails to do.

2
3 **III. REBUTTALS OF MR. WILLIAM J. BARTA'S REBUTTAL TESTIMONY**
4 **FILED ON BEHALF OF THE FCTA AND MS. CAROL BENTLEY'S**
5 **REBUTTAL TESTIMONY FILED ON BEHALF OF SUPRA**

6
7 **A. REBUTTAL OF MR BARTA'S TESTIMONY ON BEHALF OF THE FCTA**

8
9 **Q. What is Mr. Barta's stated opinion on the ILECs' capital costs?**

10 A. Mr. Barta observes that "... [i]t is likely that the forward-looking cost of capital for each of
11 the ILECs falls below the FCC's benchmark rate of return of 11.25% ..." (Rebuttal
12 Testimony, p. 12, line 24 – p. 13, line 1).

13
14 **Q. Does Mr. Barta offer any empirical evidence or provide any explanation for his**
15 **opinion concerning the ILECs' forward-looking cost of capital?**

16 A. No. Mr. Barta provides no evidence or explanation to support his opinion.

17
18 **Q. What is your evaluation of Mr. Barta's opinion that the ILECs' overall cost of capital**
19 **is below 11.25%?**

20 A. As summarized above and explained in detail below, I provide objective market-based
21 analysis that demonstrates that Mr. Barta's unsupported opinion concerning the ILEC's
22 capital costs does not apply to BST. Specifically, I show that BST's forward-looking overall
23 cost of capital is in the range of 14.66% to 15.34%, which is far in excess of 11.25%. Mr.
24 Barta comes forward with nothing to question this finding.

25

1 **B. REBUTTAL OF MS. BENTLEY'S TESTIMONY ON BEHALF OF SUPRA**

2

3 **Q. What is Ms. Bentley's position on the ILECs' riskiness and capital costs?**

4 A. Ms. Bentley argues that "... the capital markets still view investments into these companies
5 as being essentially risk-free" and concludes that "... shareholder investments into ILECs
6 should not be allowed more than an eight to ten percent ... rate of return" (Rebuttal
7 Testimony, p. 9, lines 3 - 7).

8

9 **Q. Does Ms. Bentley offer any empirical evidence for her position that ILECs are**
10 **"essentially risk-free" or that an appropriate return to ILEC shareholders is 8% to**
11 **10%?**

12 A. No. Ms. Bentley provides no evidence to support her position.

13

14 **Q. What is your evaluation of Ms. Bentley's opinions on the riskiness of the ILECs and**
15 **their capital costs?**

16 A. I believe that her unsupported opinions on the above points are contradicted by empirical
17 capital market evidence in the case of BST. First, my analysis below shows that firms
18 comparable in risk to BST have an average beta (systematic risk) coefficient of 0.78. A risk-
19 free investment has a beta of 0. Thus, empirical capital market evidence decisively
20 contradicts Ms. Bentley's assumption that the ILECs in general are "essentially risk-free"
21 since BST is far from being so. Second, my analysis below demonstrates that BST's cost of
22 equity is between 15.50% and 16.26%, which clearly indicates that the market perceives
23 BST to be far from "essentially risk-free." Ms. Bentley's unsupported opinions on the
24 ILECs' capital costs and riskiness are contradicted by capital market evidence.

25

1 **Q. Does this conclude your rebuttal testimony?**

2 **A. Yes.**

3

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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 (1998) 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 (1998) 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 (1994-1998).

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 (1998).

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 356 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:

$$Z_{ij} = \frac{V_{ij} - \bar{V}_j}{\sigma_j}$$

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

	<u>Common Equity to Total Capital</u>	<u>Operating Cash Flow to Assets (Standard Deviation)</u>	<u>Operating Cash Flow to Assets</u>	<u>Cash Flow Interest Coverage</u>
Bond Rating	-0.2949	0.2632	-0.3794	-0.4012
Common Equity to Total Capital		0.1341	0.2587	0.5972
Operating Cash Flow to Assets (Standard Deviation)			-0.0268	-0.0462
Operating Cash Flow to Assets				0.4466

DCF AND CAPM DATA FOR BST COMPARABLE FIRM PORTFOLIO

DCF RESULTS

<u>Portfolio of Comparable Firms</u>	<u>IBES</u>	<u>ZACKS</u>	<u>BARRA Beta Coefficients</u>
Anheuser-Busch Companies, Inc.	11.84%	11.92%	0.67
Boeing Company	18.09%	19.02%	0.75
Clorox Company	15.42%	15.41%	0.93
Coca Cola Company	14.91%	16.13%	0.75
Colgate Palmolive Company	14.38%	13.65%	0.85
R. R. Donnelley & Sons Company	16.99%	16.44%	0.83
Ecolab Incorporated	15.78%	15.39%	0.79
Electronic Data Systems	17.03%	16.95%	0.84
Guidant Corporation	19.16%	19.29%	0.91
Kellogg Company	13.49%	13.29%	0.65
Kimberly-Clark Corporation	13.96%	14.16%	0.86
Eli Lilly & Company	16.85%	16.29%	0.65
Lubrizol Corporation	11.97%	12.22%	0.73
McCormick & Company	13.42%	12.68%	0.52
New York Times Company	13.78%	14.32%	0.77
Philip Morris Companies, Inc.	21.94%	21.71%	0.69
Proctor & Gamble Company	15.14%	14.96%	0.92
Sysco Corporation	14.90%	14.57%	0.62
United Technologies Corporation	15.92%	16.29%	0.85
Wal-Mart Stores	15.10%	15.24%	0.96
<hr/>			
AVERAGE	15.50%	15.50%	0.78
<hr/>			

**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:

$$(Price\ of\ Contract) \times 10 = \frac{\$30}{(1+i)^1} + \frac{\$30}{(1+i)^2} + \dots + \frac{\$30}{(1+i)^{40}} + \frac{\$1,000}{(1+i)^{40}}$$

where i = the semi-annual rate of return.

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

The U.S. Treasury Bond futures contract prices shown below are averaged, by contract maturity, using the Friday settlement prices for all contracts trading for the entire month of May, 2000.

U.S. TREASURY BOND FUTURES CONTRACT DATA

Contract Maturity	<u>05/05/00</u>	<u>05/12/00</u>	<u>05/19/00</u>	<u>05/26/00</u>	Average Price	Implied Yield
06/00	93.5625	93.5000	93.2813	95.2813	93.9063	6.66%
09/00	93.3750	93.3125	93.1563	95.1875	93.7578	6.67%
12/00	93.3125	93.2813	93.1563	95.2188	93.7422	6.67%
03/01	93.3125	93.2813	93.1875	95.2500	93.7578	6.67%
AVERAGE IMPLIED YIELD						6.67%

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
Jul-99	17.18	7.34	9.84
Aug-99	17.24	7.54	9.70
Sep-99	17.45	7.55	9.90
Oct-99	17.74	7.73	10.01
Nov-99	18.06	7.56	10.50
Dec-99	18.65	7.74	10.91
Jan-00	18.70	7.95	10.75
Feb-00	19.02	7.82	11.20

Month	Standard & Poor's 500 DCF Cost of Equity (%)	Moody's Aaa Public Utility Bonds (%)	Market Risk Premium (%)
Mar-00	19.29	7.87	11.42
Apr-00	19.09	7.87	11.22
May-00	18.96	8.22	10.74
AVERAGE	15.61	8.19	7.42*

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

RECENT Aaa VS. TREASURY BOND YIELDS

Month	Moody's Aaa Public Utility Bond (%)	30-Year U.S. Treasury Bond (%)	Aaa/U.S. Treasury Bond Spread (%)
Mar-00	7.87	6.05	1.82
Apr-00	7.87	5.85	2.02
May-00	8.22	6.15	2.07
AVERAGE	7.99	6.02	1.97*

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.

004163

**Market Value Capital Structure of Portfolio of Companies Comparable in Risk to
BellSouth Telecommunications
December 1999¹**

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
Anheuser-Busch Companies, Inc.	32,680.46	5,122.90	0.00	0.1355	0.8645
Boeing Company	36,084.91	6,732.00	0.00	0.1572	0.8428
Clorox Company	12,566.97	1,443.00	0.00	0.1030	0.8970
Coca Cola Company	143,969.24	6,227.00	0.00	0.0415	0.9585
Colgate Palmolive Company	37,626.10	2,789.50	17.90	0.0694	0.9306
R. R. Donnelley & Sons Company	3,057.76	1,168.05	0.00	0.2764	0.7236
Ecolab Incorporated	5,063.40	281.07	0.00	0.0526	0.9474
Electronic Data Systems	31,206.03	2,709.30	0.00	0.0799	0.9201
Guidant Corporation	14,421.43	887.70	0.00	0.0580	0.9420
Kellogg Company	12,492.91	2,134.30	0.00	0.1459	0.8541
Kimberly-Clark Corporation	35,377.55	2,709.00	0.00	0.0711	0.9289
Eli Lilly & Company	72,500.83	3,053.40	0.00	0.0404	0.9596
Lubrizol Corporation	1,681.98	402.96	0.00	0.1933	0.8067
McCormick & Company	2,257.16	342.00	0.00	0.1316	0.8684
New York Times Company	8,538.81	701.16	0.00	0.0759	0.9241
Phillip Morris Companies, Inc.	53,785.94	14,468.00	0.00	0.2120	0.7880
Proctor & Gamble Company	117,788.04	9,381.00	229.00	0.0754	0.9246
Sysco Corporation	9,828.18	1,031.58	0.00	0.0950	0.9050
United Technologies Corporation	30,845.49	4,321.00	449.00	0.1339	0.8661

¹ Based on the closing common stock prices and financial statements as of December 31, 1999.

² Debt is defined as the book value of total debt plus the book value of preferred equity.

BellSouth Telecommunications
Docket No. 990649-TP
Billingsley Exhibit No. RSB-17
Market Value Capital Structure of
BST Comparables
Page 2 of 2

COMPANY	MARKET VALUE OF COMMON EQUITY (\$M)	BOOK VALUE OF TOTAL DEBT (\$M)	BOOK VALUE OF PREFERRED EQUITY (\$M)	DEBT / TOTAL CAPITAL ³	EQUITY / TOTAL CAPITAL
Wal-Mart Stores	244,020.75	22,082.00	0.00	0.0830	0.9170
Average ³	45,289.70	4,399.35	34.80	0.1116	0.8884

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