1 **Q. What capital structure weights does Mr. Hirshleifer use in his estimate of**
2 **Verizon VA's forward-looking economic cost of capital?**
3 A. Mr. Hirshleifer uses both book and market value capital structure weights to estimate
4 Verizon VA's forward-looking economic cost of capital. Using book value capital
5 structure weights containing 49 percent debt and 51 percent equity, Mr. Hirshleifer
6 estimates Verizon VA's economic cost of capital to be 9.17 percent. Using market value
7 capital structure weights containing 20 percent debt and 80 percent equity,
8 Mr. Hirshleifer estimates Verizon VA's economic cost of capital to be 9.91 percent. His
9 recommended economic cost of capital of 9.54 percent at June 30, 2000, is the midpoint
10 of the range of estimates he found using book and market value capital structure weights.
11
12 **Q. Does financial and economic theory provide any guidance on the correct capital**
13 **structure weights to use in calculating the weighted average cost of capital?**
14 A. Yes. As I noted in my direct testimony, financial and economic theory requires the use of
15 market value weights (market values of debt and equity) to calculate the weighted
16 average cost of capital because market values are the best measures of the amounts of
17 debt and equity investors have invested in the company on a going-forward basis.
18 Furthermore, investors measure the risk and return on their investment portfolios using
19 market value weights because they purchase a company's stocks and bonds at market
20 price, not at book value. Thus, the return, and the risk or uncertainty of the return, can
21 only be measured in terms of market values.
22

Q. What do economists have to say about the use of book value capital structures to measure the weighted average cost of capital?

A. Economists unanimously reject the use of book value capital structures to estimate the weighted average cost of capital because book values depend on arbitrary accounting conventions, are based on historical costs, and are inherently backward looking. I have taught corporate finance for more than 25 years, and I do not recall ever encountering a financial or economic text that recommended anything other than the use of market value weights to calculate a company's weighted average cost of capital.

Q. Does Mr. Hirshleifer recognize that economic costs are forward looking and market based, not backward looking and accounting based?

A. Yes. In his testimony in Ohio on behalf of AT&T and MCI, Mr. Hirshleifer states:

> Economic costs are forward-looking. To better understand this, one must put oneself in the shoes of a current investor. For example, if an investor today were to consider an investment in CBI's common stock, which is fundamentally a claim on the net assets CBI uses to conduct its varied businesses, such investor would only be willing to pay the ***market value*** of those assets. [Emphasis added.] (Mr. Hirshleifer's Direct Testimony at page 10, *In the Matter of the Application of Cincinnati Bell Telephone Company For Approval of a Retail Pricing Plan Which May Result in Future Rate Increases and for a New Alternative Regulation Plan*, Case No. 96-899-TP-ALT.)

In addition, Mr. Hirshleifer uses market value capital structure weights, rather than book value capital structure weights, when he levers and unlevers the betas in his portfolio of proxy companies.

1 **Q. Do you agree with Mr. Hirshleifer's statement on page 36 of his direct testimony**
2 **that "there remains a debate among academics, practitioners, and forensic experts**
3 **regarding the choice between book and market weights"?**
4 A. No. He is just flat wrong. Academic experts and well-trained practitioners unanimously
5 agree that market value weights should be used to estimate the weighted average cost of
6 capital. For example, the following well-known texts recommend the use of market
7 value weights to estimate the weighted average cost of capital: Copeland/Weston,
8 *Financial Theory and Corporate Policy*, Chapter 13, Third Edition, 1988, Addison-
9 Wesley, Reading, MA.; Brealey/Myers, *Principles of Corporate Finance*, Chapter 9,
10 page 214, Fifth Edition, 1996, McGraw-Hill; and Robert C. Higgins, *Analysis for*
11 *Financial Management,* Chapter 8, Fourth Edition, 1995, Irwin.
12
13 **Q. Do you agree with Mr. Hirshleifer's statement on page 36 of his direct testimony**
14 **that "in traditional rate of return hearings, capital structure is typically presented**
15 **in terms of book value weights"?**
16 A. Yes, I do. However, in traditional rate of return hearings, rate base and expenses were
17 also measured on the basis of historical, or accounting costs, not forward-looking costs. I
18 understand that the cost of service in this proceeding will be measured on the basis of
19 forward-looking economic costs. While book capital structure weights may have been
20 accepted by regulators in an environment where rates were based on historical costs,
21 Mr. Hirshleifer's book value capital structures are definitely not appropriate in a world
22 where rates are based on forward-looking economic costs. Forward-looking economic

costs require the use of market value capital structure weights, not book value capital structure weights.

Q. On pages 1-2 of his direct testimony, Mr. Hirshleifer indicates that he was vice-president and director of research for a company called FinEcon, which has merged with Mr. Hirshleifer's current employer, Charles River Associates. Who was the founder of FinEcon?

A. Professor Bradford Cornell was the founder and President of FinEcon, and is also currently a senior consultant to Charles River Associates. Professor Cornell has provided testimony in a number of states on behalf of AT&T and WorldCom that is virtually identical to Mr. Hirshleifer's testimony in this proceeding.

Q. Has Mr. Hirshleifer's colleague, Professor Cornell, written a book, entitled *Corporate Valuation*, published by Business One Irwin?

A. Yes, he has.

Q. Does Professor Cornell make any recommendations in his book regarding the correct capital structure for use in measuring a company's weighted average cost of capital?

A. Yes. Professor Cornell clearly recommends the use of a firm's target market value capital structure, not its book value capital structure. On page 224 of his book he states, "The appropriate weights to use are the firm's *long-run target weights stated in terms of market value*." [Original emphasis.] On page 225, Professor Cornell writes,

> It is also possible to avoid the circularity by estimating the long-run target weights directly. For example, the appraiser may assume that all the comparable firms have the same target capital structures. Given this assumption, the best estimate of the target capital structure is the average capital structure across the comparable firms. If the comparable firms are publicly traded, ***their market value weights can be calculated directly and averaged.*** [Emphasis added.]

Finally, on pages 228-229 of his book, he provides an example of the correct way to calculate the weighted average cost of capital:

> Table 7-8 puts all the pieces together and calculates FEC's weighted average cost of capital using the target financing weights chosen by management. ***Notice that the target weight of equity is significantly greater than the book value weight. This reflects management's realization that the market value of equity is much greater than the book value*** [Emphasis added].

Q. On pages 14-15 of his direct testimony, Mr. Hirshleifer also cites a book by Copeland, Koller, and Murrin, entitled, *Valuation: Measuring and Managing the Value of Companies*, and by Damodaran, entitled, *Damodaran on Valuation: Security Analysis for Investment and Corporate Finance*. Do Copeland, Koller, and Murrin and Damodaran make any recommendations in their books regarding the correct capital structure to use in measuring a company's weighted average cost of capital?

A. Yes. Copeland, Koller, and Murrin clearly recommend the use of market value capital structure weights to calculate the weighted average cost of capital. Specifically, they state at page 240 that one must "employ market value weights for each financing element, because market values reflect the true economic claim of each type of financing outstanding, whereas book values usually do not." Damodaran, at page 41 in the section titled, "Calculating the Weights of Debt and Equity Components, Market-Value versus Book-Value Weights," states:

> The weights assigned to equity and debt in calculating the weighted average cost of capital ***have to be based upon market value, not book value***. The rationale rests on the fact that the cost of capital measures the cost of issuing securities, stocks as well as bonds, to finance projects and that these securities are issued at market value, not at book value. [Emphasis added.]

Q. Does Mr. Hirshleifer explain why he used both book and market value capital structure weights to calculate Verizon VA's weighted average cost of capital, when academic experts unanimously recommend the use of market value capital structure weights alone?

A. Yes. On pages 40-44 of his direct testimony, Mr. Hirshleifer argues that: (1) the network element leasing business is less risky than the telecommunications holding companies' other businesses; and (2) the network element leasing business should thus have more leverage than the holding companies' other businesses. He then speculates that the "higher debt weight [in the holding companies' average book value capital structure] may be more representative of the target capital structure for the low-risk network element leasing business." (Direct testimony of Mr. Hirschleifer at 43.)

Q. Do you agree with Mr. Hirshleifer's opinion that his telephone holding companies are more risky than Verizon VA's network element leasing business?

A. No. Mr. Hirshleifer's assumption that Verizon VA's network element leasing business is less risky than each of the other businesses of Mr. Hirshleifer's holding companies is undoubtedly incorrect. The business of leasing unbundled network elements is *more* risky than many of Verizon VA's other businesses. In offering UNEs, ILECs face the risk that competitors will lease unbundled network elements in the short term, only to

abandon them later when they have built their own network or leased portions from others, leaving the ILEC with stranded investment. In addition, ILECs' network element leasing business faces the regulatory risk that UNE prices will be set below cost.

Furthermore, even if the UNE leasing business were less risky than each of the telecommunications holding companies other businesses (which it is not), it does not follow that the network element leasing business is less risky than Mr. Hirshleifer's telecommunication holding companies as a whole. Telecommunications holding companies are experiencing a high degree of technological uncertainty. As a facilities-based provider, Verizon VA must place very large bets on the best technology for providing UNEs in Virginia. The holding companies have the opportunity to reduce the risks of rapid technological change by hedging some of their bets on the most efficient technology for providing telecommunications services. In particular, they can invest in both wireline and wireless technologies, while Verizon VA's UNE business cannot. In addition, as compared to Verizon VA's UNE business, the holding companies can diversify geographically, offer a wider variety of products and services, and can achieve economies of scale associated with greater size and financial strength. Thus, it is actually less risky to provide a bundle of national or international telecommunications services than to provide unbundled network elements in a limited geographical territory.

1 **Q. Do you agree with Mr. Hirshleifer's opinion that the network element leasing**
2 **business should have a more highly leveraged market value capital structure?**
3 A. No. Since the network element leasing business is at least as risky as Mr. Hirshleifer's
4 holding companies, it should have a market value capital structure that, in principle,
5 contains at least as much equity as the holding companies' average market value capital
6 structure.
7
8 **Q. Do you agree with Mr. Hirshleifer's statement on pages 43-44 that the "higher debt**
9 **weight may be more representative of the target capital structure" of Verizon VA's**
10 **network element leasing business?**
11 A. No. First, since book value capital structures are inherently backward looking, they can
12 provide no useful information on the target market value capital structure of
13 Verizon VA's network element leasing business.
14
15 Second, Mr. Hirshleifer simply asserts that the reported book value capital
16 structures of his telecommunications holding companies *"may be"* representative of the
17 target market value capital structure of Verizon VA's network leasing business. He
18 provides no evidence or studies to support his conjecture. Since the book value capital
19 structures are not representative of the target market value capital structure of
20 Verizon VA's network element leasing business, they should not be used in cost studies
21 that estimate the forward-looking cost of unbundled network elements.
22

1 Third, local exchange companies such as Verizon VA have traditionally
2 employed target book value capital structures containing at least 60 percent equity.
3 However, economists recognize that the cost of capital must be measured using a *market*
4 *value* capital structure. Since the market value of equity generally exceeds the book
5 value of equity by a significant margin, the appropriate target market value capital
6 structure for Verizon VA's network element leasing business must contain significantly
7 more than 60 percent equity. In contrast, Mr. Hirshleifer's book value capital structure
8 contains significantly less than 60 percent equity.
9
10 Fourth, Mr. Hirshleifer's reported book value capital structures for his proxy
11 holding companies reflect economic depreciation rates that are significantly higher than
12 the regulatory depreciation rates AT&T and WorldCom use in their cost studies. It is
13 inconsistent for AT&T and WorldCom to use economic depreciation rates in one part of
14 their cost studies, and regulatory depreciation rates in another.
15
16 **Q. Do you have any evidence to support your assertion that "local exchange companies**
17 **have traditionally employed target book value capital structures, based on**
18 **regulatory accounting, containing 40 percent debt and 60 percent equity?"**
19 A. Yes. Local exchange companies file their book value capital structures with the
20 Commission in ARMIS 43-02. As shown in Vander Weide Rebuttal Schedule 1, the
21 average book value capital structure for the local exchange companies, based on
22 regulatory accounting for the period 1995 to 1999, contains 39.64 percent debt and 60.36
23 percent equity.

1

2 **Q. You note that local exchange companies typically employ a book value capital**

3 **structure containing approximately 40 percent debt and 60 percent equity. Is there**

4 **any way to determine what a local exchange company's market value capital**

5 **structure would be if its stock were publicly traded?**

6 A. Yes. Morgan Stanley values local exchange company assets by calculating the most

7 recent EBITDA[10] and multiplying this value by a factor of 7 or 8.[11] This value represents

8 the market value of the enterprise, and the percent debt in the market value capital

9 structure can be obtained by dividing total debt by the value of the enterprise. I have

10 performed this calculation for two groups of local exchange companies. To be

11 conservative, I have also reduced the EBITDA multiple in the calculation by 15 percent.

12 This calculation results in a range of implied market value capital structures for the local

13 exchange companies containing 17 percent to 21 percent debt and 83 percent to

14 79 percent equity (see Vander Weide Rebuttal Schedule 2). These data confirm the

15 reasonableness of using a market value capital structure, and the unreasonableness of

16 Mr. Hirshleifer's book value capital structures.

17

18

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[10] EBITDA is defined as earnings before interest, taxes, depreciation, and amortization. It is frequently used as a measure of a company's ability to generate cash from its operations.

[11] Morgan Stanley Dean Witter, Industry Report, Telecom – Wireline, January 21, 2000, page 2.

1 **Q. If local exchange companies employ a book value capital structure containing**
2 **60 percent equity, why do Mr. Hirshleifer's telecommunications holding companies**
3 **have book value capital structures containing 49 percent debt and only 51 percent**
4 **equity?**
5 A. Mr. Hirshleifer's holding companies have book value capital structures containing
6 49 percent debt and only 51 percent equity because they have taken very large
7 extraordinary accounting write offs in recent years. As shown on Vander Weide Rebuttal
8 Schedule 3, the equity in the book value capital structure of Mr. Hirshleifer's holding
9 companies was reduced by at least $28.8 billion as a result of the discontinuation of
10 regulatory accounting principles established in Financial Accounting Standard 71 ("FAS
11 71") and for write-offs for Other Post Employment Benefits ("OPEB"). These write-offs
12 represent more than 52 percent of the total equity in Mr. Hirshleifer's holding companies'
13 capital structures. Since extraordinary write-offs, by definition, are infrequent and
14 unusual, capital structures that include these write-offs cannot be representative of his
15 firms' long-run target capital structures. Thus, Mr. Hirshleifer has clearly erred in using
16 his holding companies' book value capital structures for the purpose of estimating
17 Verizon VA's forward-looking economic cost of capital. The companies' book value
18 capital structures are neither forward looking nor economic.
19
20

1 **Q. Is Mr. Hirshleifer's use of book value capital structures consistent with AT&T's and**
2 **WorldCom's position that Verizon VA's investment in network facilities should be**
3 **measured on a market value basis?**
4 A. No. Mr. Hirshleifer's recommendation on behalf of AT&T and WorldCom to use a book
5 value capital structure along with a forward-looking economic valuation of Verizon VA's
6 network facilities is an ill-disguised attempt by these parties to "have their cake and eat it
7 too." They want to measure the cost of investment in network facilities on a *forward-*
8 *looking economic basis* because they estimate that value to be lower than the historical
9 value of Verizon VA's investment in network facilities; and they want to value
10 Verizon VA's capital structure on a *book value or historical basis* because using a book
11 value capital structure also provides a lower estimate of Verizon VA's cost of capital.
12 Mr. Hirshleifer and his clients fail to acknowledge the inconsistency of their
13 recommendations. It is unreasonable to use forward-looking economic costs to measure
14 the value of the investment while at the same time using backward-looking book values
15 to measure the company's weighted average cost of capital.
16
17 **Q. What is the impact of Mr. Hirshleifer's use of book value capital structure weights**
18 **on his cost of capital recommendation?**
19 A. Mr. Hirshleifer obtained a 9.91 percent estimate of Verizon VA's weighted average cost
20 of capital at June 30, 2000, using market value capital structure weights, and a
21 9.17 percent estimate of Verizon VA's cost of capital using book value capital structure
22 weights. Mr. Hirshleifer's final recommended 9.54 percent cost of capital at June 30,
23 2000, gives equal weight to book and market value capital structures. Thus,

Mr. Hirshleifer's use of book value capital structure weights by itself reduced his estimate of Verizon VA's overall cost of capital by 37 basis points.

D. Cost of Equity

1. Proxy Group

Q. Does Mr. Hirshleifer estimate the cost of equity for Verizon VA from market data on Verizon VA's stock?

A. No. Mr. Hirshleifer estimates Verizon VA's cost of equity from market data for groups of risk proxy companies.

Q. What companies does Mr. Hirshleifer choose as his risk proxy group for Verizon VA?

A. Mr. Hirshleifer chooses a group of four telecommunications holding companies from Standard & Poor's telephone operating companies as cost of capital proxies for Verizon VA in his DCF analysis, and a group of five telecommunications holding companies in his CAPM analysis. The four companies in his DCF analysis include BellSouth, SBC, Verizon, and ALLTEL; in his CAPM analysis he adds a fifth – CenturyTel.

Q. Are there difficulties with the use of a group of holding companies as a risk proxy group for Verizon VA?

A. Yes. The DCF and CAPM Models provide more uncertain estimates of the cost of equity for companies such as the holding companies that are experiencing radical restructuring and profound regulatory, organizational, and technological change. In addition, the four

or five holding companies are simply too small a group to obtain reliable cost of equity estimates. (Indeed, Mr. Hirshleifer's proxy group will be even smaller in the future if ALLTEL's proposed acquisition of CenturyTel is accepted.) On pages 19-20 of his testimony, Mr. Hirshleifer himself presents the following citation to support the use of larger samples:

> The sampling distribution of most estimators changes as the sample size changes. The sample mean statistic, for example, has a sampling distribution that is centered over the population mean but whose variance becomes smaller as the sample size becomes larger. [Peter Kennedy, *A Guide to Econometrics*, 3rd Edition, The MIT Press, Cambridge MA, 1992, p. 18.]

Q. What cost of equity proxies do you recommend be used to estimate the cost of equity for Verizon VA's investment in the facilities required to provide unbundled network elements?

A. I recommend the S&P Industrials as a cost of equity proxy for Verizon VA's investment in the facilities required to provide unbundled network elements.

Q. Why do you recommend the S&P Industrials as a cost of equity proxy for Verizon VA's investment in the facilities required to provide unbundled network elements?

A. I recommend the S&P Industrials because the purpose of this proceeding is to determine the cost of providing unbundled network elements using forward-looking economic costing principles. The forward-looking economic cost standard is intended to approximate the cost of providing unbundled network elements in a competitive market. Thus, the use of forward-looking economic cost as a relevant cost standard presumes that the market for providing unbundled network elements is competitive. The competitive

1 market assumption also follows from the basic intent of Congress in passing the
2 Telecommunications Act. Since the S&P Industrials are a group of competitive firms
3 whose composite risk is average, I have selected them as a reasonable proxy for
4 Verizon VA's risk of providing unbundled network elements in a competitive market. In
5 addition, the S&P Industrials are a large sample of companies that, as a group, are not
6 experiencing the same degree of radical restructuring and technological change as the
7 telecommunications holding companies; thus, the DCF and CAPM methods provide
8 more reliable estimates for these companies, on average, than do Mr. Hirshleifer's
9 companies.
10
11 **Q. Why is it necessary to estimate the cost of capital for competitive companies when**
12 **forward-looking economic cost principles are used to establish the cost of unbundled**
13 **network elements?**
14 A. The cost of capital must be linked to the specific investment under consideration. Under
15 forward-looking economic costing principles, the market for unbundled network elements
16 is assumed to be competitive. If the competitive market assumption is used to estimate
17 the investment in facilities and software required to provide unbundled network elements,
18 then the competitive market assumption must also be used to estimate the cost of capital.
19 Any other assumption would not produce rates that approximate what the incumbent LEC
20 could charge if there were a competitive market for unbundled network elements.
21 Indeed, if one were to use a monopoly market assumption in estimating the cost of capital
22 input in forward-looking cost studies, but a competitive market assumption in estimating
23 the operating expenses and amount of investment, one would necessarily arrive at rates

that are less than those that the incumbent LEC would be able to charge in a competitive market. As a result, there would be no economic incentive for CLECs to invest in their own facilities.

2. DCF Model

Q. What DCF model did Mr. Hirshleifer use to estimate Verizon VA's cost of equity capital?

A. Mr. Hirshleifer used a three-stage Annual DCF Model to estimate Verizon VA's cost of equity capital.

Q. What are the basic assumptions of Mr. Hirshleifer's three-stage annual DCF model?

A. Mr. Hirshleifer's three-stage Annual DCF Model is based on the assumptions that: (1) the risk proxy companies pay dividends only at the end of each year; (2) investors expect the risk proxy companies' growth in dividends, earnings, and stock prices to occur in three stages; and (3) the risk proxy companies incur no flotation costs when they issue new equity.

Q. Do you agree with Mr. Hirshleifer's use of an annual DCF Model to estimate the cost of equity for companies that pay dividends quarterly?

A. No. Financial theory suggests that the present value of a stream of dividends depends on both the magnitude and the timing of the dividend payments. Common sense would dictate the same. Since dividends are, in fact, paid quarterly, Mr. Hirshleifer should have used a DCF Model that assumes quarterly dividend payments. The Quarterly DCF

Model provides the most accurate basis for valuing the dividend stream expected by the investor.

Q. Do investors use the DCF model to value other investments such as investments in government and corporate bonds and mortgages?

A. Yes. Investors use the DCF Model to value almost any investment opportunity, including investments in government and corporate bonds and mortgages.

Q. Do investors recognize the correct timing and magnitude of cash flows when they use the DCF model to value bond investments?

A. Yes. When using the DCF Model to value long-term government or corporate bonds, investors recognize that interest is paid semi-annually. Thus, the price of a long-term government or corporate bond is simply the present value of the semi-annual interest payments on these bonds plus the present value of the principal payments.

Q. Would an investor use an annual DCF model to value bonds when interest is paid semi-annually?

A. No. Bond investors recognize that bond prices depend on both the timing and the magnitude of the cash flows resulting from their bond investments. Since bond cash flows (interest payments) occur semi-annually, bond investors use a semi-Annual DCF Model to value bond investments. Investors who would use an Annual DCF Model to value bonds would err in their valuations of bonds and would probably lose money.

1 **Q. Do banks use an annual DCF model when valuing mortgage loans?**

2 A. No. Banks recognize that mortgages pay interest monthly, and they value mortgages on
3 the basis of a monthly DCF model. I know of no bank that would use an Annual DCF
4 Model to evaluate mortgage loans.

5

6 **Q. Does Mr. Hirshleifer's colleague, Professor Cornell, in his published work,**
7 **recognize the need to use a quarterly DCF model for a company that pays dividends**
8 **quarterly?**

9 A. Yes. On page 198 of his book, Professor Cornell presents a quarterly DCF analysis that
10 recognizes the quarterly payment of dividends to estimate Apple Computer's cost of
11 equity.

12

13 **Q. Mr. Hirshleifer argues on page 50 of his testimony that the Annual DCF Model is**
14 **reasonable because the telecommunications holding companies actually receive cash**
15 **flows on a monthly basis. Do you agree that Mr. Hirshleifer's observation about the**
16 **receipt of monthly cash flows justifies the use of an Annual DCF Model?**

17 A. No. The DCF Model is designed to model the cash flows received by *investors*, not the
18 cash flows received by the company. Since investors receive quarterly dividends, the
19 Quarterly DCF Model is the most accurate model for estimating the company's cost of
20 equity.

21

22

1 **3. Growth**

2 **Q. How does Mr. Hirshleifer estimate the three growth components of his three-stage**
3 **Annual DCF Model?**

4 A. Mr. Hirshleifer assumes that his proxy companies will have growth during the first year
5 equal to the Value Line one-year dividend growth forecast,[12] and growth in years two
6 through five equal to the average I/B/E/S analysts' earnings growth forecasts. After this
7 initial five-year period, Mr. Hirshleifer, in his June 30, 2000, studies, assumes that his
8 proxy companies' earnings growth will decline over a fifteen-year period to his estimate
9 of the then current expected growth in the GNP, 6.29 percent, and then grow at
10 6.29 percent forever.[13]

11

12 **Q. Why does Mr. Hirshleifer employ a three-stage, rather than a single stage, DCF**
13 **model?**

14 A. Mr. Hirshleifer employs a three-stage DCF Model because he finds it unreasonable to
15 assume that a company's earnings can grow at a rate greater than the growth in GNP
16 forever.

17

18

---

[12] The one exception to this method is his application of his model to Verizon; in this case, he assumes that Verizon's current dividend will grow at the I/B/E/S growth rate for five years.

[13] Thus, Mr. Hirshleifer's three-stage DCF model is actually a four-stage DCF model. In stage one, he uses the Value Line dividend growth forecast; in stage two, he uses the I/B/E/S earnings growth forecast; in stage three, he assumes earnings and dividends decline linearly to his estimate of the long-run growth rate; and in stage four, he assumes earnings and dividends grow at his estimate of the long-run growth rate forever.

1 **Q. Do you agree with the argument that a company's earnings cannot grow at a rate**
2 **greater than the rate of growth in the GNP forever?**
3 A. Yes. If a company were to grow at a rate greater than the growth in the GNP forever, at
4 some point far in the future, perhaps 400 years or more out, that company would
5 represent most of the economy.
6
7 **Q. Does the fact that a company cannot grow at a rate greater than the rate of growth**
8 **in the GNP forever preclude the use of a single-stage DCF model?**
9 A. No. Mr. Hirshleifer fails to recognize that (1) companies do not have to grow at the same
10 rate forever for the single-stage DCF Model to be a reasonable approximation of how
11 prices are determined in capital markets; (2) it is common for companies to grow at rates
12 significantly greater than the rate of growth in GNP for long periods of time; (3) the
13 average I/B/E/S growth rate for Mr. Hirshleifer's proxy group of holding companies is
14 achievable for a period longer than five years, especially in an industry such as
15 telecommunications, which is growing significantly faster than the economy as a whole;
16 and (4) evidence suggests that investors expect the holding companies to grow at a rate
17 significantly greater than Mr. Hirshleifer's assumed long-run growth rates.
18
19 **Q. Why is the single-stage DCF Model a reasonable approximation of reality even**
20 **though firms cannot grow at rates in excess of GNP growth forever?**
21 A. To understand why the single-stage DCF Model may be a reasonable approximation of
22 reality, even if firms cannot grow at rates exceeding the GNP growth rate forever, recall
23 that the DCF Model assumes that the price of a company's stock is equal to the

discounted value of its future stream of dividends. Because future dividends are discounted at a rate, k, that exceeds the growth rate, g, dividends beyond a specific finite period, such as 40 or 50 years, have very little impact on the firm's stock price. Thus, the validity of the single-stage DCF Model depends only on whether firms can grow at a constant growth rate in excess of GNP for a long period, not on whether firms can grow at a constant growth rate in excess of GNP forever.[14]

Q. Does the fact that a company cannot grow at a rate of growth greater than the growth in GNP forever imply that Mr. Hirshleifer's growth assumptions are correct?

A. No. Mr. Hirshleifer seems to believe that his unusual three-stage growth assumptions necessarily follow from his statement that a company's earnings cannot grow at a rate greater than the rate of growth in the GNP forever. However, the truth of the statement, "A company's earnings cannot grow at a rate greater than the rate of growth in the GNP forever," does not imply the truth of Mr. Hirshleifer's four arbitrary and unsupported assumptions:

1. Companies' earnings will grow at the Value Line forecasted dividend growth rate for one year.
2. Companies' earnings will grow at the analysts' growth rate for four years.
3. Earnings growth will then decline linearly to the long-run growth in GNP for 15 years.
4. Earnings beginning in year 20 will then grow at the GNP growth rate forever.

[14] Using Mr. Hirshleifer's DCF cost of equity for Bell Atlantic, for example, and the 6.29 percent long-term growth rate he used in his updated calculations, the first 40 years of dividends account for 81 percent of the stock price.

Thus, Mr. Hirshleifer has provided neither logical nor empirical support for his use of a three-stage growth model.

Q. Does Mr. Hirshleifer provide any evidence to support his unusual assumptions that his proxy companies will grow at the Value Line growth rate for one year, the I/B/E/S analysts' forecasted growth rate for the next four years, then decline linearly to his estimate of the long-run growth in GNP over the next 15 years, and then grow at his estimate of GNP growth forever?

A. No. Mr. Hirshleifer's assumptions are arbitrary, and he provides no evidence to support them.

Q. Do you have any evidence that investors expect Mr. Hirshleifer's holding companies to grow at a rate higher than the analysts' growth rate in the period beyond five years?

A. Yes. Value Line publishes data that can be used to estimate a company's long-run sustainable growth from internal sources. The sustainable growth estimate can be obtained by multiplying Value Line's forecast of the company's rate of return on equity by Value Line's forecast of the company's retention ratio. The long-run sustainable growth from internal sources for Mr. Hirshleifer's companies using Value Line data is 15.6 percent (see Vander Weide Rebuttal Schedule 4).

1 **4. Flotation Expenses**

2 **Q. You note that Mr. Hirshleifer assumes that firms incur no flotation costs when they**
3 **issue debt and equity securities. Is his assumption reasonable?**

4 A. No. All firms that have sold securities in the capital markets have incurred some level of
5 flotation costs, including underwriters' commissions, legal fees, printing expense, etc.
6 These costs are withheld from the proceeds of the debt and equity sale, or are paid
7 separately, and must be recovered over the life of the issue.

8

9 **Q. Does the financial literature provide any evidence of the impact of flotation costs on**
10 **the cost of equity?**

11 A. Yes. The financial literature indicates that equity flotation costs vary depending upon the
12 size of the issue, the type of registration method used and other factors, but in general
13 these costs range between three and five percent of the proceeds from the issue [see Lee,
14 Inmoo, Scott Lochhead, Jay Ritter, and Quanshui Zhao, "The Costs of Raising Capital,"
15 *The Journal of Financial Research*, Vol XIX No 1 (Spring 1996), 59-74, and Clifford W.
16 Smith, "Alternative Methods for Raising Capital," *Journal of Financial Economics* 5
17 (1977) 273-307]. In addition to these costs, there is likely to be a decline in price
18 associated with the sale of shares to the public. On average, the decline due to market
19 pressure has been estimated at two to three percent [see Richard H. Pettway, "The Effects
20 of New Equity Sales Upon Utility Share Prices," *Public Utilities Fortnightly*, May 10,
21 1984, 35-39].

22

23 From the above evidence, the total flotation cost, including both issuance expense
24 and market pressure, could range anywhere from five to eight percent of the proceeds of

1 an equity issue. I believe a combined five percent allowance for flotation costs is a
2 conservative estimate that can be used in applying the DCF Model in this proceeding.
3 For Mr. Hirshleifer's group of telecommunications companies, a five-percent flotation
4 cost allowance would increase Mr. Hirshleifer's estimate of the cost of equity by
5 approximately 15 basis points.
6
7 **Q. Do you have any evidence regarding the impact of bond flotation costs on the**
8 **market cost of debt?**
9 A. Yes. A 1998 Bear Stearns study indicates that bond flotation costs increased the cost of
10 debt by approximately 10 basis points with respect to 349 telecommunications company
11 issuances from January 1993 through June 1998.
12
13 **Q. Why is it necessary to include flotation costs when estimating the cost of capital for**
14 **use in long-run incremental cost studies such as those prepared by AT&T and**
15 **WorldCom?**
16 A. The purpose of AT&T's and WorldCom's long-run incremental cost study is to estimate
17 the forward-looking economic cost a competitive provider would incur if they were to
18 build a new telecommunications network to provide unbundled network elements.
19 Companies who build a telecommunications network for the first time would obviously
20 have to issue debt and equity securities to finance their investment in the facilities
21 required to provide network elements. Flotation costs are a necessary expense of firms
22 issuing such securities. Therefore, they should be included in any study of the forward-
23 looking economic cost of providing unbundled network elements and interconnection.