1

2 **Q. Do you agree with Mr. Hirshleifer's statement on pages 51-52 of his testimony that**
3 **it is not necessary to include flotation costs because his proxy companies' stock**
4 **prices already reflect flotation costs?**

5 A. No. If Mr. Hirshleifer's argument were true, there would be no requirement to include
6 any forward-looking expenses in Verizon VA's forward-looking cost study, because all
7 these expenses are reflected in his proxy companies' stock prices. Obviously, this is an
8 absurd conclusion.

9

10 **5. Capital Asset Pricing Model ("CAPM")**

11 **Q. Please describe the CAPM.**

12 A. The CAPM is an equilibrium model of the security markets in which the expected or
13 required return on a given security is equal to the risk free rate of interest, plus the
14 company equity "beta," times the market risk premium:

15 *Cost of equity = Risk-free rate + Equity beta x Market risk premium*

16 The risk-free rate in this equation is the expected rate of return on a risk-free
17 government security, the equity beta is a measure of the company's risk relative to the
18 market as a whole, and the market risk premium is the premium investors require to
19 invest in the market basket of all securities compared to the risk-free security.

20

21 **Q. How did Mr. Hirshleifer estimate the beta component of his CAPM analysis?**

22 A. Mr. Hirshleifer uses BARRA betas as his estimate of the beta component of the CAPM.

23

Q. Has Mr. Hirshleifer always used BARRA betas in the CAPM analyses he has presented in previous UNE proceedings?

A. No. Mr. Hirshleifer previously estimated his own betas from five-years of monthly stock returns.

Q. Why did Mr. Hirshleifer not present his own estimated betas, as he had previously, in the cost of equity studies he reports in this proceeding?

A. Mr. Hirshleifer states on page 23 of his testimony,

> In prior testimonies, using data before June 30, 2000, I calculated betas based on five years of monthly return data for Bell Atlantic and the comparable companies. However, given Bell Atlantic's merger with GTE which became effective June 30, 2000, I use BARRA predicted betas because a 5-year historical beta cannot be calculated for the newly-formed Verizon.

Q. Does Mr. Hirshleifer avoid the data problems associated with the Bell Atlantic/GTE merger by using BARRA betas?

A. No. BARRA betas are calculated from a linear equation involving a set of explanatory variables that are all calculated from historical data. Indeed, one of the explanatory variables used to calculate the BARRA beta is the five-year historical beta calculated in the same way that Mr. Hirshleifer previously calculated historical betas. Thus, the same data factors that apparently caused Mr. Hirshleifer to abandon the use of historical betas should also cause Mr. Hirshleifer to abandon the use of BARRA betas.

Q. How do the Value Line betas for Mr. Hirshleifer's group of telecommunications companies compare to the BARRA betas for these companies?

A. The average Value Line beta for Bell Atlantic and for Mr. Hirshleifer's group of telecommunications companies at the time of his studies is .85, as compared to Mr. Hirshleifer's beta of .77 for Verizon.

Q. How much would Mr. Hirshleifer's cost of equity estimate have increased if he had used Value Line's beta estimate for Bell Atlantic rather than the relevered BARRA beta estimate?

A. Mr. Hirshleifer's CAPM cost of equity estimate would have increased by 44 to 60 basis points. (.85 - .77 = .08. .08 x 5.5 = .44; and .08 x 7.5 = .60.)

Q. How did Mr. Hirshleifer estimate the risk premium on the market portfolio?

A. Mr. Hirshleifer estimated the risk premium in two ways. First, he calculated the difference between the 10.2 percent Merrill Lynch estimate of the expected return on the market portfolio and the risk-free rate of interest. Second, he used historical risk premium data obtained from Ibbotson Associates and a book published in 1994 entitled, *Stocks for the Long Run*, by Jeremy Siegel.

Q. Has Mr. Hirshleifer used the Merrill Lynch expected return on the market portfolio in his risk premium analysis in previous UNE testimonies?

A. No. Until presenting this testimony, Mr. Hirshleifer had always used the results of his three-stage DCF model applied to the S&P 500 to estimate the risk premium on the market portfolio.

Q. Does Mr. Hirshleifer discuss why he now uses the Merrill Lynch expected return on the market portfolio rather than the three-stage DCF model results?

A. Yes. On page 28 of his direct testimony, Mr. Hirshleifer states,

> Given the relative cost and degree of difficulty of obtaining data for, and updating the calculation of, the DCF return on the market frequently, and given that Merrill Lynch's calculation techniques appear to result in slightly higher estimates, I have elected to use Merrill Lynch's estimate as a reasonable substitute for use in this study. As of June 30, 2000, Merrill Lynch's expected return on the market estimate was 10.20%."

Q. Do you agree with Mr. Hirshleifer's assertion on page 29 that "Merrill Lynch's calculation techniques appear to result in slightly higher estimates" of the expected market return than his three-stage DCF model?

A. No. I have tested this assertion by applying Mr. Hirshleifer's three-stage DCF model to June 2000 data for the S&P 500 in precisely the same manner that Mr. Hirshleifer has previously applied his three-stage DCF model to the S&P 500. I found that Mr. Hirshleifer's three-stage DCF model produces a result that is 73 basis points higher than the Merrill Lynch estimate of the expected return on the market portfolio in June 2000. The three-stage model result is 10.93 percent versus the Merrill Lynch expected return of 10.2 percent.

Q. In testing Mr. Hirshleifer's assertion that use of the Merrill Lynch data produces higher results, you stated that you applied Mr. Hirshleifer's DCF method to the S&P 500. Do you agree with Mr. Hirshleifer's DCF method?

A. No. Mr. Hirshleifer's DCF method is based on a three-stage DCF Model similar to that which he used in his DCF calculation of the cost of equity for the telecommunications companies. As noted above, his DCF Model is based on the arbitrary and incorrect assumptions that companies can grow for a short period at the I/B/E/S growth rate, and that growth must then decline to his estimate of the rate of growth in GNP over a period of 15 years. This basic assumption produces a downward bias in his DCF calculations. In addition, his DCF Model ignores both the actual quarterly payment of dividends and the existence of flotation costs.

Q. How did Mr. Hirshleifer use historical risk premium data from Ibbotson Associates and the Siegel book to estimate the risk premium on the market portfolio?

A. As shown on his Attachment JH-8, Mr. Hirshleifer reports both arithmetic mean and geometric mean risk premium results for four periods: 1802-1999, 1926-1999, 1951-1999, and 1971-1999. From these data Mr. Hirshleifer uses his judgment to arrive at the conclusion that the appropriate risk premium on stocks over the yield on Treasury bills is 7.5 percent and that the appropriate risk premium on stocks over the yield on Treasury bonds is 5.5 percent.

Q. What is the relationship between Mr. Hirshleifer's reported arithmetic mean risk premium results and his reported geometric mean risk premium results?

A. Mr. Hirshleifer's arithmetic mean risk premium results are significantly higher than his reported geometric mean risk premium results in every time period.

Q. Has Mr. Hirshleifer's colleague Professor Cornell expressed an opinion in his book on whether the arithmetic mean or geometric mean risk premia provide better estimates of the risk premium on the market portfolio?

A. Yes. On page 217 of his book, *Corporate Valuation*, published by Business One Irwin, Professor Cornell states,

> As shown by Bodie, Kane, and Marcus, the best estimate of expected returns over a given future holding period is the arithmetic average of past returns over the same holding period.

Q. With regard to the four time periods for which he reported risk premia, has Mr. Hirshleifer's colleague Professor Cornell expressed an opinion in his book on the most appropriate time period to use in a risk premium study?

A. Yes. On pages 212-213 of his book, *Corporate Valuation*, Professor Cornell states:

> Before an average can be calculated, the sample period must be determined. The longest period for which reliable stock price data are readily available is January 1926 to the present. Given the significant variation in the risk premium, altering the sample period when calculating the average is hazardous because it can greatly affect the estimate. To avoid data mining, a reasonable solution is to use the entire period from 1926 to the present, or as a substitute, the postwar period from 1945 to the present. Finer partitioning of the sample data, even if done with the best intentions, raises the specter of introducing bias.

1 **Q. In the statement you have just quoted, Professor Cornell recommends the use of**
2 **either the period 1926 to the present or 1945 to the present. How does the arithmetic**
3 **mean risk premium for the period 1926 to 1999 reported in JH-8 compare to Mr.**
4 **Hirshleifer's recommended risk premium of 7.5 percent for Treasury bills and 5.5**
5 **percent for Treasury bonds?**
6 A. Mr. Hirshleifer's Attachment JH-8 reports the arithmetic mean risk premium for the
7 period 1926 to 1999 as 9.45 percent over Treasury bills and 7.78 percent over Treasury
8 bonds, approximately 195 to 230 basis points higher than the risk premia Mr. Hirshleifer
9 uses in his cost of equity estimate. In addition, Mr. Hirshleifer incorrectly reports the
10 arithmetic mean risk premium over long-term Treasury bonds; the risk premium for the
11 period 1926 to 1999 is 8.1 percent. The correct risk premium over long-term Treasury
12 bonds is 260 basis points higher than that used by Mr. Hirshleifer.
13
14 **Q. Mr. Hirshleifer's colleague Professor Cornell also states in his book that the period**
15 **1945 to the present might be an acceptable alternative to the period 1926 to the**
16 **present. Did Mr. Hirshleifer employ the period 1945 to the present in his current**
17 **testimony?**
18 A. No, he did not.
19
20 **Q. What is the arithmetic mean risk premium for the period 1945 to 1999?**
21 A. The arithmetic mean risk premium for the period 1945 to 1999 for stocks over Treasury
22 bills is 9.8 percent, and for stocks over Treasury bonds, 8.6 percent. These risk premia are

approximately 230 to 310 basis points higher than the risk premia used by Mr. Hirshleifer in his testimony.

Q. Do you agree with Mr. Hirshleifer's use of a risk premium for the period 1802 to 1999 in this case?

A. No. I agree with the statement of Mr. Hirshleifer's colleague Professor Cornell in his book that the period 1926 to the present is the longest period for which reliable data are available. During the 19th century, the stock market was comprised of very few stocks, mainly the stocks of several banks, railroads, and insurance companies, located in the Northeast. These stocks were thinly traded; and, since no dividend data was available, a rough estimate had to be made of the average dividends on these stocks. Furthermore, prices for the period generally were based on averages of high and low bids, not prices at which trades actually occurred. For these and many other reasons, the historical returns on these stocks are simply not indicative of returns investors expect to receive on stock investments in June 2000.

Q. On page 31 of his direct testimony, Mr. Hirshleifer cites a *Wall Street Journal* article by Mr. Clements, in which Professor Ibbotson is quoted as stating that historical averages overstate the forward-looking cost of equity. Have you investigated whether either Professor Ibbotson or his firm no longer recommend the use of the period 1926 to the present as the best estimate of the future risk premium on equity?

A. Yes. Let me note, first, that Ibbotson's 1997, 1998, 1999, 2000, and 2001 Yearbooks have been published since the appearance of the Clements article, and Ibbotson Associates continue specifically to recommend the period 1926 to the present for estimating the future risk premium on equity. With regard to the use of the arithmetic mean versus the geometric mean risk premium, Ibbotson's *2001 Yearbook* also continues to recommend that the arithmetic mean risk premium is the correct rate for estimating the cost of capital. It states further that:

> The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance, since it represents the compound average return. [Ibbotson Associates' *2001 Yearbook, Valuation Edition*, page 61.]

Second, Mr. Hirshleifer has misstated the historical risk premium for the period 1926 to 1999 on his Attachment JH-8. The historical risk premium for the period 1926 to 1999 reported in the *2000 Yearbook* for stocks over long term treasury bonds is 8.1 percent, not the 7.78 percent reported on Mr. Hirshleifer's Attachment JH-8.

Third, Mr. Hirshleifer mischaracterizes Ibbotson's statements regarding survivorship bias when he refers to the Ibbotson and Brinson book *Global Investing*. The Ibbotson and Brinson book clearly refers to survivorship bias in measuring *world* equity returns, not to the performance of equities in the U.S. market. Ibbotson addresses this issue in his *2001 Yearbook*:

> While the survivorship bias evidence may be compelling on a worldwide basis, one can question its relevance to a purely U.S. analysis. If the entity being valued is a U.S. company, then the relevant data set should be the performance of equities in the U.S. market. [Ibbotson Associates, *Stocks, Bonds, Bills and Inflation, 2001 Yearbook, Valuation Edition*, p. 73.]

Clearly, Ibbotson *does not* believe that his long-run risk premium is overstated.

Fourth, Ibbotson Associates state unequivocally in their *2001 Yearbook* that there is no conclusive evidence that "the estimate of the equity risk premium is upwardly biased since the stock market is currently priced high." To the contrary,

> Our own empirical evidence suggests that the yearly difference between the stock market total return and the U.S. Treasury bond income return in any particular year is random. ... The best estimate of the expected value of a variable that has behaved randomly in the past is the average (or arithmetic mean) of its past values. [Ibbotson Associates' *2000 Yearbook*. pp. 64-65.]

Q. Does Mr. Hirshleifer make any adjustment for the tendency of the CAPM to underestimate the cost of equity for companies whose betas are less than 1.0?

A. No. Mr. Hirshleifer does not appear to recognize the well-documented tendency of the CAPM to underestimate the cost of equity for companies whose betas are less than 1.0.

1 **Q. What evidence do you have that the CAPM tends to underestimate the cost of equity**
2 **for companies whose betas are less than 1.0?**
3 A. The original evidence that the unadjusted CAPM tends to underestimate the cost of
4 equity for companies whose equity beta is less than 1.0 and to overestimate the cost of
5 equity for companies whose equity beta is greater than 1.0 was presented in a paper by
6 Black, Jensen, and Scholes, "The Capital Asset Pricing Model: Some Empirical Tests."
7 Numerous subsequent papers have validated the Black, Jensen, and Scholes findings,
8 including those by Litzenberger and Ramaswamy, Banz, Fama and French, and Fama and
9 MacBeth.[15]
10
11 **Q. Do you have any other reservations about the use of the CAPM at this time?**
12 A. Yes. The CAPM relates a company's cost of equity to the interest rates on risk-free
13 Treasury securities. For many years, the spread between the yield on long-term Treasury
14 securities and the yield on A-rated industrial and utility bonds was approximately 100
15 basis points. Since the summer of 1998, however, the spread between the yields on
16 long-term Treasury bonds and A-rated industrial and utility bonds has increased to
17 approximately 200 basis points due to increased demand for U.S. Treasury securities
18 resulting from the Treasury's announcement that it will significantly reduce the supply of
19 long-term Treasury bonds over the next several years. The increased spread between the

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[15] Fischer Black, Michael C. Jensen, and Myron Scholes, "The Capital Asset Pricing Model: Some Empirical Tests," in Studies in the Theory of Capital Markets, M. Jensen, ed. New York: Praeger, 1972; Eugene Fama and James MacBeth, "Risk, Return, and Equilibrium: Empirical Tests," Journal of Political Economy 81 (1973), pp. 607-36; Robert Litzenberger and Krishna Ramaswamy, "The Effect of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence," Journal of Financial Economics 7 (1979), pp. 163-95; Rolf Banz, "The Relationship between Return and Market Value of Common Stocks," Journal of Financial Economics (March 1981), pp. 3-18; and Eugene Fama and Kenneth French, "The Cross-Section of Expected Returns," Journal of Finance (June 1992), pp. 427-465.

yield on long-term Treasury bonds and A-rated industrial and utility bonds has caused the CAPM cost of equity results to decline at a time when the cost of money for telecommunications companies as measured by the yield on A-rated industrial and utility bonds has remained constant. Thus, in addition to the tendency noted above of the CAPM to underestimate the cost of equity for companies whose betas are less than 1.0, the unadjusted CAPM further underestimates the cost of equity at this time because of the unusually large spread between the yields on long-term Treasury bonds and industrial and utility bonds.

Q. Despite your reservations, have you nonetheless calculated a CAPM cost of equity for Verizon VA in order to assess the reasonableness of Mr. Hirshleifer's CAPM calculation?

A. Yes. In order to assess the reasonableness of Mr. Hirshleifer's CAPM cost of equity estimate, I have calculated a CAPM estimate based on the same data period that Mr. Hirshleifer used in his testimony. The yield to maturity on long-term U.S. Treasury bonds (6.28 percent average yield for June 2000) and on the arithmetic mean risk premium of large company stocks over the yield on long-term Treasury bonds (8.1 percent). I believe that a conservative estimate of the forward-looking beta for Verizon VA's UNE business is the average beta of 1.0 for all companies. Thus, a reasonable CAPM cost of equity estimate for Verizon VA's UNE business is 14.4 percent [6.28 percent + (1.0 times 8.1 percent)= 14.4 percent].

1 **E. Tests of Reasonableness—Comparisons to Other Sources**

2 **1. AT&T's Internal Estimate of the Forward-Looking Cost of**
3 **Capital**

4 **Q. Does Mr. Hirshleifer attempt to provide any other evidence purporting to show that**
5 **his estimate of Verizon VA's cost of capital is reasonable?**

6 A. Yes. Mr. Hirshleifer cites various Wall Street sources in an attempt to demonstrate the
7 reasonableness of his cost of capital recommendation for Verizon VA.

8

9 **Q. Does Mr. Hirshleifer cite AT&T's own estimate of the forward-looking cost of**
10 **capital associated with incremental investments in AT&T's telecommunications**
11 **networks?**

12 A. No, he does not.

13

14 **Q. What forward-looking cost of capital has AT&T used in its own model of the**
15 **incremental cost of investing in its telecommunications network?**

16 A. In its response to interrogatories in New York and New Jersey (BA ATT/MCI 1044 in
17 Case No. 98 C 1357 in New York and VNJ-547 in Docket No. TO-00060356 in New
18 Jersey), AT&T indicated that it used a cost of capital of 15.306 percent throughout the
19 country when it last used its Total Incremental Cost Model in 1997.

20

21 **Q. Why is AT&T's internal estimate of the forward-looking cost of capital for use in its**
22 **TICM model relevant in this proceeding?**

23 A. AT&T's TICM model is analogous to the incremental cost models that are the focus of
24 this proceeding. It was designed to measure the incremental cost of investing in

telecommunications facilities such as those considered in this proceeding. AT&T's use of a forward-looking cost of capital that is significantly higher than that presented by Mr. Hirshleifer, its witness in this proceeding, is strong evidence that Mr. Hirshleifer's 9.54 percent estimate of Verizon VA's forward-looking cost of capital is unjustifiably low.

2. Analysts Discount Rates

Q. How does Mr. Hirshleifer test the reasonableness of his 9.54 percent estimate of Verizon VA's weighted average cost of capital?

A. Mr. Hirshleifer compared his recommended weighted average cost of capital to the discount rates Wall Street analysts have used in their fairness opinions of telecommunications mergers over the last several years.

Q. Did Mr. Hirshleifer cite the registration statement in the ALLTEL/Aliant merger as support for his cost of capital estimate?

A. Yes, he did.

Q. Have you read the registration statement in the ALLTEL/Aliant merger.

A. Yes, I have.

Q. What discount rate range did Merrill Lynch use in its valuation of Aliant?

A. Merrill Lynch used discount rates in the range 10% to 12% in its discounted cash flow analysis of Aliant.

1 **Q. What price range did Merrill Lynch derive for Aliant as a stand-alone operation**
2 **(that is, no synergies were involved) using this discount range of 10% to 12%?**
3 A. As shown on page 28 of the registration statement, Merrill Lynch obtained values of
4 $30.29 to $37.20 per share using the 10% to 12% discount rates.
5
6 **Q. Is there any way to associate specific share prices in Merrill Lynch's $30.29 to**
7 **$37.20 per share price range with specific discount rates?**
8 A. Yes. Since a higher discount rate is associated with a lower stock valuation, Merrill
9 Lynch's low-end valuation of $30.29 must have been based on the high-end of its
10 discount rate range, 12%, while the highest stock valuation of $37.20 must have been
11 based on its low-end discount rate of 10%.
12
13 **Q. What was Aliant's stock price on the days immediately before the merger**
14 **announcement?**
15 A. On page 27 of the ALLTEL/Aliant registration statement, Merrill Lynch notes that the
16 average daily closing per share price of Aliant's common stock over the "one-day, ten-
17 day, thirty-day and one-year periods ended December 10, 1998, was $30.25, $30.21,
18 $29.47 and $28.15, respectively."
19
20

1 **Q. Based on this information, is it fair to say that Merrill Lynch's estimated range of**
2 **values for Aliant's stand-alone operations exceeded the market's assessment of**
3 **Aliant's stand-alone value prior to the merger announcement?**
4 A. Yes. Merrill Lynch's estimate of the value of Aliant's stand-alone operations ranged
5 from $30.29 to $37.20, while Aliant's average stock prices for the four periods ending
6 December 10, 1998, were in the range $28.15 to $30.25. In fact, the upper end of Merrill
7 Lynch's stand-alone valuation of Aliant using its discounted cash flow analysis exceeded
8 Aliant's actual stock price by approximately 25%. [For the periods considered by Merrill
9 Lynch, the average price is $29.52; Merrill Lynch's estimated value of $37.20 ÷ $29.52 =
10 1.26.]
11
12 **Q. Did Mr. Hirshleifer express an opinion in his direct testimony regarding the**
13 **relationship between investors' estimates of a company's cost of capital and its stock**
14 **price?**
15 A. Yes. On page 50 of his direct testimony, Mr. Hirshleifer states, "Verizon and the other
16 telephone companies in the sample are large holding companies whose stocks trade on
17 the NYSE in an efficient market." In efficient markets, investors' estimates of the cost of
18 capital are embedded in that company's market price.
19
20

1 **Q. Does Mr. Hirshleifer's opinion that investors' estimate of a company's cost of**
2 **capital is incorporated in that company's stock price have any implications for his**
3 **opinion that Merrill Lynch's 10% to 12% discount rate range supports his own**
4 **9.54% estimate of Verizon VA's cost of capital?**
5 A. Yes. Since Merrill Lynch's 10% to 12% cost of capital range produces a stock price
6 range that significantly exceeds Aliant's actual market stock price, Merrill Lynch's
7 discount rate range obviously does not reflect investors' estimates of the cost of capital.
8
9 **Q. Is there any way to determine whether investors' estimate of the cost of capital is**
10 **higher or lower than Merrill Lynch's discount rate estimate?**
11 A. Yes. Since Merrill Lynch's low-end valuation, based on Merrill Lynch's after-tax
12 discount rate of 12%, exceeds the actual market price of Aliant's stock, and since higher
13 discount rates are associated with lower stock prices, investors' estimate of Aliant's after-
14 tax cost of capital must exceed the 12% discount rate Merrill Lynch used to arrive at its
15 low-end estimate of Aliant's equity value.
16
17 **Q. Are you aware that in this proceeding the cost of capital input is a before-tax cost of**
18 **capital, not an after-tax cost of capital?**
19 A. Yes.
20
21

1 **Q. If Merrill Lynch's estimate of the after-tax cost of capital were 12%, what would be**
2 **its estimate of the before-tax cost of capital?**
3 A. Its estimate of the before-tax cost of capital would probably be closer to 12.5%, because
4 the before-tax cost of capital generally exceeds the after tax cost of capital by about 50
5 basis points.
6
7 **Q. Does a before-tax cost of capital in excess of 12.5% support Mr. Hirshleifer's 9.54%**
8 **estimate of the before-tax cost of capital for Verizon VA's local exchange**
9 **operations?**
10 A. No. A before-tax cost of capital in excess of 12.5% exceeds Mr. Hirshleifer's estimates
11 of the cost of capital for Verizon VA's UNE business by approximately 300 basis points.
12 Thus, the financial analysts' data support the conclusion that Mr. Hirshleifer has grossly
13 underestimated the cost of capital for Verizon VA's UNE business.
14
15 **Q. The example you have just discussed relates to Aliant. Have you examined any**
16 **analysts' reports that relate more closely to Verizon?**
17 A. Yes, I have also read the Bell Atlantic/GTE merger prospectus cited in Mr. Hirshleifer's
18 testimony. In that registration statement, Salomon Smith Barney provides a valuation of
19 Bell Atlantic using a discount rate in the range 9% to 11%.
20
21

1 **Q. What valuation range did Salomon Smith Barney obtain for Bell Atlantic using**
2 **these discount rates?**
3 A. As shown on page I-41 of the Bell Atlantic/GTE merger prospectus, Salomon Smith
4 Barney obtained a valuation range for Bell Atlantic of $53.50 to $63, based on a discount
5 rate range of 9 percent to 11 percent.
6
7 **Q. Given that stock price valuations are inversely related to the discount rate, is it fair**
8 **to say that the $53.50 end of the valuation range must have been based on an after-**
9 **tax discount rate of 11 percent, and the $63 end of the range must have been based**
10 **on an after-tax discount rate of 9 percent?**
11 A. Yes.
12
13 **Q. What was Bell Atlantic's closing stock price prior to the merger?**
14 A. On page I-41 of the Bell Atlantic/GTE merger prospectus, it states that Bell Atlantic's
15 closing price prior to the merger was $45.
16
17 **Q. Can we draw any conclusions from the fact that Bell Atlantic's actual stock price**
18 **was significantly less than Salomon Smith Barney's valuation range for Bell**
19 **Atlantic?**
20 A. Yes. Since Bell Atlantic's closing price was nearly 20 percent lower than the low end of
21 Salomon Smith Barney's valuation range, the market must necessarily have been using a
22 discount rate significantly higher than Salomon Smith Barney's 11 percent discount rate
23 in valuing Bell Atlantic's share price at $45. Indeed, it is fair to say that investors must

1 necessarily have been using a before-tax discount rate significantly higher than 11.5
2 percent in valuing Bell Atlantic prior to the merger, because Salomon Smith Barney's 11
3 percent discount rate was an after-tax cost of capital, and Bell Atlantic's actual market
4 price was significantly less than the valuation price obtained.
5
6 **Q. Have you examined the discount rates and valuation ranges used by investment**
7 **bankers in the other telecommunications company mergers cited in**
8 **Mr. Hirshleifer's testimony?**
9 A. Yes, I have. The discount rates and valuations for all the mergers cited in Mr.
10 Hirshleifer's testimonies are shown in Vander Weide Rebuttal Schedule 5, along with the
11 companies' actual market price in the days prior to the merger announcements.
12
13 **Q. Is there any relationship between the investment bankers' valuations and the actual**
14 **market prices of these telecommunications companies?**
15 A. Yes. In every case, the investment bankers obtained valuations from their discounted
16 cash flow analyses that significantly ***exceeded*** the market prices for the subject
17 companies prior to the merger announcements.
18
19 **Q. What conclusions do you draw from your discovery that the investment bankers**
20 **have, in every case, over-estimated the market prices of the subject**
21 **telecommunications companies?**
22 A. I draw two conclusions. First, I conclude that the ***market's*** estimate of the cost of capital
23 ***must surely have exceeded*** even the high end of the discount rate ranges used by the

1 investment bankers in each of these cases. Second, I conclude that Mr. Hirshleifer has
2 very significantly underestimated the cost of capital for Verizon VA's local exchange
3 operations. Rather than supporting his estimate of the cost of capital, the investment
4 banker's discount rates clearly demonstrate that Mr. Hirshleifer's cost of capital estimates
5 are unreasonably low.
6
7 **Q. In this proceeding, are we seeking to find the *investors' estimates* of the cost of**
8 **capital, or the estimates of Wall Street analysts?**
9 A. In this proceeding, we are seeking to find the investors' estimates of the cost of capital.
10 Clearly, investors' estimates of the cost of capital are significantly higher than the
11 discount rates used by the Wall Street analysts in the merger analyses. In addition, the
12 investors' estimate of the telecommunications companies' cost of capital exceeds Mr.
13 Hirshleifer's estimate by an even wider margin.
14
15 **Q. Are there any other reasons why the discount rates used by investment bankers in**
16 **their fairness opinions of telecommunications mergers do not support**
17 **Mr. Hirshleifer's opinion that the cost of capital input in UNE cost studies should be**
18 **9.54 percent?**
19 A. Yes. There are several additional reasons why the discount rates used in fairness
20 opinions do not support Mr. Hirshleifer's low estimate of the cost of capital input in
21 AT&T's and WorldCom's UNE cost studies. First, the Wall Street analysts that
22 Mr. Hirshleifer cites were hired to provide an opinion regarding the fairness of the stock
23 exchange ratio to be used in proposed mergers, not to estimate the cost of capital input in

UNE cost studies. Since estimates of the cost of capital require knowledge of the very share price that these companies were attempting to estimate, they simply could not simultaneously estimate the cost of capital at the same time that they estimated the appropriate share price. Indeed, these firms were faced with a situation where they had just one equation to determine two unknowns—the value of the firm's stock, and the cost of equity. As a simple matter of mathematics, there are many combinations of share values and costs of capital that will solve a single equation; and hence, no unique solution exists for either unknown. To resolve this dilemma, the investment bankers chose not to estimate the cost of capital. Instead, they simply *assumed* a discount rate.

Second, Mr. Hirshleifer fails to acknowledge that the investment bankers he quotes have themselves specifically stated that investors are not entitled to rely on any single part of their analyses outside of the context for which they were intended. These various analyses were intended for the purpose of estimating the value of the proposed exchange ratio in a merger—not the cost of capital in UNE cost studies. Thus, Mr. Hirshleifer is not entitled to rely on these estimates to justify his low cost of capital estimate for Verizon VA.

Third, Mr. Hirshleifer fails to cite the Ibbotson cost of capital estimates for telecommunications firms. Using five different methodologies, the Ibbotson Associates' equivalent before-tax weighted average cost of capital estimates for the telecommunications industry large company composite at March 31, 2000, are: 11.35 percent, 11.59 percent, 12.54 percent, 12.54 percent, and 14.40 percent, with an

average of 12.48 percent. These estimates are all significantly higher than Mr. Hirshleifer's cost of capital estimate for Verizon VA in this proceeding.

F. Tests of Reasonableness -- Internal Consistency

Q. Is there any way to test the reasonableness of Mr. Hirshleifer's cost of capital estimates without referring to parties who are not part of this proceeding?

A. Yes. One can test the internal consistency of Mr. Hirshleifer's cost of capital estimates using the commonly accepted standard that the cost of capital should be higher for higher risk investments than for lower risk investments.

Q. Have you tested the internal consistency of Mr. Hirshleifer's testimony using the standard that a higher risk investment should have a higher cost of capital than a lower risk investment?

A. Yes. First, I have compared the average DCF result, using Mr. Hirshleifer's same three-stage methodology, for various groups of companies in the S&P 500. Data is from the Value Line Investment Survey for the period ending June 2000, corresponding to the time period of the data presented by Mr. Hirshleifer in his direct testimony. As shown in Table 1, the average DCF result for the industrial companies in the S&P 500 is 8.71 percent, and the average DCF result for all companies in the S&P 500 is 9.00 percent. In contrast, the average DCF result for the electric companies in the S&P 500 is 12.17 percent, and for the natural gas distribution companies, 11.56 percent. These results contradict the common perception that electric and natural gas companies are less risky than industrial companies. (See Table 1 below.)

Table 1

Anomalous Discounted Cash Flow Results From
Mr. Hirshleifer's Three-Stage DCF Model

Company Group	Three-Stage DCF Result
Industrials in the S&P 500	8.71%
S&P 500	9.00%
Local Exchange Carriers	10.02%
Natural Gas Distribution Companies	11.56%
Electric Companies	12.17%

Second, Mr. Hirshleifer claims that beta is a measure of risk, and that companies with higher betas are more risky than companies with lower betas. I have performed a regression analysis of the relationship between the Mr. Hirshleifer's three-stage DCF model results for companies in the S&P 500 and their Value Line betas. The resulting regression statistics are shown in Table 2. Again, Mr. Hirshleifer's three-stage DCF Model produces lower DCF results for companies, which have higher risk as measured by beta. The significant negative relationship between DCF results and beta for Mr. Hirshleifer's three-stage DCF Model is indicated by: (1) the negative value of the coefficient on the X 1 variable (beta); and (2) the high absolute value of the t Statistic for the X 1 coefficient (an absolute value greater than 1.96 indicates that the relationship is significant.)

Table 2

Regression of Hirshleifer Three-Stage Model DCF Results
vs. Value Line Betas

	Intercept	Beta	Adjusted R Square	F
Coefficient	0.127	-0.026	0.089	36.771
T Statistic	29.053	-6.064		

Third, companies with high dividend yields are generally recognized as having lower risk than companies with low dividend yields. Thus, one would expect the DCF

results for high dividend yield companies to be lower than the DCF results for low dividend yield companies (that is, there should be a negative relationship between DCF results and dividend yield). However, the data in Table 3 indicates that there is a positive relationship between the three-stage DCF results and dividend yields for companies in the S&P 500. Thus, high dividend yield companies have higher three-stage DCF results using Mr. Hirshleifer's three-stage model. Once again, Mr. Hirshleifer's DCF methodology produces results that are contrary to the expectation that companies with higher risk (that is, those that have lower dividend yields) have higher DCF results.

Table 3

Regression of Hirshleifer Three-Stage Model DCF Results vs. Dividend Yield

	Intercept	Dividend Yield	Adjusted R Square	F
Coefficient	0.076	1.052	0.802	1537.662
t Statistic	92.021	39.213		

Fourth, financial practitioners generally recognize that companies with higher expected growth are more risky than companies with lower expected growth, indicating that there should be a positive relationship between DCF results and growth. Contrary to this reasonable expectation, however, the regression results shown in Table 4 indicate that companies in the S&P 500 with higher expected growth have <u>lower</u> three-stage model DCF results. The negative relationship between DCF result and growth is indicated by the negative coefficient on the X 1 variable (growth) and the high absolute value of the t Statistic for the X 1 variable. Thus, Mr. Hirshleifer's three-stage DCF Model again produces results that fail the simple, common sense test that the cost of equity should increase with the risk of an investment.

Table 4

Regression of Hirshleifer Three-Stage Model DCF Results
vs. Analysts' Expected Growth

	Intercept	Expected Growth	Adjusted R Square	F
Coefficient	0.130	-0.233	0.181	84.617
t Statistic	38.950	-9.202		

Q. You have shown that Mr. Hirshleifer's three-stage DCF model produces DCF results that are contrary to the common sense standard that the cost of equity increases with risk, as measured by beta, dividend yield, and expected growth. Have you tested whether the constant growth DCF model produces results that are consistent with the expectation that the cost of equity should increase with risk?

A. Yes. I have performed three simple regression analyses of the relationship between the DCF results produced by the constant growth DCF Model and risk, as measured by beta, dividend yield, and growth. The same stock prices, dividends, and growth estimates were used to calculate the three-stage growth and constant growth model results. As shown below in Tables 5, 6, and 7, in every case, the cost of equity as measured by the constant growth DCF Model increases with higher risk. That is to say, the DCF results are positively related to beta, negatively related to dividend yield, and positively related to expected growth.

Table 5

Regression of Constant Model DCF Results
vs. Value Line Betas

	Intercept	Beta	Adjusted R Square	F
Coefficient	0.103	0.048	0.162	71.667
t Statistic	17.522	8.466		

Table 6

Regression of Constant Model DCF Results
vs. Dividend Yield

	Intercept	Dividend Yield	Adjusted R Square	F
Coefficient	0.161	-0.415	0.060	25.327
t Statistic	63.444	-5.033		

Table 7

Regression of Constant Model DCF Results
vs. Expected Growth

	Intercept	Expected Growth	Adjusted R Square	F
Coefficient	0.065	0.680	0.782	1359.243
T Statistic	26.860	36.868		

Q. What conclusions do you reach from your examination of the internal consistency of Mr. Hirshleifer's testimony?

A. I conclude that Mr. Hirshleifer's cost of equity estimates for Verizon VA fail the common sense test that the cost of equity should increase with the risk of an investment. Contrary to a reasonable expectation, Mr. Hirshleifer consistently obtains lower cost of equity results for companies having demonstrably higher risk.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

Vander Weide Rebuttal Schedule 1
Regulatory Book Value Capital Structure of
Local Exchange Telephone Companies
Source of data: FCC ARMIS 43-02

Year	Debt	Equity	% Debt	% Equity
1995	46,469,722	71,865,796	39.27%	60.73%
1996	47,189,904	73,536,289	39.09%	60.91%
1997	46,447,966	71,415,765	39.41%	60.59%
1998	45,941,592	69,921,766	39.65%	60.35%
1999	46,149,421	66,869,626	40.83%	59.17%
Average	46,439,721	70,721,848	39.64%	60.36%

Vander Weide Rebuttal Schedule 2
Estimation of Market Value Capital Structures
of Local Exchange Carriers[16]

Item	RBOCs and GTE Reporting Local Exchange Companies ($ thousands)	Regional Bell Operating (RBOCs) Companies ($ thousands)
Depreciation & Amortization. Expense	21,995,041	18,507,808
Operating Income Taxes	8,703,813	7,474,363
Non-Operating Income Taxes	(774,638)	(752,701)
Interest and Related Items	3,879,847	3,164,018
NET INCOME	11,778,090	9,661,157
EBITDA	45,582,153	38,054,645
EBITDA X 7.0	319,075,071	266,382,515
EBITDA X 8.0	364,657,224	304,437,160
NOTES PAYABLE	12,024,628	10,302,901
Current Maturities - Long-Term Debt	1,880,370	1,674,692
Current Maturities - Capital Leases	113,538	102,490
Long-Term Debt	41,510,891	32,953,245
Total Debt	55,529,427	45,033,328
Total Debt / (EBITDA X 7.0)	**17.4%**	**16.9%**
Total Debt / (EBITDA X 8.0)	**15.2%**	**14.8%**
Total Debt / (EBITDA X 7.0 X 0.85)	**20.5%**	**19.9%**
Total Debt / (EBITDA X 8.0 X 0.85)	**17.9%**	**17.4%**

[16] Data from FCC Common Carrier Bureau, Statistics of Communications Common Carriers, 1999 edition, table 2-10 Statistics of Reporting Large Local Exchange Carriers; Registration Statements for Ameritech/SBC merger, ALLTEL/Aliant merger, Bell Atlantic/GTE merger, U S West/Qwest merger (EBITDA multiples); Morgan Stanley Dean Witter, Industry Report, Telecom – Wireline, January 21, 2000, page 2 (EBITDA Multiples); Merrill Lynch, United States Telecom Services – Wireline, February 15, 2000, page 28 (EBITDA Multiples).

Vander Weide Rebuttal Schedule 3
Impact of Extraordinary Write Offs on Total Equity
of Telecommunications Holding Companies
(Millions of $)[17]

Company	1993-1995 Total Adjustments[18]	1995 Total Equity	Adjustments as Percent of Equity
Ameritech	2,234.0	7,014.5	32%
Bell Atlantic	2,150.0	6,683.6	32%
BellSouth	2,718.0	11,825.0	23%
NYNEX	2,919.4	6,079.2	48%
Pacific Telesis	5,084.0	2,190.0	232%
SBC	4,946.5	6,255.8	79%
U S West	3,123.0	7,948.0	39%
GTE	4,682.0	6,871.0	68%
SNET	951.3	352.9	270%
TOTAL	28,808.2	55,220.0	52%

[17] Data is taken from Company Annual Reports.

[18] This is a conservative estimate of the impact of extraordinary one-time write offs on reducing the book value of the equity of these telecommunications companies, since this estimate includes only write offs for discontinuance of regulatory accounting and OPEB taken during 1993, 1994, and 1995, and does not include the large extraordinary write offs taken for OPEB prior to 1993 by Ameritech, Bell Atlantic, BellSouth, NYNEX, U S West, and GTE.

Vander Weide Rebuttal Schedule 4
Value Line Retained to Common Equity
2004—2006 for Telecommunications Holding Companies[19]

Company	Internal Growth
Verizon	17.0
BellSouth	18.0
SBC	13.5
Alltel	13.0
CenturyTel	11.5
Market Weighted Average	15.6

[19] Source of Data: Value Line Investment Survey, April 6, 2001.

Vander Weide Rebuttal Schedule 5
Comparison of Wall Street Valuations to Actual Market Prices

Analyst	Company	Range of Discount Rates		Stand-alone Valuation Range		Pre-Merger Market Price
Merrill Lynch	Aliant	10%	12%	$30.29	$37.20	$30.21
Donaldson Lufkin Jenrette	U S West	9%	11%	$76.00	$109.00	$54.94
Salomon Smith Barney	Bell Atlantic	9%	11%	$53.50	$63.00	$45.19
Salomon Smith Barney	GTE	9%	11%	$60.50	$72.50	$57.94
Warburg Dillon Read	MCI WorldCom	10.5%	11.5%	$99.00	$118.00	$71.88
Goldman Sachs	Ameritech	8.5%	11.5%	$45.78	$66.22	$42.56

Declaration of James Vander Weide

I declare under penalty of perjury that the foregoing is true and correct. Executed this 24th day of August , 2001.

James Vander Weide

James Vander Weide