

Vander Weide's S&P 400 industrial companies as an appropriate comparison group: "we see no systematic reason that the level of risk represented by the S&P 400 as group should be biased either above or below that of an ILEC providing unbundled network elements."²⁶ The MDTE also accepted the equity-rich capital structure assumed by Dr. Vander Weide.²⁷

38. The MDTE agreed, however, with Dr. Hubbard's criticism of the perpetual growth assumption implicit in Dr. Vander Weide's one-stage DCF model:

On this matter, we agree with Dr. Hubbard. The mathematical result of Dr. Vander Weide's analysis [sic²⁸] is uncontroverted and reasonable. Dr. Vander Weide's testimony [that the Value Line short-term growth estimates are in fact projections of long run earnings growth] is not documented on the record, and, even if it were, does not address the underlying problem explained by Dr. Hubbard with regard to the model.

Accordingly, the MDTE directed NYNEX to resubmit its cost study based on a cost of capital conducted "in accordance with the three-stage growth methodology used by Dr. Hubbard."²⁹

4. The Massachusetts DTE's decision of February 1997

39. On December 18, 1996, NYNEX petitioned the MDTE to reconsider its determination to adopt a three-stage DCF model. Substituting a three-stage DCF model for Dr. Vander Weide's one-stage model, NYNEX stated, would single-handedly reduce Dr. Vander Weide's

²⁶ *Id.* at 50.

²⁷ *Id.* at 52-53. For the cost of debt, the MDTE, finding that the difference between the 7.7 percent debt cost calculated by Dr. Hubbard and the 7.9 percent value calculated by Dr. Vander Weide was insignificant, simply split the difference, adopting a value of 7.8 percent. *Id.* at 52.

²⁸ This appears to be an error; the MDTE appears to have intended "Dr. Hubbard's analysis."

²⁹ *Id.* at 51-52.

equity cost estimate from 14.8 percent to 11.38 percent.³⁰ This in turn would reduce the weighted average cost of capital from Dr. Vander Weide's value of 13.18 percent to *10.5 percent*.³¹ "Such an outcome," NYNEX asserted, "is totally at odds with the Department's recognition in the Order that NYNEX will face significantly greater risks in the future."³² NYNEX did not explain, however, what relevance the choice of a one-stage vs. three-stage DCF had to Dr. Vander Weide's risk assumptions, particularly in light of the MDTE's continued embrace of 400 firm S&P Industrial comparison group offered by NYNEX and Dr. Vander Weide as an appropriate proxy for the competitive risk facing NYNEX in Massachusetts.

40. On February 5, 1997, the DTE changed its position.³³ The DTE stated its concern that substituting a three-stage would reduce Dr. Vander Weide's cost of capital by so large an amount:

We expected, based on [Dr. Vander Weide's] testimony, that use of the multi-stage model would produce a minor adjustment to NYNEX's proposed 14.8 percent return on equity . . . Unfortunately, we did not actually ask for the model to be run during the course of the proceeding and only now learn that our interpretation of Dr. Vander Weide's testimony was mistaken . . .³⁴

Such a large downward adjustment, the DTE continued, "produces results that are not reasonable, given our more qualitative findings concerning the relative risk of providing unbundled network

³⁰ Letter dated December 18, 1996 from Bruce Beausejour, NYNEX counsel, to Mary L. Cottrell, Secretary to MDTE.

³¹ $(11.38 * 0.7649) + (7.8 * 0.2351) = 10.538342$.

³² December 18 letter at 1.

³³ Decision served February 5 1997 ("Phase 4-A Decision").

³⁴ *Id.* at 5.

elements.”³⁵ Like NYNEX, the MDTE failed to explain how the 11.38 percent result of a three-stage DCF analysis of Dr. Vander Weide’s data, which continued to incorporate the 400-firm comparison group of industrial companies represented by NYNEX as fully reflective of its forward-looking business risk—failed to reflect the “relative risk of providing unbundled network elements.”

41. The DTE declined to adopt either the 14.8 percent cost of equity offered by Dr. Vander Weide or the 11.5 percent cost of equity offered by Dr. Hubbard. Instead, the DTE asserted that the witnesses’ “extensive qualitative discussion” of risk factors supported a 13.5 percent return on equity. The DTE pronounced this figure as reasonable “viewing the entire record in this proceeding,” but did not offer any explanation of how it had derived the number.³⁶ Combined with the debt cost and capital structure previously adopted by the MDTE, the 13.5 percent cost of equity produced a weighted average cost of capital of 12.16 percent.³⁷

5. The Massachusetts DTE’s October 2000 Comments

42. The MDTE has added two more justifications for the 12.16 percent cost of capital in its comments of October 16, 2000, on Verizon’s Section 271 application to this Commission. First, the MDTE contends, it is irrelevant that Verizon’s “actual” (i.e., current) cost of capital may be lower than 12.16 percent because “TELRIC is not designed to match historic or actual costs of the ILEC.”³⁸ Second, the disparity between the 12.16 percent cost of capital and the far lower values adopted by

³⁵ *Id.*

³⁶ *Id.*

³⁷ $(13.5 \times 0.7649) + (7.8 \times 0.2351)$

³⁸ CC Docket No. 00-176, Evaluation of the Massachusetts Dept. of Telecommunications and Energy (Oct. 16, 2000) at 330-32.

the MDTE peer commissions elsewhere in Verizon's service area is irrelevant, because states retain flexibility to consider "local technological, environmental, regulatory, and economic conditions."³⁹

B. The Massachusetts DTE's Adoption Of An Equity Cost Of 13.5 Percent Was Completely Unsupported By The Record.

43. The MDTE's adoption of an equity cost of 13.5 percent, and a weighted average cost of capital of 12.16 percent, is without foundation and appears to be result-oriented. The notion that Verizon's "actual" (i.e., current) cost of capital is irrelevant because "TELRIC is not designed to match historic or actual costs of the ILEC" is incomprehensible. Neither Dr. Hubbard's study nor Dr. Vander Weide's study proposed to limit the cost of capital to the embedded cost of Verizon's outstanding debt, and estimating the cost of equity is, by definition, always a forward-looking exercise focused on the *expected* risks and cash flows. As Ibbotson Associates explains:

The cost of capital is always an expectational or forward-looking concept. While the past performance of an investment and other historical information can be good guides and are often used to estimate the required rate of return on capital, the expectations of future events are the only factors that actually determine the cost of capital.⁴⁰

The issue here is whether the forward-looking risks and cash flows assumed by the MDTE were the relevant ones. As Dr. Hubbard explained in his testimony, and as we explain further below, the answer is no.

44. Likewise, the Massachusetts DTE identifies no local condition peculiar to Massachusetts that warrants such a high cost of capital. Dr. Vander Weide also advocated essentially

³⁹ *Id.* at 336.

⁴⁰ Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation: Valuation Edition 2000 Yearbook*, p. 9.

the same weighted average cost of capital, based on the same methodology and supported by substantially the same narrative testimony, in testimony for Verizon in numerous UNE rate cases before other state commissions in 1996 and 1997. The only state-to-state variations in his results stemmed from minor differences of a few basis points in the debt cost data that he submitted in each state.

**WEIGHTED AVERAGE COST OF CAPITAL ("WACC")
PROPOSED BY DR. VANDER WEIDE
IN STATE UNE PROCEEDINGS IN 1996-97**

Company	Date of Direct Testimony	WACC Proposed
BA – DC	1/17/97	13.2%
BA – Delaware	12/16/96	13.2%
BA – Maryland	1/10/97	13.2%
<i>BA – Massachusetts</i>	<i>10/28/96</i>	<i>13.18%</i>
BA – New Jersey	9/18/96	13.18%
BA – New Jersey	11/4/96	13.2%
BA – Virginia	12/20/96	13.2%
BA – Virginia	4/23/97	13.2%
BA – West Virginia	2/13/97	13.18%

45. Accordingly, it is evident that the reasonableness of the 12.16 cost of capital adopted by the MDTE stands or falls on the three main issues of dispute between Dr. Hubbard and Dr. Vander Weide: the choice between a one-stage and three-stage DCF, the appropriate DCF comparison group, and the appropriate debt/equity ratio. Unless the DTE's assumptions in each area were correct, the 12.16 value is significantly overstated. In fact, as we now show, the DTE's choices in all three areas are completely unsupported.

1. The risk assumptions of Verizon and the Massachusetts DTE, even if completely correct, cannot support a cost of equity above 11.38 percent.

46. The MDTE's avoidance of the implications of a three-stage DCF, and the agency's belated substitution of a "qualitative" 13.5 percent return on equity, are unsupported by the record. The MDTE's claim that the 11.38 percent cost of equity generated by substituting a three-stage DCF analysis of Dr. Vander Weide's comparison group of industrial companies fails to reflect the "relative risk of providing network elements" is not sensible. In a DCF model, the analyst captures the risk of the business being analyzed by selecting an equally risky group of publicly traded companies (or a group of the closest proxies) for analysis, not by adjusting the assumed sustainability of their earnings growth over the long run. The 14.8 percent cost of equity derived by Dr. Vander Weide from his one-stage DCF analysis, and the 11.38 percent cost of equity obtained by substituting a three-stage DCF model are premised on *identical* judgments about the risk of NYNEX: *both* values are derived from the *identical* group of 400 industrial companies selected by Dr. Vander Weide.

47. The MDTE has certainly offered no basis for finding that NYNEX faces *greater* risk than does the average company in Dr. Vander Weide's 400 company comparison group. As noted above, the MDTE specifically found that Dr. Vander Weide's comparison group had a risk comparable to NYNEX's local operations: "we see no systematic reason that the level of risk represented by the S&P 400 as group should be biased either above or below that of an ILEC providing unbundled network elements." Phase 4 Decision at 50. Moreover, Verizon, the sponsor of Dr. Vander Weide's testimony, obviously had every incentive to offer as risky a comparison group as possible. If the record contains any evidence from any party that the proper comparison group for NYNEX should have been even riskier, the MDTE does not cite it.

48. Moreover, the MDTE has not abandoned its initial finding that a one-stage DCF model is unsound. Nor could the MDTE legitimately do so. It is undisputed by reputable financial analysts that the perpetual growth assumption grossly overstates the present value of the future returns of a company that is currently experiencing above-average earnings growth. Sooner or later, the rate of earnings growth for a firm can be expected to regress to the mean as the firm reaches the limits of its potential markets, or succumbs to new competition, technological innovation, management errors, or other factors that reduce earnings growth.

49. Dr. Vander Weide has defended his assumption of perpetual growth on the grounds that some companies have grown at high rates for longer than five years. His logic is indefensible. To be sure, individual sectors of the economy, and individual companies participating in any particular line of business, will have differing growth rates over different time periods. Clearly, a few companies will do extraordinarily well, and may grow at high rates for many years. However, even the most rapid growers identified by Dr. Vander Weide (e.g., Wal-Mart, Intel, Merck and CenturyTel) cannot grow at those rates perpetually. If any one of the companies in Dr. Vander Weide's S&P group experienced super-normal growth in excess of the market-wide rate of growth forever, that one company would eventually grow to become the entire economy.

50. Indeed, studious analysts would be hard-pressed to agree that these particular companies will all grow at high rates for the *next* 20 years, let alone forever. Intel, for example, has been the single most dominant microprocessor producer serving the microcomputer industry, which grew from a base of close to zero in the early 1980s, when microcomputers were unknown to

consumers, to widespread use worldwide as of today. Obviously, the entire S&P Industrials does not enjoy the incredible position that Intel was in at the commencement of the 1980s.⁴¹

51. Moreover, it is equally certain that other companies that currently enjoy above-average projections of short-term growth will perform very poorly, and may experience low or negative growth (or go out of business entirely). Just in the last two years, for example, Laidlaw, Helmerich & Payne, Foster Wheeler, Fleetwood Enterprises, Pep Boys, Silicon Graphics, IKON Office Solutions, Milacron and several others were dropped from the S&P Industrial group. Laidlaw's earnings growth rate averaged *negative* 1% over the past 10 years; Pep Boys' *negative* 8.5% over the past 5 years; IKON's *negative* 2.5% over the past 10 years and *negative* 8.5% over the past 5 years. Had these and other companies that have been dropped from the S&P Industrials over the course of time remained in the set, the expected growth rate for the aggregate sample would also likely be lower than the rate currently forecasted. And the vast majority of industry participants that currently enjoy above-average growth are likely to experience long-run growth somewhere between the highest-growth stars and the weak underperformers.

52. The problem facing investors is that no analyst can definitively predict which companies in an industry will be the winners and which will be the losers over the long run. Neither Dr. Vander Weide nor anyone else can tell which companies of his S&P Industrial sample, or even of a sample of telephone companies, will grow at above-average rates, and which will have average or below-average rates of growth. Because the actual long-run performance of any company will be

⁴¹ Indeed, Intel's stock price has dropped nearly 50% from September 2000 until the present date, and the company has announced lower expected earnings. It is probably too early to know whether Intel's projected decline in earnings is a short-term blip or the harbinger of a longer-term slowdown in growth. One fact is clear, however: Intel is unlikely to continue growing indefinitely at the pace it set in recent years.

known for certain only in hindsight, the expected returns demanded by a rational investor reflect the likelihood that corporate growth will regress to the mean—not the atypical performance of the subset of above-average performers.

53. Other scholars and practitioners share our belief that the constant growth assumption is untenable for companies growing at supra-normal rates. Burton Malkiel, for example, has stated that:

Corporations and industries have life cycles similar to most living things. There is, for corporations in particular, a high mortality rate at birth. Survivors can look forward to rapid growth, maturity, and then a period of stability. Later in the life cycle, companies eventually decline and either perish or undergo a substantial metamorphosis. Consider the leading corporations in the United States 100 years ago. Such names as Eastern Buggy Whip Company, La Crosse and Minnesota Steam Packet Company, Lobdell Car Wheel Company, Savannah and St. Paul Steamship Line, and Hazard Power Company, the already mature enterprises of the time, would have ranked high in a "*Fortune* Top 500" list of that era. All are now deceased.

Look at the industry record. Railroads, the most dynamic growth industry a century ago, finally matured and enjoyed a long period of prosperity before entering their recent period of decline. The paper and aluminum industries provide more recent examples of the cessation of rapid growth and the start of a more stable, mature period in the life cycle. These industries were the most rapidly growing in the United States during the 1940s and early 1950s. By the 1980s they were no longer able to grow any faster than the economy as a whole.

Similarly, the most rapidly growing industry of the late 1950s and 1960s, the electronics industry, had slowed to a crawl by the 1970s.

And even if the natural life cycle doesn't get a company, there's always the fact that it gets harder and harder to grow at the same percentage rate. A company earning \$1 million need increase its earnings by only \$100,000 to achieve a 10 percent growth rate, whereas a company starting from a base of \$10 million in earnings needs \$1 million in additional earnings to produce the same record.

The nonsense of relying on very high long-term growth rates is nicely illustrated by working with population projections for the United States. If the populations of the nation and of California continue to grow at their recent rates, 120 percent of the United States population will live in California by the year 2035! Using similar kinds of projections, it can be estimated that at the same time 240 percent of the people in the country with venereal disease will live in California. As one Californian put it on hearing these forecasts, 'Only the former projections make the latter one seem at all plausible.'⁴²

54. Investment banks and other finance professionals also use multi-stage rather than one-stage DCF analyses. We have examined numerous DCF valuations over the years, virtually all of which have used multi-stage forecast methodologies. This is because analysts are constrained by the reasonability of their valuation results. No one reasonably expects that companies that are growing quickly now will grow at high rates for long, long periods of time. If one were to make such assumptions, the resulting valuations would be stratospheric, and it would be clearly evident to the analyst that it was simply wrong.⁴³

2. The DTE's findings concerning the degree of risk faced by Verizon are unsupported by the record and contrary to Verizon's own admissions.

55. Because modifying Dr. Vander Weide's DCF analysis to include a three-stage DCF growth assumption single-handedly reduces his estimated cost of equity from 14.8 percent to 11.38 percent (and the overall cost of capital from 13.18 percent to 10.5 percent), the 12.16 percent cost of capital adopted by the MDTE would be excessive even if the MDTE's findings about the risk of Verizon's local business were credited in their entirety. Nevertheless, a brief review of the MDTE's evaluation of the risk of supplying UNEs makes clear that it is overstated as well.

⁴² Burton G. Malkiel, *A Random Walk Down Wall Street*, 1999, pp. 97-99.

⁴³ Dr. Vander Weide's characterization of the earnings forecasts published by Value Line as "long run" forecasts is simply incorrect. It is clear to any reader of the Value Line reports that forecasts are provided for up to 5 years only. Our staff has confirmed directly with Value Line that the company does not forecast future earnings beyond five years.

56. As the MDTE seems to acknowledge, the relevant line of business in UNE cost proceedings is not local retail phone service, let alone the non-local operations of holding companies like Verizon, but rather the wholesale business of leasing network elements to CLECs that provide competitive phone service to an existing retail market. In particular, retail competition for Verizon by competing local exchange carriers that purchase UNEs from Verizon, or buy Verizon's wholesale service for resale, diverts no volume or revenue from Verizon's wholesale business of supplying UNEs. The risk of entry of local competitors that buy UNEs from Bell Atlantic or resell services purchased at wholesale from Bell Atlantic may be a competitive threat to Bell Atlantic's retail operations, but is a potential source of additional revenue to Bell Atlantic's wholesale operations.

57. The Commission has agreed that the relevant risk is the risk incurred in the *wholesale* business of supplying unbundled network elements, not the retail business of providing local service to end users. *Local Competition Order* (August 8, 1996) ¶ 702. As the District Court stated in *Bell Atlantic-Delaware, Inc. v. McMahon*, 80 F.Supp.2d 218, 240 (D.Del. 2000):

In assessing Bell's case for an elevated cost of equity, the Hearing Examiners criticized the testimony of Bell's expert, Dr. James Vander Weide. The Examiners noted that Vander Weide based his cost of equity on the risk associated with Bell's retail business instead of on the future demand for Bell's network elements that it will sell at *wholesale*. AT&T's expert, Bradford Cornell, also criticized Vander Weide's analysis as "ignor[ing] the critical fact that the business at hand in this proceeding is *not* local retail phone service that already exists, but rather the new business of leasing of network elements at *wholesale* for use in providing competitive phone services to an existing *retail* market." [citation omitted] The distinction between wholesale and retail is crucial.

Retail competition is competition for the end user of telephone service. That sort of competition is not at issue when determining the risks associated with leasing unbundled network elements (e.g., loops and switches) at wholesale. The risks associated with leasing "bottleneck" network elements at wholesale is less than that

associated with competition for retail service. *See August 8, 1996 Order* ¶ 702, at 353 (noting that network elements “generally are bottleneck, monopoly services that do not now face significant competition”). This is so because Bell often is the only provider of these network elements, and it is to Bell that new entrants must come to lease or purchase loops, switches, or other network elements. Thus, even if retail competition intensifies, Bell’s prominence as a wholesale provider of network elements will remain largely unaffected—at least until new entrants build their own networks. [footnote omitted] Accordingly, the Hearing Examiners correctly rejected Vander Weide’s testimony as impermissibly attributing the risks of retail competition to the competition in the sale of unbundled network elements. *See August 8, 1996 Order* ¶ 691, at 348 (explaining that, “[o]nly those costs that are incurred in the provision of network elements in the long run shall be directly attributable to those elements”).

58. Apparently recognizing this fact, the MDTE asserts in its decisions that Verizon going forward faces a significant threat of local competition that is facilities-based. Verizon has powerful defenses against such competitive diversion, however, including its status as the known and established local exchange provider. Verizon’s experience since approval of its Section 271 application in New York is telling. As Credit Suisse First Boston reports, in the first half of 2000 “Verizon grabbed 11.5% consumer-market share [of interexchange service] in New York at low incremental costs.”⁴⁴

59. The MDTE’s pessimistic view of Verizon’s competitive posture is also at odds with Verizon’s own representations to investors and the SEC. Bell Atlantic’s 4th Quarter 1999 Investor Quarterly states, for example, that:

On the retail side, we will benefit from the new brand we’ll be introducing this year, the bundling opportunities as regulatory barriers fall, and the heightened competitiveness of our core telecom products

⁴⁴ Credit Suisse First Boston, RBOC/ILEC 2Q00 Review, September 6, 2000, p.5.

with LD entry. *(Actually, we have more to gain from being able to compete better for business customers than we have to lose in the local consumer market.)*⁴⁵

And on the wholesale side, our high-efficiency network model allows us to retain as much traffic on our network as possible. Remember, *virtually all the competition in the local consumer marketplace travels over our network today*, which allows us to retain a high percentage of our retail revenues. The net of all this is a very healthy business: volumes are strong and growing, our wholesale business will grow this year at close to double digit rates, and *even lost market share translates into more traffic for our network.*⁴⁶

60. Verizon has backed up these claims with action. Verizon's CEO Ivan Seidenberg recently trumpeted the company's confidence in its expected performance by announcing its aggressive buy-back of its shares.⁴⁷

61. Morgan Stanley likewise states that,

There is no doubt that competitive pressures are significant in the industry, with the recent opening up of New York to Bell Atlantic long distance heralding the new era. Nevertheless, we continue to firmly believe that the pie is growing, and those companies who execute effectively can succeed despite competitive pressures. The Bells have already absorbed significant local and toll competition from CLECs as well as significant rate reductions over the past several years. We also see the control of the customer, and the local loop combining with scale advantages to create significant competitive leverage for the local phone companies.⁴⁸

62. In any event, whatever losses (if any) that investors expect Verizon to suffer from facilities-based competition have already been incorporated in the price of Verizon's stock. If such

⁴⁵ Bell Atlantic Investor Quarterly 4Q '99, Jan. 24, 2000 (emphasis added).

⁴⁶ Bell Atlantic Investor Quarterly 4Q '99, January 24, 2000, p. 17 (emphasis added).

⁴⁷ Verizon Press Release, "Verizon Responds to Recent Market Activity," July 21, 2000

⁴⁸ Morgan Stanley Dean Witter, "Telecom - Wireline", January 21, 2000.

fears of competition were significant to investors' estimates of the required cost of capital, they have already accounted for them in valuing Verizon's stock. The actual or potential advent of facilities-based local competition has been discussed widely by financial publications and investment analysts, and this development thus can be presumed to be well known to investors.

63. Because investors already have incorporated the available information about the risks facing local telephone companies, there is no need to substitute the S&P Industrials for telephone holding companies in the DCF comparison group. The DCF method for estimating the cost of equity is based on market prices which incorporate all available information in the marketplace. Whether or not the current or prospective risk of local telephone companies is higher than in the past, all material information about this risk should be reflected in the current market prices of those companies' stock, and thus should be reflected in a DCF comparison group that consists of holding companies with local telephone subsidiaries.

64. Even Verizon has acknowledged elsewhere that the companies whose risks are most comparable to its own risk are the other regional Bell holding companies – not the S&P 400 Industrials or other industrial companies. The joint proxy statement/prospectus submitted by Bell Atlantic and GTE to their shareholders and the SEC on April 14, 1999, included valuation analyses by both of GTE's financial advisors, Goldman Sachs and Salomon Smith Barney, employing a comparison group of "Regional Bell Holding Companies" consisting of most of the same RBOCs used in my comparison group.⁴⁹

⁴⁹ Goldman Sachs and Salomon Smith Barney's group of "publicly-traded regional telecommunications companies" consists of Ameritech, BellSouth, SBC, and US West. Salomon Smith Barney also used a secondary list of "independent telephone companies" consisting of Aliant Communications, ALLTEL, Century Telephone, Cincinnati Bell, and Southern New England Telephone.

65. Public utility commissions in other Verizon states have agreed that telephone holding companies with local operations continue to provide the most appropriate DCF comparison group. For example, the United States District Court in Delaware, upholding the decision of the Delaware PSC in 1997 to include a weighted average cost of capital of only 10.28 percent in the prices of UNEs offered by Verizon in Delaware, quoted with approval the following findings:

The [Delaware PSC Hearing] Examiners also discounted Vander Weide's analysis because he based his cost of equity calculation on the assumption that Bell's business was as risky as that of a Standard & Poor's ("S&P") 400 industrial firm. . . . Because these S&P firms employ a variety of technologies and enjoy a wide array of market shares, the Hearing Examiners concluded that the risks faced by these firms said little about the risk Bell faced in the market for unbundled network elements. . . . Instead, they accepted AT&T's assessment of Bell's risk, which it premised upon the risk experienced by other telephone holding companies.

Bell Atlantic-Delaware, Inc. v. McMahon, 80 F.Supp.2d 218, 241 (D.Del. 2000) (citations omitted).

C. An Efficient Supplier of UNEs Would Rely Far Less On Equity Financing Than The Massachusetts DTE Has Assumed.

66. The 12.16 percent cost of capital adopted by the Massachusetts DTE is overstated in a third independent respect: it appears unlikely that an efficient forward-looking supplier of UNEs would adopt a target capital structure with only 24 percent debt financing. Efficient debt/equity ratio depends on the risk of the firm's line of business: the more risky the business, the more equity and the less debt is appropriate. The MDTE appeared to recognize this fact in its December 1996 Phase 4 decision.⁵⁰ Dr. Vander Weide, for his part, has explicitly recognized it elsewhere. In testimony

⁵⁰ Phase 4 final Decision served Dec. 4, 1996, at 52-53 (indicating that the appropriate debt/equity ratio is a function of the risk of the business).

submitted to the Virginia State Corporation Commission regarding Virginia's Experimental Plan (Case No. PUC920029), explained that,

According to financial theory, the appropriate capital structure for an enterprise is determined by its own business risk, the liquidity and the market value of its own assets, and its own competitive strategy. The proper capital structure for the LECs participating in the Plan is related to their own business situation, not their parent company's. The parent companies of the LEC's each have capital structures that reflect their particular business situations. There is evidence of parent company diversification into financial services, real estate, cellular, interLATA services, cable television, and overseas ventures. The LECs participating in the Plan have no investment in their parent's diversification efforts, and the risks of these ventures are unrelated to the LECs business risks as local telephone companies. [emphasis added]

67. The MDTE adopted the market debt/equity ratio of Dr. Vander Weide's S&P Industrials group on the theory that the business of supplying UNEs is as risky as the average business in the S&P Industrials group.⁵¹ Because this assumption is unfounded, a more leveraged capital structure is warranted. Because the capital structure of enterprises devoted to the wholesale supply of unbundled network elements is not directly observable, Dr. Hubbard's alternative of using a debt/equity ratio equal to the average of the book and market debt/equity ratios of his telephone holding group is a reasonable approach.

68. Many other state commissions have agreed. In a UNE proceeding involving Ameritech, for example, the Public Utilities Commission of Ohio found that:

Rather than adopting the cost of capital recommended by Ameritech, we find that, on balance, the midpoint cost of capital recommendation advanced by the AT&T/MCI witness Dr. Cornell most accurately

⁵¹ *Id.*

reflects the appropriate forward-looking cost of capital for use in Ameritech's TELRIC studies. In adopting the AT&T/MCI recommendation, we note that Dr. Cornell provided the most extensive support and analysis for his cost of capital recommendation. Based on the record presented to us, we are most comfortable with the analysis Dr. Cornell has undertaken.⁵²

In that proceeding, the Ohio Commission adopted Prof. Cornell's recommended cost of capital of 9.74%.

69. Similarly, in a recent proceeding involving Cincinnati Bell, the same commission adopted the recommendation of its Staff to use the book capital structure for Cincinnati Bell Telephone: 42.24% debt and 57.76% equity. Rejecting Dr. Vander Weide's argument on behalf of Cincinnati Bell for adopting a lower debt/equity ratio, the Ohio commission specifically noted that the capital structure proposed by its Staff approximated the mid-point of the range proposed by one of us. The resulting weighted average cost of capital adopted by the Ohio commission was 9.56 percent.⁵³

⁵² Opinion and Order, *In the Matter of the Review of Ameritech Ohio's Economic Costs for Interconnection, Unbundled Network Elements, et al.*, The Public Utilities Commission of Ohio, Case no. 96-922-TP-UNC, June 19, 1997.

⁵³ "We find that, under the facts and circumstances presented in this case, the staff's book capital structure should be adopted for purposes of determining the cost of capital. Staff witness Chaney recommends that a capital structure of 42.24 percent long-term debt and 57.76 percent common equity be used for purposes of this case. ... The staff's recommended capital structure approximates the mid-point of Mr. Hirshleifer's proposed range." The Public Utilities Commission of Ohio, Supplemental Opinion and Order, *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, pp.13 & 15.

VERIFICATION

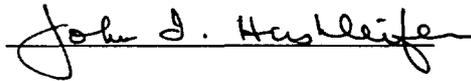
I, Bradford Cornell, declare under penalty of perjury that the foregoing is true and correct. Executed on November 1, 2000.

A handwritten signature in cursive script, reading "Bradford Cornell", is written over a horizontal line.

Bradford Cornell

VERIFICATION

I, John I. Hirshleifer, declare under penalty of perjury that the foregoing is true and correct. Executed on November 1, 2000.

A handwritten signature in cursive script that reads "John I. Hirshleifer". The signature is written in black ink and is positioned above a solid horizontal line.

John I. Hirshleifer



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Ph.D. Financial Economics, Stanford University, 1975
M.S. Statistics, Stanford University, 1974
A.B. (Interdepartmental) Physics, Philosophy and Psychology, Stanford University,
1970

ACADEMIC AND PROFESSIONAL POSITIONS

1987–Present: Bank of America Professor of Finance, Anderson Graduate School of
Management, UCLA
1990–1999: President, FinEcon: Financial Economic Consulting
1988–1990: Vice-President and Director of the Securities Litigation Group, Economic
Analysis Corporation
1979–1986: Assistant and Associate Professor of Finance, UCLA
1983–1984: Visiting Professor of Finance, California Institute of Technology
1977–1979: Assistant Professor of Finance, University of Southern California
1975–1977: Assistant Professor of Finance, University of Arizona

Courses Taught

Corporate Valuation
The Law and Finance of Corporate Acquisitions and Restructurings
Corporate Financial Theory
The Theory of Finance (in the UCLA Law School)
Security Valuation and Investments
A wide variety of executive and community education programs

Special Education Programs Include

The U.S. Business School in Prague — Special Finance Program, Summer 1991
The Nissan Program for Historically Black Colleges, Director, Summer 1989
The Lead Program for Business Education of Minority High School Students, 1987–Present



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CONSULTING AND PROFESSIONAL ACTIVITIES

Selected Service at UCLA

Twice Chairman of Finance Department
Twice Vice Chairman of the Anderson School
Three-time member of the staffing and promotion committee

Service to Scholarly Journals and Organizations

Served as an associate editor for a variety of scholarly and business journals including: *Journal of Finance*, *Journal of International Business Studies*, *Journal of Business and Economics*, *Journal of Financial Research*, *Journal of Futures Markets*, and the *Investment Management Review*.

Served as a reviewer for numerous finance and economics journals including: *American Economic Review*, *Journal of Political Economy*, *Journal of Financial Economics*, *Journal of Business*, *Journal of Financial and Quantitative Analysis*, and the *Review of Economics and Statistics*.

Memberships in Professional Societies

American Finance Association: 1973–Present
Member of Board of Directors: 1987–1989
Western Finance Association: 1973–Present
Member of Board of Directors: 1982–1985
Vice President: 1987
American Economic Association: 1973–Present
American Bar Association: 1995–Present
American Statistical Association: 1992–Present
International Association of Financial Engineers: 1993–Present
American Law and Economics Association: 1995–Present
Human Behavior and Evolution Society: 1995–Present

Research Evaluation

Project reviewer for the National Science Foundation: 1979–Present
Program committee for the Western Finance Association: 1982–1988

Selected Board and Committee Memberships

Chairman, Mayor Riordan's Blue Ribbon Commission on Los Angeles' Municipal Investments
Pension Policy Board, The Aerospace Corporation: 1985–Present
Forms Engineering Corporation: 1976–1997
Trustee, Kellow Trust: 1982–1991



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Selected Consulting Clients

Merrill Lynch (obtained futures broker's license, owned a seat on the International Monetary Market of the Chicago Mercantile Exchange)
Chase Manhattan Bank
Thrifty Corporation
Wynn Oil
Resorts International

Expert Witness

Numerous cases involving the application of financial economics

Media Experience

Occasional contributor to *The Wall Street Journal* and *The Los Angeles Times*
Occasional commentator for local television and radio stations
Lecturer on valuation theory, appraisal practice, and securities pricing

PUBLICATIONS

Books

Cornell, B., 1999, *The Equity Risk Premium and the Long-run Future of the Stock Market*, John Wiley and Sons, New York, NY.

Cornell, B., 1994, "Corporate Valuation," in *Handbook of Modern Finance*, 3rd edition, Dennis Logue, ed., Warren Gorham Lamont, Boston, MA.

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Academic Articles

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Cornell, B., 1999, "Risk, Duration and Capital Budgeting: New Evidence on Some Old Questions," *Journal of Business*, 2 (April): 183–200.

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Cornell, B. and K. Green, 1991, "Measuring the Investment Performance of Low-grade Bond Funds," *Journal of Finance*, 66 (March): 29–48.

Cornell, B. and G. Morgan, 1990, "Using Finance Theory to Measure Damages in Fraud on the Market Cases," *UCLA Law Review*, 37 (No. 2): 883–924.

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Cornell, B., 1990, "Volume and R^2 ," *Journal of Financial Research*, 13 (No. 13): 1–7.

Cornell, B., 1990, "Measuring the Term Premium: An Empirical Note," *Journal of Economics and Business*, 42 (No. 1): 89–93.

Cornell, B., W. Landsman and A. Shapiro, 1989, "Cross Sectional Regularities in the Reaction of Stock Prices to Bond Rating Changes," *Journal of Accounting, Auditing and Finance*, 4 (No. 4): 460–479.



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Cornell, B. and A. Shapiro, 1989, "The Mispricing of U.S. Treasury Bonds: A Case Study," *The Review of Financial Studies*, 2 (No. 3): 297-310.

Cornell, B., 1989, "The Impact of Data Errors on Measurement of the Foreign Exchange Risk Premium," *Journal of International Money and Finance*, 8: 147-157.

Cornell, B. and W. Landsman, 1989, "Security Price Response to Quarterly Earnings Announcements and Analyst Forecast Revisions," *The Accounting Review*, 64 (October): 680-692.

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Cornell, B., A. Shapiro and W. Landsman, 1987, "The Impact on Bank Stock Prices of Regulatory Responses to the International Debt Crisis," *Journal of Banking and Finance*, 3: 161-178.

Cornell, B., 1987, "Pricing Interest Rate Swaps: Theory and Empirical Evidence," Proceeding of Conference on Swaps and Hedges, Saloman Brothers Center, New York University.

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Cornell, B. and A. Shapiro, 1985, "Interest Rates and Exchange Rates: Some New Empirical Evidence," *Journal of International Money and Finance*, 4: 431-442.

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