BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of	DOCKET NO. 980696-TP
Determination of the cost of basic local telecommunications service, pursuant to Section 364.025, Florida Statutes.	

VOLUME 2

Pages 144 through 361

PROCEEDINGS: HEARING

BEFORE: CHAIRMAN JULIA L. JOHNSON
COMMISSIONER J. TERRY DEASON
COMMISSIONER SUSAN F. CLARK
COMMISSIONER JOE GARCIA
COMMISSIONER E. LEON JACOBS, J

DATE: Monday, October 12, 1998

TIME: Commenced at 9:40 a.m.

PLACE: Betty Easley Conference Center
Room 148
4075 Esplanade Way
Tallahassee, Florida

REPORTED BY: H. RUTHE POTAMI, CSR, RPR
Official Commission Reporter

APPEARANCES:

(As heretofore noted.)

WITNESSES

EXHIBITS

NUMBER		ID.	ADMTD.
5	JH-1 through 1 and JH-1 and 2 (rebuttal)	147	147
6	JVW-1 through 8	251	251

PROCEEDINGS

(Transcript follows in sequence from Volume 1.)

MR. COX: Next section are the cost of the capital witnesses, and the first is John Hirschleifer for AT&T/MCI.

MR. NELSON: Madam Chairman, Mr. Hirschleifer had both direct and rebuttal testimony. He had 11 direct exhibits labeled JH-1 through JH-10 and -- I'm sorry -- 11 Exhibits; 1 through 11, and two rebuttal exhibits labeled JH-1 and JH-2. There's a duplication of numbers there. I'd ask that both the direct and rebuttal exhibits be identified.

CHAIRMAN JOHNSON: They will be identified as a composite exhibit, Composite Exhibit 5.

MR. NELSON: Thank you. And that the two pieces of testimony be inserted into the record.

CHAIRMAN JOHNSON: The testimony will be inserted into the record as though read, and the composite exhibit will be admitted without objection.

(Exhibit 5 marked for identification and received in evidence.)

BEFORE
THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 980696-TP

DIRECT TESTIMONY
OF
JOHN I. HIRSHLEIFER

ON BEHALF OF

AT&T COMMUNICATIONS OF THE SOUTHERN STATES, INC.

AND

MCI TELECOMMUNICATIONS CORPORATION

AUGUST 3, 1998

TABLE OF CONTENTS

I.

INTRODUCTION & QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John I. Hirshleifer and my business address is FinEcon, 10877 Wilshire Blvd., Los Angeles, California 90024.

Q. WHAT IS YOUR OCCUPATION?

A. I am Vice President and Director of Research of FinEcon, a firm which provides financial economic consulting services to corporations, law firms and government agencies.

Q. WHAT IS YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?

A. I graduated from the University of California at Los Angeles with an B.A. degree in 1976. Subsequently, I received my M.B.A. in finance in 1980 from UCLA's Anderson Graduate School of Management. I worked at Price Waterhouse from 1980 to 1984 and I am a certified public accountant in the State of California. From 1985 through 1990 I was the due diligence officer of Transamerica Financial Resources, Inc. (TFR), the broker-dealer subsidiary of Transamerica Corporation. While at Transamerica I held the registered representative, securities principal and financial and operations principal licenses, and ultimately became TFR's treasurer

and chief financial officer. At FinEcon I have been responsible for numerous engagements involving securities, valuation and cost of capital issues. I have provided cost of capital testimony in numerous state proceedings regarding the provision of network elements to competing local exchange carriers and the provision of universal service. I also co-authored an article entitled "Estimating the Cost of Equity", which was published in the Autumn 1997 issue of *Contemporary Finance Digest*. My resume is attached as Attachment JH-1.

II.
PURPOSE

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

A. I have been asked to estimate the forward-looking economic cost of capital that should be used in determining for the telephone subsidiaries of BellSouth and GTE; and for Central Telephone ("Centel") and United Telephone ("United"), subsidiaries of Sprint Corporation; the forward-looking cost of capital appropriate for the provision of universal service in Florida. As stated below, the midpoint of my cost of capital range for the provision of universal service is 8.50% for BellSouth, 8.74% for GTE, and 8.55% for Centel and United.

III.
SUMMARY OF TESTIMONY/RECOMMENDATIONS

Q. PLEASE SUMMARIZE THE BASIC APPROACH OF YOUR TESTIMONY.

A. My testimony involves applying the basic formula for the weighted average cost of capital ("WACC"), given as equation (1) below, to estimate the cost of capital.

Q. SUMMARIZE THE WACC FORMULA AND EXPLAIN HOW IT IS APPLIED.

A. The WACC formula is given by,

$$WACC = w_d * k_d + w_e * k_e \qquad (1)$$

where,

w_d = the fraction of debt in the capital structure,

k_d = the forward-looking cost of debt,

w_e = the fraction of equity in the capital structure,

k_e = the forward-looking cost of equity.

To apply the formula I estimate the forward-looking cost of both debt and equity using methodologies that are well accepted by both financial economists and regulators. In addition, I estimate the appropriate capital structure mix of debt and equity capital. With these inputs, the WACC can be calculated from equation (1).

Q. WHAT IS THE ESTIMATE FOR COST OF CAPITAL YOU CALCULATED FROM EQUATION (1)?

A. I estimate the cost of capital to be in the range of 7.94 to 9.05 percent for BellSouth. The average of this range is **8.50** percent. For GTE I estimate the cost

of capital to be in the range of 8.17 to 9.31 percent, with a midpoint of 8.74 percent. For Centel and United, I estimate a range of 7.97 to 9.12 percent, with a midpoint of 8.55 percent.

Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?

A. The remainder of my testimony is divided into six sections. Section IV discusses the fundamental relationship between risk and the cost of capital in light of both financial theory and widely-cited court decisions. Section V addresses the cost of debt that should be employed. Section VI develops several approaches to estimating the cost of equity capital. Section VII addresses the question of determining the appropriate capital structure to use when calculating the WACC, and presents my estimates of the WACC. Section VIII discusses why the cost of capital I have calculated for BellSouth, GTE, Centel and United, based on the public data available for companies at the holding company level, is likely to overstate the relevant cost of capital for the provision of universal service. Finally, Section IX presents a summary of my conclusions.

IV.

THE RELATIONSHIP BETWEEN RISK AND THE COST OF CAPITAL

Q. WHAT IS THE RELATION BETWEEN THE RISK OF AN INVESTMENT AND THE COST OF CAPITAL?

A. Financial research has shown conclusively that investors are risk averse. Consequently, the greater the risk of a business the higher the expected return that investors require to invest in the business. From the standpoint of a company, this means that riskier businesses will have higher costs of capital.

Q. HAVE THE COURTS RECOGNIZED THIS RELATION BETWEEN RISK AND RETURN?

A. Yes. The relation between risk and return is a centerpiece in decisions dealing with the fair rate of return for regulated businesses. In *Bluefield Water Works v. Public Service Commission*, 262 U.S. 679,692 (1923) the Supreme Court said:

> "A public utility is entitled to such rates as will permit it to earn a return... equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties..."

The Court went on to say:

> "The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties." Id. at 693.

In *Federal Power Commission v. Hope Natural Gas Company*, 320 U.S. 591,603 (1944), the Supreme Court stated:

"The return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital."

Q. WHAT RISKS ARE ASSOCIATED WITH THE PROVISION OF UNIVERSAL SERVICE?

A. It is my understanding that the purpose of a universal service fund will be to compensate providers for costs incurred to provide services to certain types of customers which are not compensated by payments from those customers. If this is the case, the risk associated with the provision of universal service will be minimal. A minor risk will then be the possibility that the compensation structure from the fund will not in fact work properly, resulting in either undercompensation or overcompensation to providers.

Q. WHAT IS THE VIEW OF THE FEDERAL-STATE JOINT BOARD ON UNIVERSAL SERVICE AND THE FCC ORDER ON UNIVERSAL SERVICE?

A. The Joint Board concludes that support should be set at forward-looking economic cost levels (Joint Board ¶276), and that the proxy model should measure the long-run cost of providing service by including a forward-looking cost of capital (Joint Board ¶277(4)). The FCC Order at paragraph 26 agrees that a forward-looking methodology should be used.

Q. WHAT ARE THE FCC'S CRITERIA FOR THE COST OF CAPITAL PER ITS MAY 8, 1997 UNIVERSAL SERVICE ORDER?

A. The May 8, 1997 Universal Service Order states at ¶250.(4) that:

> "The rate of return must be either the authorized federal rate of return on interstate services, currently 11.25 percent, or the state's prescribed rate of return for intrastate services. We conclude that the current federal rate of return is a reasonable rate of return by which to determine forward looking costs. We realized that, with the passage of the 1996 Act, the level of local service competition may increase, and that this competition might increase the ILECs' cost of capital. There are other factors, however, that may mitigate or offset any potential increase in the cost of capital associated with additional competition. For example, until facilities-based competition occurs, the impact of competition on the ILEC's risks associated with the supported services will be minimal because the ILEC's facilities will still be used by competitors using either resale or purchasing access to the ILEC's unbundled network elements. In addition, the cost of debt has decreased since we last set the authorized rate of return. The reduction in the cost of borrowing caused the Common Carrier Bureau to institute a preliminary inquiry as to whether the currently authorized federal rate of return is too high, given the current marketplace cost of equity and debt.

We will reevaluate the cost of capital as needed to ensure that it accurately reflects the market situation for carriers."

Q. TO WHAT EXTENT HAVE INTEREST RATES DECLINED SINCE THE FCC PRESCRIBED THE 11.25% RATE?

A. 30-year Treasury bond rates have fallen from 9.03% as of September 1990 to 5.62% as of June 30, 1998. This is a decline of 341 basis points since the 11.25% rate was prescribed. Using this decline as a rough rule of thumb would imply a current cost of capital of 7.84%, before considering the question of whether the risk has increased.

Q. WHAT DOES THE DECLINE IN INTEREST RATE IMPLY FOR THE DETERMINATION OF THE FORWARD-LOOKING COST OF CAPITAL?

A. The decline in interest rates implies that the 11.25% rate determined in 1990 would be too high an estimate for the forward-looking cost of capital. Therefore, the Florida Commission should determine the proper forward-looking cost of capital as part of this proceeding, as allowed under the FCC's criteria.

Q. ARE THE PRINCIPLES YOU HAVE CITED FROM THE SUPREME COURT DECISIONS CONSISTENT WITH THE PROVISIONS OF THE TELECOMMUNICATIONS ACT OF 1996 (the 1996 Act) DEALING WITH UNBUNDLED NETWORK ELEMENTS?

A. Yes. Section 251(c)(3) of the 1996 Act indicates that incumbent local exchange carriers have the duty to provide to any requesting telecommunications carrier access to unbundled network elements at rates, terms and conditions that are just, reasonable and nondiscriminatory. Section 252(d) further provides that a State commission shall determine just and reasonable rates for network elements based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the interconnection or network element and may include a reasonable profit. The provision for a reasonable profit as an element of total cost is consistent with the opinions of the Supreme Court in both the Hope and Bluefield cases. A utility's reasonable profit is essentially a true economic return commensurate with the risk its business. In order to achieve this, the pricing of utility services and products must be based on true economic costs.

Q. ARE ECONOMIC COSTS FORWARD-LOOKING OR BACKWARD-LOOKING?

A. 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 BellSouth's common stock, which is fundamentally a claim on the net assets BellSouth uses to conduct its varied businesses, such investor would only be willing to pay the market value of those assets. An asset amounts to a capacity to generate future cash flows. Therefore, an investor today would not care what historical costs were spent to acquire or build BellSouth's assets. The market value of any asset is a function of the time pattern of cash flows

expected to be derived from it and the riskiness of the business endeavor. In essence then, the asset's market value represents its economic cost.

Q. IS IT YOUR POSITION THAT THE COSTS ASSOCIATED WITH THE PROVISION OF UNIVERSAL SERVICE ARE ANALOGOUS TO THE COSTS OF PROVIDING UNBUNDLED NETWORK ELEMENTS?

A. Yes.

Q. DOES THE FCC PROVIDE GUIDANCE AS TO HOW TO IMPLEMENT THE CONCEPT OF ECONOMIC COSTS FOR THE PROVISION OF UNBUNDLED NETWORK ELEMENTS?

A. Yes. While the Eighth Circuit Court of Appeals has opined that the FCC is not empowered to mandate network element prices under the 1996 Act,[11] the FCC's First Report & Order, Docket No. 96-98 (the August 8, 1996 FCC Order), provides a thorough discussion and analysis of the meaning of forward-looking economic costs for purposes of implementing the provisions of the 1996 Act which can be considered by State commissions.[2] The FCC adopts the concept of "total service long-run incremental costs", defines its application to network elements rather than services as "total element long run incremental costs" (TELRIC), and provides for a fair allocation of shared and common costs to network elements. State commissions have generally adopted practices consistent with the FCC's guidance on economic costs.

The meaning of true economic costs according to TELRIC is as follows: the pricing of network elements must be based on true forward-looking incremental costs (including the cost of capital) which are necessary to provide the elements, not on costs which have been expended in the past and may not represent the costs that the utility will actually incur in the future.[3] The concept of normal profit is embodied in forward-looking costs because the forward-looking cost of capital, i.e. the cost of obtaining debt and equity financing, is one of the forward-looking costs of providing the network elements. Consistent with the correct analysis provided in the August 8, 1996 FCC Order, this Commission should reject the use of either embedded costs (August 8, 1996 FCC Order ¶704), which represent historical, "sunk" investments, or internal "hurdle rates" used by local exchange operators to evaluate projects which exceed the market cost of capital (August 8, 1996 FCC Order ¶689) as being inconsistent with a forward-looking economic costing methodology.

Q. WHAT ARE THE FUNDAMENTAL DETERMINANTS OF INVESTMENT RISK?

A. There are two fundamental sources of risk: operating risk and financial risk. Operating risk arises from the actual operation of the business. It is affected by factors such as competition, technological change, customer acceptance of a company's products, variation in the costs of producing the company's products and the like.[4] Financial risk is determined by the amount of debt in a company's capital structure. Taking on more debt increases fixed financial charges, thereby

increasing the risk that the firm will not be able to meet its financial obligations. The total risk investors face is determined by the combination of operating risk and financial risk.

Q. ARE OPERATING RISK AND FINANCIAL RISK RELATED?

A. Yes. In an effort to control the total risk that investors face, companies manage their capital structures in a manner that leads to a relation between operating risk and financial risk. In particular, companies that face a great deal of operating risk, like high technology firms, limit the debt they issue to prevent total risk from becoming too large. On the other hand, firms that face little operating risk, like regulated utilities, can benefit by using a good deal of low-cost debt without raising total risk to an unacceptable level.

Q. HOW DO YOU ACCOUNT FOR COMPANIES' BUSINESS AND FINANCIAL RISK IN ESTIMATING COST OF CAPITAL?

A. I apply the WACC formula to the closest comparable companies for which public market data is available. The problem is that public data for key variables, such as stock prices, are available only at the holding company level. Therefore, the comparable companies that must be used are diversified firms. These firms operate many businesses, most of which are riskier than the business in question in this case. Further discussion of this risk issue is postponed until the final section of my testimony. At this juncture, I proceed by using data at the holding company level.

Q. WHAT COMPARABLES DO YOU USE IN THIS TESTIMONY?

A. The comparable companies selected were derived from the list of telephone operating companies in Standard and Poor s Industry Survey. These companies are presented along with some descriptive information at Attachment JH-2, and include the five regional Bell holding companies ("RBHCs"), and the larger independent telephone companies. Among the independents, Aliant Communications (formerly Lincoln Communications) was excluded because it has less than 500,000 access lines in service and is an order of magnitude smaller than the RBHCs. Telephone and Data Systems was excluded because a majority of its operations are focused on higher-risk endeavors rather than the more traditional telephone and network operations. Frontier Corp. was excluded because 73% of its revenues are derived from unregulated long-distance operations and only 25% from local service.

Q. WHY DID YOU NOT INCLUDE SPRINT IN THE SET OF COMPARABLES?

A. Sprint, the owner of Centel and United, is a major long-distance company which derives 57% of its revenues from long-distance operations and only 35% from local service. My opinion is that, for estimating the cost of capital for Centel 's and United's provision of unbundled network elements and universal service, a more appropriate sample of comparable companies is one that includes companies which derive a larger proportion of their revenues from local exchange services. Standard and Poor's itself categorized Sprint as a long-distance company and did not include

it in the group of telephone operating companies. However, in order to be conservative and for a comparison, I performed a test calculation in which I included Sprint in the model sample. The estimate of Centel's and United's cost of capital is approximately the same in either case, as discussed in greater detail below.

Q. HOW DOES THE MAIN APPROACH THAT YOU EMPLOYED FOR THE CALCULATION OF CENTEL'S AND UNITED'S COST OF CAPITAL DIFFER FROM THE CALCULATION OF THE COST OF CAPITAL FOR BELLSOUTH AND GTE?

A. In my testimony which follows I set forth the theory and describe in detail the calculations of the cost of debt; the DCF and CAPM methods for estimating the cost of equity; and the approach for estimating the appropriate capital structure for the telephone holding companies being analyzed.

Sprint is not included in the sample of comparable telephone holding companies in my main approach. Thus, for Centel's and United's cost of capital calculations my method assumes that the cost of equity for the provision of universal service is approximated by the average cost of equity for the whole set of the telephone holding companies. For BellSouth and GTE, I employ a weighting approach for their cost of equity calculations. I utilize Sprint's actual debt costs because most of its debt securities were issued by its telephone subsidiaries.

Q. HOW MUCH WOULD YOUR ESTIMATE OF CENTEL'S AND UNITED'S COST OF CAPITAL CHANGE IF YOU INCLUDE SPRINT IN THE SET OF COMPANIES USED FOR THE CALCULATIONS?

A. I performed a test where I included Sprint in the set of companies used for estimation of the cost of capital and used the same cost of equity averaging methodologies described below which were used for BellSouth and GTE. The cost of capital of Centel and United in this test model is 8.45%. This estimate is 10 basis points lower than my estimate of 8.55%.

V.

THE COST OF DEBT CAPITAL

Q. HOW DO YOU ESTIMATE THE COST OF DEBT?

A. Because debt payments are fixed, the cost of debt can be computed directly and with a high degree of accuracy.[5] For this reason, I am able to utilize the costs of debt on the outstanding debt securities for each of the companies in this study, BellSouth, GTE and Sprint. It is not necessary to use a large sample of companies to estimate the cost of debt for any of the individual companies because of the small measurement error.

Q. WHAT IS THE COST OF DEBT THAT YOU USE?

A. The best estimate of the cost of debt is the weighted average cost over all of the subject company's outstanding issues, including the debt of the holding company and any subsidiaries. Standard & Poor's Bond Guide ("Bond Guide") provides information on the face value and current yields to maturity on individual bonds.[6]

The data from the Bond Guide are presented in Attachments JH-3a, JH-3b and JH-3c. For each of the companies' major debt issues the Attachment shows the bond rating, the face value and the yield to maturity. The yield to maturity is a forward-looking cost of debt that measures the rate that the company would have to pay if the bonds were issued at the measurement date, and reflects investors' expectations regarding the future returns on these publicly-traded bonds.[7] The Attachments show that the weighted average cost of debt for BellSouth is 6.65 percent; for GTE is 6.85 percent, and for Sprint it is 6.63 percent. Consequently, I use **6.65 percent** as the cost of debt of BellSouth, **6.85 percent** as the cost of debt of GTE, and **6.63 percent** as the cost of debt of Centel and United in my WACC analysis.[8]

VI.

THE COST OF EQUITY CAPITAL

Q. WHAT MAKES THE COST OF EQUITY CAPITAL MORE DIFFICULT TO ESTIMATE THAN THE COST OF DEBT?

A. The cost of debt can be computed directly because both the face value of debt and the contractual payments a company agrees to make are fixed. In the case of equity, however, there is no face value and dividends are paid at the discretion of

management depending upon business conditions. In addition, the dividend stream does not terminate at a known point. For these reasons, there is no simple way to compute the cost of equity capital and more complex approaches must be employed.

Q. WHAT METHODS DO YOU USE TO ESTIMATE THE COST OF EQUITY CAPITAL IN THIS CASE?

A. I used two basic methods for estimating the cost of capital. The first is the discounted cash flow, or "DCF", method that has been widely adopted by the courts and regulatory agencies in rate of return hearings. Second, I use the capital asset pricing model, or "CAPM". In various forms, the CAPM is the most widely employed theoretical model, other than DCF, for estimating the cost of capital. Methods based on the CAPM are sometimes referred to as "risk premium" methods because the model provides an estimate of the risk premium associated with investing in specific issues of common stock.

Q. PLEASE EXPLAIN THE BASIC DCF METHOD.

A. The DCF method is based on the realization that the price of a share of stock, P, equals the present value of all future dividends expected to be received on that share, discounted at the cost of common equity. Mathematically, the DCF model is written,

$$P = Div_1 / (1+k) + Div_2 / (1+k)^2 + Div_3 / (1+k)^3 + \ldots , \qquad (2)$$

where Div_1 is the expected dividend in year 1, Div_2 is the expected dividend in year 2, etc.

The cost of common equity is arrived at by solving the DCF equation for the cost of capital, k. There are two obstacles that make it difficult to solve the equation. First, the number of terms in the equation is infinite. Second, dividends must be forecast for every future year. To surmount these obstacles, simplifying assumptions must be made about the behavior of future dividends.

Q. WHAT ARE THE SIMPLIFYING ASSUMPTIONS THAT ARE EMPLOYED IN THE CONTEXT OF THE DIVIDEND GROWTH MODEL?

A. One of the simplest assumptions that can be made is that future dividends will grow *forever*, at a constant rate, g, i.e. the growth rate can be maintained in perpetuity. In that case the DCF equation simplifies to,

$$P = Div_1 / (1+k) + Div_1 * (1+g) / (1+k)^2 + Div_1 * (1+g)^2 / (1+k)^3 + \ldots ,$$

which can be solved for k. The solution is well known to be,

$$k = Div_1 / P + g .$$

Q. DID YOU USE THE CONSTANT GROWTH DCF EQUATION GIVEN ABOVE IN ESTIMATING THE COST OF CAPITAL FOR YOUR SAMPLE OF TELEPHONE COMPANIES?

A. No. Once again a problem is raised by the fact that modern telephone companies are composed of a variety of businesses, some of which— such as cellular— are expected to grow at rates of 30 percent or more in the short run. Such high growth

rates are clearly not sustainable into perpetuity, so that the simple constant growth model cannot be applied unless one modifies the growth rate or adopts some mitigating assumption. Stewart Myers and Lynda Borucki state that:

> "[f]orecasted growth rates are obviously not constant forever. Variable-growth DCF models, which distinguish short- and long-term growth rates, should give more accurate estimates of the cost of equity. Use of such models guards against naïve projection of short-run earnings changes into the indefinite future."[9]

In addition, Ibbotson Associates state that:

> "[t]he reason it is difficult to estimate the perpetual growth rate of dividends, earnings, or cash flows is that these quantities do not in fact grow at stable rates forever. Typically it is easier to forecast a company-specific or project-specific growth rate over the short run than over the long run. To produce a better estimate of the equity cost of capital, one can use a two stage DCF model. ... For the resulting cost of capital estimate to be useful, the growth rate over the latter period should be sustainable indefinitely. An example of an indefinitely sustainable growth rate is the expected long-run growth rate of the economy."[10]

Sharpe[11], Alexander and Bailey state that:

"Over the last 30 years, dividend discount models (DDMs) have achieved broad acceptance among professional common stock investors...

Valuing common stock with a DDM technically requires an estimate of future dividends over an infinite time horizon. Given that accurately forecasting dividends three years from today, let alone 20 years in the future, is a difficult proposition, how do investment firms actually go about implementing DDMs?

One approach is to use constant or two-stage dividend growth, models, as described in the text. However, although such models are relatively easy to apply, institutional investors typically view the assumed dividend growth assumptions as overly simplistic. Instead, these investors generally prefer three-stage models, believing that they provide the best combination of realism and ease of application.

...[M]ost three-stage DDMs make standard assumptions that all companies in the maturity stage have the same growth rates, payout ratios and return on equity."[12]

Damodaran states that:

"While the Gordon growth model is a simple and powerful approach to valuing equity, its use is limited to firms that are growing at a *stable growth rate*...

The second issue relates to what growth rate is reasonable as a *stable growth rate.* Again, the assumption in the model that this growth rate will last forever establishes rigorous constraints on *reasonableness.* A firm cannot in the long term grow at a rate significantly greater than the growth rate in the economy in which it operates. Thus, a firm that grows at 12% forever in an economy growing at 6% will eventually become larger than the economy. In practical terms, the stable growth rate cannot be larger than the nominal (real) growth rate in the economy in which the firm operates, if the valuation is done in nominal (real) terms…

…If a firm is likely to maintain a few years of above-stable growth rates, an approximate value for the firm can be obtained by adding a premium to the stable growth rate, to reflect the above-average growth in the initial years. Even in this case, the flexibility that the analyst has is limited. The sensitivity of the model to growth implies that the stable growth rate cannot be more than 1% or 2% above the growth rate in the economy. If the deviation becomes larger, the analyst will be better served by using a two-stage or a three-stage model to capture the supernormal or above-average growth and restricting the use of the Gordon growth model to when the firm becomes truly stable."[13]

Copeland, Koller and Murrin echo these observations, stating that "[f]ew companies can be expected to grow faster than the economy for long periods of time."[14]

Q. HOW DO YOU APPLY THE DCF MODEL?

A. I use a three-stage version.[15] The first stage lasts five years because that is the longest horizon over which analysts forecasts of growth are available. The second stage is assumed to last 15 years. During this stage the growth rate falls from the high level of the first five years to the growth rate of the U.S. economy by the end of year 20. From the twentieth year onward the growth rate is set equal to the growth rate for the economy because rates greater than that cannot be sustained into perpetuity. A perpetual growth rate that exceeded the growth rate of the economy would illogically imply that eventually the whole economy would be comprised of nothing but telephone companies.

Q. WHAT DATA ARE USED TO ESTIMATE DIVIDEND GROWTH DURING THE FIRST FIVE YEARS?

A. To estimate growth rates during the first five years I use the Value Line dividend forecasts for 1998 and individual company earnings forecast data from Institutional Brokers' Estimate System ("IBES") as of January 1998. To compile the IBES data, over 2000 analysts are surveyed each month regarding their estimates of five-year earnings growth rates for a wide variety of major American companies. These analysts represent over 100 different securities firms. The forecasts are tabulated

and widely distributed to subscribers, including most large institutional investors, such as pension funds, banks, and insurance companies.

By relying on the IBES data, which is for earnings, I am implicitly assuming that dividends and earnings will grow at approximately the same rate over the five-year horizon. There are no growth forecasts beyond a five-year horizon. That is why an assumption must be made about how the growth rate behaves after that. As stated above, I assume that it converges to the long-run aggregate growth rate of the U.S. economy over the succeeding 15 years.

Q. WHAT IS A REASONABLE ESTIMATE FOR LONG-RUN GROWTH IN THE AGGREGATE ECONOMY?

A. The long-term growth forecast was derived by averaging the long-term GNP growth forecasts obtained from the Wharton Econometric Forecasting Associates ("WEFA") Group and from Ibbotson Associates. The WEFA Group is an econometric forecasting organization, formed in 1987 through a merger of WEFA and Chase Econometrics. Ibbotson Associates is widely-known in the fields of finance and valuation as one of the leading providers of securities returns data and publications. As of December 1997, WEFA predicted an average nominal GNP growth rate of 4.80% from 1998 through 2020. As of December 1997, Ibbotson Associates forecast long-term inflation to be 3.10% annually. By adding this inflation forecast to the historical long-term real GNP growth rate of 3.10%, Ibbotson Associates predicted a nominal GNP growth rate of 6.20%. Given the magnitude of the difference, I decided to take the average of the two forecasts, 5.50%, rather than choose a single GNP forecast.

Q. DO YOU APPLY THE DCF MODEL TO EACH INDIVIDUAL COMPANY AS YOU DID IN ESTIMATING THE COST OF DEBT?

A. No. Consistent with financial practice, I use the DCF model to estimate cost of equity for all of the companies selected as likely comparables, in addition to estimating a DCF cost of equity for the individual companies.

Q. WHY IS IT A GOOD IDEA TO APPLY THE DCF MODEL TO A NUMBER OF COMPANIES, NOT JUST THE COMPANY WHOSE COST OF COMMON EQUITY YOU ARE TRYING TO ESTIMATE?

A. Estimating future growth for a company always involves some uncertainty because no analyst can be expected to have perfect foresight. In some cases, the growth rate may be overestimated and in other cases it may be underestimated. On average, over a group of similar companies, these estimation errors tend to cancel out so that the average growth rate for the group is estimated more accurately than the growth rate for any individual company.[16] Consequently, I apply the DCF method to all the telephone companies in the previously-selected sample.

Q. HOW IS THE DCF COST OF EQUITY CAPITAL COMPUTED?

A. Given the market price of a company's stock, the current dividend, and the forecast growth rates during each of the three stages, equation (2) can be solved iteratively for k. The iterative solution is the estimate of the cost of equity capital.[17]

Q. WHAT IS YOUR DCF ESTIMATE OF THE COST OF EQUITY CAPITAL?

A. Attachment JH-4 presents the DCF estimates of the cost of equity capital derived from the three-stage model for the telephone company sample. The estimates range from a low of 7.53 percent to a high of 10.23 percent.

The cost of equity capital for BellSouth is estimated to be 9.35 percent, based on a value-weighted average of the equity cost of capital for all telephone holding companies (excluding BellSouth) and the cost of capital for BellSouth itself. The table below shows how this weighted average cost of equity capital was computed:

WEIGHTED AVERAGE DCF COST OF EQUITY FOR BELLSOUTH

	Weight	Rate	Weighted Cost
Average (excluding BellSouth)	.75	9.53	7.14
BellSouth	.25	8.83	2.21
Weighted Cost of Equity			**9.35**

For GTE, the DCF cost of equity is estimated to be 9.50 percent. The table below shows how this weighted average cost of equity capital was computed:

WEIGHTED AVERAGE DCF COST OF EQUITY FOR GTE

	Weight	Rate	Weighted Cost
Average (excluding GTE)	.75	9.26	6.95
GTE	.25	10.23	2.55
Weighted Cost of Equity			**9.50**

For Centel and United the DCF cost of equity is estimated to be **9.41** percent by taking the weighted average of the DCF cost of equity for all the companies in the sample.

Q. WHY DO YOU USE A WEIGHTED AVERAGE TO COMPUTE BELLSOUTH'S AND GTE'S DCF COST OF EQUITY?

A. There is a trade-off between two considerations. First, because the DCF approach, like any approach, estimates the cost of equity capital with error, it is wise to use an average. This is because in the averaging process errors tend to cancel with overestimates offsetting underestimates. However, the DCF method does not have a mechanism to adjust for differences in risk caused by differing capital structures employed by the firms in the sample. Therefore, of all the individual companies in the sample, BellSouth, for example, provides the best estimate of BellSouth's own cost of capital. In light of these two considerations, I feel a weighted average which assigns a ¾ weight to the average excluding BellSouth and a ¼ weight to BellSouth is the best estimate. Using this procedure, BellSouth is given a significantly larger weight than any of the other companies in the sample, but a smaller weight than the aggregate of all the comparables.

Q. WHAT OTHER METHODS DID YOU USE TO ESTIMATE THE COST OF EQUITY?

A. I also used the capital asset pricing model ("CAPM").

Q. WHAT ARE CAPITAL ASSET PRICING MODELS?

A. Capital asset pricing models are mathematical formulas designed to quantify the trade-off between risk and return. Professor William Sharpe was awarded the Nobel Prize for developing the first capital asset pricing. Here I employ several updated variants of Professor Sharpe's model.

Q. HOW DOES THE CAPITAL ASSET PRICING MODEL (CAPM) WORK?

The CAPM is designed to give the risk premium, that is the premium over the rate on Treasury securities, required to induce investors to hold specific issues of common stock. The standard CAPM is given by equation (3),

Company risk premium = Company "beta" * Market risk premium. (3)

To apply the CAPM for a given company, it is necessary to estimate both that company's beta and the market risk premium.

Q. WHAT IS A COMPANY'S BETA?

A. The beta coefficient measures the systematic risk of investing in a company's equity. The CAPM is built upon the insight that investors will be rewarded for bearing only those risks, called systematic risks, that cannot be eliminated by diversification. To understand the difference between systematic and non-systematic risk, consider a hypothetical investment in Apple Computer. The risks associated with this investment can be seen as arising from two sources. First, there are risks that are unique to Apple. Will Apple design competitive products?

Will computer users accept Apple's new operating system? Second, there are risks that affect all common stocks. Will the economy enter a recession? Will war break out in the Middle East?

The risks that are unique to Apple can be eliminated by diversification. An investor who invests only in Apple will suffer significant losses if Apple's new products are a failure, but an investor who holds Apple along with hundreds of other securities will hardly notice the impact on the value of his or her portfolio if Apple's new products fail. Therefore, risks that are unique to Apple are said to be non-systematic.

On the other hand, market-wide risks cannot be eliminated by diversification. If the economy enters a recession and stock prices fall across the board, investors holding hundreds of securities fare no better than investors who put all their money in Apple computer. Thus, economy-wide risks are systematic.

The CAPM says that only systematic risks, as measured by beta, are associated with a risk premium. Non-systematic risks are not associated with premiums because they can be eliminated by diversification.

This concept is particularly important for the determination of cost of capital because the risk that a company will lose customers to competition -- such as a network leasing company or a local exchange company -- is a diversifiable risk which does not increase the risk premium according to capital market theory.[18]

Q. HOW DO YOU CALCULATE BETA?

A. Beta is typically calculated by a procedure called regression analysis. In regression analysis, the returns on the subject stock (the dependent variable), are regressed

against the returns of a market portfolio of stocks (frequently the S&P 500) to estimate statistically the degree that the independent variable movements in the market portfolio have caused the returns of the subject company. Using this statistical tool, therefore, the sensitivity of a stock to movements in the market can be estimated. This sensitivity is what determines beta. In this case, I used Dow Jones Beta Analytics software to obtain betas computed on five years of monthly return data through December 31, 1997 for BellSouth, GTE and the comparable companies. Dow Jones Beta Analytics is a common source for betas used by finance professionals. Returns on the S&P 500 were used as the market proxy. Because beta is measured with error, the average beta over all the comparables is a more accurate indicator of the true beta than any individual estimate of beta.

Betas can also be calculated over other time periods and using different observation intervals. For examples, for newer smaller companies one year of daily data are often used to measure beta. This is because the true underlying beta is likely to be changing for such companies and because five years of data are often not available. The drawback is that the shorter sample period and more frequent observation interval increase measurement error. In this case I concluded that the sample companies were sufficiently large, established and stable that it was more appropriate to use five years of monthly data, which is consistent with the methodology used by many institutional providers of betas, including Merrill Lynch, S&P Compustat and Wilshire Associates.

While technological and legislative change has impacted the telecommunications industry, it is equally clear from publicly available information that such change has been anticipated and considered over time by industry participants, financial analysts and credit-rating agencies. The telephone holding

companies trade very efficiently, so risks that are anticipated are impounded in the telephone holding companies' stock prices rapidly and fairly.[19]

Before averaging individual betas it is necessary to take account of the fact that the various comparable companies have differing amounts of debt in their capital structures. The amount of a company's debt leverage affects the riskiness of its stock returns and thereby its beta. To take account of this, a two-step procedure is used to estimate the average beta. First, the raw betas (i.e. betas computed using the Dow Jones software without accounting for capital structure differences) are estimated for each of the sample companies. Second, the raw betas are "unlevered" using standard financial economic formulas and based on the market value debt/equity ratios of each respective company as of December 31, 1997. The formula for "unlevering" a raw, or "levered" beta is,

$$B_u = B_L / [1 + (1 - T_c) \times D/E] \qquad (4)$$

where,

B_u = the "unlevered" beta,

B_L = the "levered" beta,

E = the value of the sample company's equity;

T_c = the corporate tax rate (typically an average rate for the sample);

D = the value of the sample company's debt.

This puts all the betas on comparable terms so that they can be averaged.

Once the average has been estimated, the beta for any individual company is estimated by "re-levering" using a simple variant of formula (4) which solves for B_L, the "levered" beta.

Q. WHAT IS YOUR ESTIMATE OF BETA?

A. My raw (levered) estimates of beta are presented in Attachment JH-5. They vary from a high of 1.11 to a low of 0.55 on a levered basis. As I discussed above, however, the betas must be unlevered first to adjust for the different amount of debt leverage employed by the individual companies before calculating an average. Attachment JH-5 also shows the unlevered betas and their average. The average unlevered beta for the entire sample is 0.64.[20] The average unlevered beta is re-levered using the formula discussed above to take BellSouth's 1997 capital structure into account, arriving at a beta of **0.72** for BellSouth. The re-levered beta for GTE is **0.78**.[21]

Q. IS THERE OTHER INFORMATION THAT SUPPORTS THE BETA ESTIMATE THAT YOU USE IN YOUR ANALYSIS?

A. Yes. In addition to the betas obtained from Dow Jones Beta Analytics, I obtained predicted betas from BARRA. BARRA (formerly Rosenberg Associates) is an internationally known financial consulting firm providing risk measurement services to investment managers, corporations, consultants, securities dealers and traders, and master custodians. The predicted betas are developed using sophisticated financial modeling techniques which account for factors which impact the future risk of a company. Unlike conventional regression betas therefore, the BARRA betas do not rely solely on historical stock returns and explicitly consider forward-looking projections. Copeland, Koller and Murrin recommend the use of

BARRA predicted betas.[22] The predicted BARRA betas are 0.76 for BellSouth and 0.75 for GTE. These are relatively close to the relevered betas of 0.72 for BellSouth and 0.78 for GTE that I have calculated. If I were to instead use the BARRA predicted betas for the telephone holding companies in my sample, the value-weighted unlevered beta would be .64, the same as what I calculated using historical betas. Therefore, the relevered betas would be the same whether I used the historical betas or the BARRA betas.

Q. HOW DOES THE BETA RISK OF THE COMPANIES IN YOUR SAMPLE COMPARE WITH THE BETA RISK OF COMMON STOCK GENERALLY?

A. By definition, the beta of all common stock generally (in other words, the beta of the market) is 1.0. Therefore, it appears that the beta of telephone stocks is less than that of common stocks generally. This means that investments in telephone company stocks are less risky than investments in typical industrial companies. Consequently, the cost of capital for telephone companies should also be less than it is for the average industrial stock.

Q. WHAT DOES YOUR BETA ANALYSIS IMPLY THE COST OF EQUITY CAPITAL SHOULD BE IN THIS CASE?

A. Beta alone is insufficient for estimating the cost of equity capital. To apply the CAPM it is also necessary to estimate the market risk premium.

Q. WHAT IS THE MARKET RISK PREMIUM?

A. The risk premium on the market is the amount of added expected return that investors require to hold a broad portfolio of common stocks (a proxy for the market as a whole) instead of risk-free Treasury securities.

Q. WHAT TREASURY SECURITIES ARE USED TO MEASURE THE RISK PREMIUM?

A. Because there are over 100 issues of Treasury securities, some convention is required. Commonly, the risk premium is measured over both short-term Treasury bills with a maturity of one to three months and long-term Treasury bonds with a maturity of 10 to 30 years. In this study, I use one-month Treasury bills and 20-year Treasury bonds using Ibbotson Associates' and Jeremy Siegel's data going back to 1802.

Q. HOW IS THE MARKET RISK PREMIUM ESTIMATED?

A. The market risk premium can be estimated two ways. First, the DCF approach can be applied to the market as a whole. Second, the premium can be estimated by examining historical data on the difference between the return on a broad portfolio of common stocks and associated Treasury securities.

Q. HOW CAN THE DCF MODEL BE USED TO ESTIMATE THE MARKET RISK PREMIUM?

A. Two steps are required to estimate the market risk premium using the DCF model. The first step is to compute the DCF expected return (another word for the cost of equity) for the market as a whole. Deducting the risk-free rate from the expected return gives the market risk premium.

Q. WHAT IS THE DCF ESTIMATE OF THE EXPECTED RETURN ON THE MARKET?

A. The starting point for estimating the expected return on the market is the S&P 500 index. The sample is then limited to those S&P 500 companies that pay a dividend of at least 2 percent on the grounds that the DCF approach may be less accurate for companies that pay small dividends.[23] The sample includes large companies for which the data is considered to be reliable for purposes of DCF estimates. For the selected companies, the three-stage DCF model is applied in the same fashion as it was applied to the sample of telephone companies. Finally, the individual DCF estimates for the sample companies are averaged. This average, which comes out to be 9.82 percent, is used as an estimate of the expected return on the market as a whole.

Q. GIVEN THE EXPECTED RETURN ON THE MARKET HOW DO YOU CALCULATE THE MARKET RISK PREMIUM?

A. The market risk premium is computed by subtracting the risk-free rate from the expected return. In the case of the 20-year Treasury bond this is straightforward.

The calculations are shown in Attachment JH-6. The Attachment shows that as of December 1997, the 20-year bond yield was 6.02 percent. Subtracting 6.02 from 9.82 percent gives a market risk premium over long-term Treasury bonds of 3.80 percent.

In the case of one-month Treasury bills the situation is more complicated. Because the goal of the analysis is to estimate the long-run cost of capital, using a one-month interest rate can be misleading. A more appropriate choice is the average return on one-month Treasury bills that is expected to obtain over the long-term. This can be calculated using the following two-step procedure. First, compute the long-run historical difference between the return on one-month Treasury bills and the return on 20-year Treasury bonds. Second, subtract that historical difference from the current yield on 20-year bonds. The difference gives a forward-looking market estimate of the average expected yield on one-month Treasury bills over the next 20 years. Attachment JH-7 shows that the average expected one-month Treasury bill rate over the long run is 4.53 percent as of December 31, 1997. Subtracting this rate from the expected return on the market gives a market risk premium over Treasury bills of 5.29 percent as shown in Attachment JH-6.

Q. WHAT IS YOUR HISTORICAL ESTIMATE OF THE MARKET RISK PREMIUM?

A. The historical risk premium is defined as the historical difference between the return on the stock market and the risk-free rate. The proper estimate of the market risk premium is a question that is disputed among both academics and practitioners

with regard to two primary issues. First, when analyzing historical data, should an arithmetic or geometric average be used to calculate the historical average risk premium? Second, over what period should the average be computed to accurately capture the risk premium expected in the future? Specifically, should the entire sample period back to 1802 be used, should the sample period be limited to post-1926 when more complete data became available, should only post-war data be employed because the role of government in the economy has changed fundamentally since the great depression, or should even more recent data be used? With regard to the type of average, many academic authors favor the arithmetic over the geometric.[24] Others, however, recommend using the geometric average because arithmetic averages are biased by the measurement period.[25,26] With regard to the sample period for computing the average risk premium, Ibbotson argues that a long data series is required so that the equity risk premium is not unduly influenced by very good or very poor short-term results. The 1996 Yearbook published by Ibbotson Associates suggests that the post-1926 data compiled therein provides a representative period of returns that can occur under diverse economic circumstances.[27] However, Ibbotson has recently cautioned that the long-run stock market returns calculated by his firm may not prove predictive. He believes that the U.S. is not as risky as it was in 1925, suggesting that lower returns will be experienced in the future. Ibbotson also states that his historical averages overstate the forward-looking cost of equity because of survivorship bias.[28] For example, the U.S. stock market survived despite the Great Depression. As of 1925, however, there existed a risk that the stock market would be entirely wiped out—as happened in Germany, Japan, China and Russia. If these countries were included in an average, historical returns would be much lower.[29]

Based on an analysis of data going back to 1802, Siegel presents convincing evidence that the risk premium was abnormally high after the U.S. went off the gold standard resulting from unanticipated inflation which reduced the real returns on bonds. He notes that the current equity premium appears to be returning to the 2 - 3 percent range that existed before the second world war.[30] Blanchard also presents evidence that the risk premium has declined to 2 to 3 percent in recent years and argues that either the DCF approach should be employed in place of relying on an average or more recent data should be used.[31] Similarly, Rappaport opposes the use of long-term averages. He states that the relative risk of bonds has increased over the past two decades, thereby lowering risk premiums to a range from 3 to 5 percent.[32]

In light of these questions, Attachments JH-6 and 8 present both DCF estimates of the market risk premium and historical averages computed using both arithmetic and geometric averages calculated over various periods of time.

Q. GIVEN THE INFORMATION IN ATTACHMENTS JH-6 AND 8, WHAT IS THE BEST MEASURE OF THE MARKET RISK PREMIUM?

A. Taking account of all the information in Attachments JH-6 and 8, I conclude that the reasonable estimates of the market risk premium are 7.5 percent over one-month Treasury bills and 5.5 percent over 20-year Treasury bonds. These estimates are conservative (i.e., on the high side) in the sense that they are above the average premiums observed in a majority of the periods, including the full sample, and are greater than those implied by the DCF analysis. Also, Damodaran uses a 5.5% risk premium over 20-year Treasury bonds, while Copeland, Koller & Murrin

recommend using a 5 to 6 percent risk premium.[33] Additional information indicating that my choice is conservative is provided by the statement of a correspondent for Fortune magazine, who indicated that "[t]o venture into the volatile stock market instead of cozying up to bonds, investors rightfully expect a superior return from stocks. In fact, they expect to beat the bond return by four full percentage points— something called the risk premium on stocks...".[34] Similarly, *The Economist* stated in its October 25, 1997 issue that "recent studies [regarding risk premium] suggest a current figure of one to four percentage points."[35] Moreover, in its 1990 Rate Represcription Order, the FCC agreed with the position of the Consumer Coalition that the risk premiums used by the LEC's experts were unrealistically high, particularly when compared to those used by financial analysts. The FCC cites the Consumer Coalition expert's testimony that "...the Wall Street analyst reports, relied upon by the RHCs to support their positions on other issues, use much smaller risk premiums, ranging from 2.0% to 5.4%."[36]

Q. GIVEN YOUR ESTIMATES OF BETA AND THE MARKET RISK PREMIUM WHAT IS THE APPROPRIATE ESTIMATE OF THE COST OF EQUITY CAPITAL?

A. To review, the CAPM says that,

Cost of equity capital = Risk-free rate + Beta * Market risk premium.

Applying this equation using the long-run, expected, one-month Treasury bill rate as the measure of the risk free rate gives:

BellSouth's Cost of equity capital = 4.53% + 0.72 * 7.5% = 9.93%;

GTE's Cost of equity capital = 4.53% + 0.78 * 7.5% = 10.38%.

Notice that in the preceding equation the expected long run Treasury bill rate over the next 20 years is used, not the current one-month Treasury bill rate.

Applying the CAPM equation using the 20-year Treasury bond as the measure of the risk free rate gives:

BellSouth's Cost of equity capital = 6.02% + 0.72 * 5.5% = 9.98%;

GTE's Cost of equity capital = 6.02% + 0.78 * 5.5% = 10.31%.

These estimates are close to the corresponding estimates obtained using Treasury bills as the measure of the risk-free rate. In light of these results, I use the average of the two as the CAPM estimate of the cost of equity capital: **9.96** percent for BellSouth, and **10.35** percent for GTE. Centel's and United's CAPM cost of equity capital is estimated as the average for the whole sample and is **10.08** percent.

Q. HOW DO YOUR CAPM RESULTS COMPARE WITH YOUR DCF ESTIMATES OF THE COST OF EQUITY CAPITAL?

A. The CAPM-derived costs of equity are on average about 65 basis points higher than the DCF costs of equity. Given the difficulty of estimating the cost of equity capital, the differences are relatively small and hence are reassuring (see Attachment JH-9).

Q. COMBINING THE TWO METHODS, WHAT IS THE COST OF EQUITY CAPITAL FOR THE COMPANIES?

A. The two estimates of the cost of equity capital produced a range for BellSouth of 9.35 to 9.96 percent, for GTE – 9.50 to 10.35 percent. I feel the best overall

estimate is approximately the average of the three-stage DCF and CAPM cost of equity estimates. The cost of equity capital that I use in the WACC calculations is therefore **9.65** percent for BellSouth, **9.92** percent for GTE, and **9.74** percent for Centel and United.

VII.

CAPITAL STRUCTURE AND THE WACC

Q. WHAT IS MEANT BY THE "CAPITAL STRUCTURE" OF A BUSINESS?

A. Most American businesses are financed by a combination of equity (common stock) and debt (including bonds and bank loans). The capital structure refers to the fraction of debt and equity used to finance a business. In terms of the WACC formula presented at the outset, the capital structure is determined by the financing weights, w_e and w_d.

Q. IS THE CAPITAL STRUCTURE RELATED TO THE RISK OF A BUSINESS?

A. Yes. As discussed earlier, companies that face greater operating risk tend to take on less debt. For example, most computer software and biotechnology companies typically have virtually no debt in their capital structure.

Q. HOW DO YOU ESTIMATE THE CAPITAL STRUCTURE FOR A PARTICULAR BUSINESS?

A. The goal is to estimate the long-run target financing weights that a rational, informed management team would employ.[37] If there are companies participating in comparable business activities, the accepted solution is to use their observed capital structure as the starting point. In this case, however, the comparables are all riskier than the business activity in question (the provision of unbundled network elements and universal service) because of the necessity to use data that are only available at the holding company level.

Alan Shapiro states that:

> "[i]n multiproduct firms, the requirement that projects be of homogeneous risk is more likely to be met for divisions than for the company as a whole. This suggests that the use of a divisional cost of capital may be valid in some cases in which the use of a companywide cost of capital would be inappropriate. Conglomerate firms that compete in a variety of different product markets ... often estimate separate divisional costs of capital that reflect both the differential risks and the differential debt capacity of each division.
>
> The estimation of these divisional costs of capital is tricky. All the firm observes is its overall cost of capital, which is a weighted average of its divisional costs of capital."[38]

For now I proceed using the holding company information because of the data limitation.

Q. WHAT ARE THE CAPITAL STRUCTURE WEIGHTS FOR YOUR SAMPLE OF COMPANIES?

A. The current capital structures for my sample of companies is shown in Attachment JH-10. Notice that the comparison depends on whether book value or market value weights are used. At this juncture, there remains a debate among academics, practitioners, and forensic experts regarding the choice between book and market weights. In traditional rate of return hearings, capital structure is typically presented in terms of book value weights.

The average book value debt weight for the sample companies is 57 percent as of December 31, 1997. BellSouth's own debt weight is 42 percent, GTE's – 69 percent. In terms of market value weight, however, the debt weight is lower. The average for the full sample is 20 percent, while BellSouth's debt weight is 17 percent and GTE's – 26 percent. However, market value debt weights of the holding companies probably understate long-run target debt weights in the capital structure of the network element leasing business as discussed in detail in Section VIII below. Consequently, in this case it is inappropriate to rely solely on current market value capital structure weights of the telephone holding companies when calculating the WACC for the network element leasing business. Therefore, I apply the WACC formula using both book and market weights to establish a range.

Q. WHAT CAPITAL STRUCTURES WEIGHTS DO YOU USE IN YOUR SAMPLE?

A. Given the dispersion in capital structure weights, I use the average weights in my WACC calculations. Both book and market averages are employed to establish a range.

Q. GIVEN YOUR PRECEDING TESTIMONY, WHAT IS THE LOWER BOUNDARY OF THE APPROPRIATE RANGE FOR THE WEIGHTED AVERAGE COST OF CAPITAL FOR EACH OF THE TELEPHONE COMPANIES IN CONSIDERATION?

A. The table below computes the WACC from the estimates of the cost of debt, the cost of equity and the capital structure developed in my preceding testimony using book value capital structures.

BellSouth's WACC Based On Average Book Capital Structure Weights

	Weight	Rate	Weighted cost
Equity	0.43	9.65	4.15
Debt	0.57	6.65	3.79
BellSouth's WACC			**7.94**

GTE's WACC Based On Average Book Capital Structure Weights

	Weight	Rate	Weighted cost
Equity	0.43	9.92	4.27

Debt	0.57	6.85	3.90
GTE's WACC			**8.17**

Centel's and United's WACC Based On Average Book Capital Structure Weights

	Weight	Rate	Weighted cost
Equity	0.43	9.74	4.19
Debt	0.57	6.63	3.78
Centel's and United's WACC			**7.97**

Q. WHAT IS THE UPPER BOUNDARY OF THE APPROPRIATE RANGE FOR THE WEIGHTED AVERAGE COST OF CAPITAL FOR EACH OF THE TELEPHONE COMPANIES FOR WHICH YOU ARE ESTIMATING THE COST OF CAPITAL?

A. As the network element leasing business is less risky than the overall risk of a telephone holding company, estimating a cost of capital using a market value capital structure (which results in a cost of capital estimate for the telephone holding company itself) will provide an upper bound estimate of the cost of capital for the network element leasing business.

The table below computes the WACC from the estimates of the cost of debt, the cost of equity and the capital structure developed in my preceding testimony using market value capital structures.

BellSouth's WACC Based On Average Market Capital Structure Weights

	Weight	Rate	Weighted cost
Equity	0.80	9.65	7.72
Debt	0.20	6.65	1.33
BellSouth's WACC			**9.05**

GTE's WACC Based On Average Market Capital Structure Weights

	Weight	Rate	Weighted cost
Equity	0.80	9.92	7.94
Debt	0.20	6.85	1.37
GTE's WACC			**9.31**

Centel's and United's WACC Based On Average Market Capital Structure Weights

	Weight	Rate	Weighted cost
Equity	0.80	9.74	7.79
Debt	0.20	6.63	1.33
Centel's and United's WACC			**9.12**

Q OVERALL WHAT DO YOU CONCLUDE IS A FAIR ESTIMATE OF THE COST OF CAPITAL?

A. I believe a fair estimate is the midpoint of my range. Averaging 7.94 and 9.05, the midpoint comes to 8.50 percent for BellSouth; for GTE 8.74 percent is the midpoint of the range from 8.17 to 9.31 percent; and for Centel and United 8.55

Q. HAVE ANY TELEPHONE HOLDING COMPANIES MADE COMMENTS TO THE PUBLIC REGARDING BENEFITS TO BE DERIVED FROM THE PROVISION OF NETWORK ELEMENTS TO COMPETITIVE LOCAL EXCHANGE COMPANIES?

A. Yes. Bell Atlantic has stated in a previous posting at its internet site that the business of providing network elements represents a revenue opportunity for the company, in that there would now be many more users of its network without the need to make additional capital expenditures. Bell Atlantic's statements to the public indicate that the network element leasing business is subject to much less risk than its retail local exchange business in the environment created by the Telecommunications Act of 1996.

Q. WHAT RISKS ARE ASSOCIATED WITH THE BUSINESS OF "LEASING" OF UNBUNDLED NETWORK ELEMENTS?

A. There is still the risk of regulation itself. The rate of return a network is allowed to earn depends on the outcome of proceedings such as this and remains somewhat uncertain. That risk can be substantially reduced if this Commission adopts compensatory forward-looking pricing rules that tell investors that telephone holding companies will have the opportunity to recover all efficiently-incurred costs on a forward-looking basis. In addition, there remains some risk that consumers, particularly business users, will bypass the network as other alternatives become available.[41] These risks, however, are substantially less than the risks faced

by telephone holding companies' other businesses, some of which are (or may soon be) subject to competition.

Q. IS THERE A SIMPLE WAY TO DISTINGUISH THE BUSINESS OF LEASING THE NETWORK FROM PROVIDING LOCAL SERVICE?

A. Yes. Think of integrated telephone holding companies, for example BellSouth, as being composed of separate business units. One business unit owns the network and leases network elements to all local service providers, including both competitors and the telephone companies' other business units that are involved in the provision of local service. Whereas those BellSouth units involved in providing local service are in businesses that (if prices are set appropriately in these proceedings) will be faced with new competitors, the unit involved in leasing the network which all the competitors need to use has virtual monopoly power and faces much less risk. The sample of companies used in my analysis for which the cost of debt and equity are estimated is composed of diversified telephone companies. As stressed earlier, these companies operate a variety of businesses, virtually all of which face a great deal more operating risk than leasing a local exchange network or providing universal service. This has been clearly recognized by financial analysts and the bond rating agencies. The company to which the WACC should be applied, however, is one which is involved exclusively in leasing network facilities and the provision of universal service. Under these circumstances, using a higher debt weight than the current market value weights for the sample companies is one way to take account of this problem. The higher debt weight may be more representative of the target capital structure for the low-risk network element leasing business.

Q. HAVE YOU SEEN ANY INFORMATION TO THE PUBLIC WHICH CONFIRMS THE REASONABLENESS OF YOUR COST OF CAPITAL RANGE?

A. Yes. Salomon Brothers in its January 1996 report "Regional Bell Operating Companies—Opportunities Ring ... While Danger Calls" stated that "[b]ased on our estimates, the RBOCs currently have an average weighted cost of capital of approximately 8.6%. In order to value the RBOCs on a level playing field, we used the same discount rate in each DCF. Specifically, we used a discount rate of 10%, which we believe should be the minimum return an investor would expect in order to entice him to invest in a security, despite the fact this is slightly above the cost of capital." Also, as part of its proposed merger with NYNEX, Bell Atlantic submitted to its shareholders a joint proxy statement/prospectus on September 18, 1996 in which Bell Atlantic's investment advisor, Merrill Lynch, performed a DCF analysis of the two companies' relative market values, estimating a discount rate in the range of 8 to 10 percent for the telephone company portion of its portfolio of businesses.

Q. SHOULD THE COST OF CAPITAL ESTIMATE ACCOUNT FOR QUARTERLY COMPOUNDING?

A. No. Telephone operating companies receive payments for the use of their network elements on a monthly basis, and consequently, are able to reinvest their cash flows on an approximate monthly basis. This is a more frequent basis than investors

receive their quarterly dividends from the telephone holding companies. Thus, the effective rate that the telephone companies receive is the allowed rate— as determined in this hearing— compounded monthly, regardless of the fact that a telephone holding company pays dividends to investors quarterly. If the Commission allows a rate which is estimated using a quarterly compounding DCF model, the telephone holding companies will get an effective rate compounded both quarterly (as allowed) and monthly (as actually received). To be precise, therefore, if quarterly compounding is allowed, the cost of equity would also have to be decompounded to account for the fact that the telephone holding companies will be able to reinvest its proceeds on a monthly basis. The net effect would result in a lower allowed rate than the annual DCF cost of equity proposed by me. Consequently, the use of a DCF cost of equity determined using the annual formula is conservatively high.

Q. SHOULD THE COST OF CAPITAL ESTIMATE BE INCREASED FOR EQUITY FLOTATION COSTS?

A. No. BellSouth, GTE and Sprint are large holding companies whose stocks trade on the NYSE in an efficient market. As part of the process of arriving at the day-to-day prices for the companies' stock, the market is anticipating future events which affect the cash flows that the companies will earn. This process clearly includes the anticipation of future cash expenditures, including financing costs for both debt and equity which reduce the companies' cash flows. Because the price of the companies' stock has accounted for flotation costs already, an estimation of the cost of equity using the DCF model accurately reflects the required return of investors.

Adding a flotation cost adjustment would in effect double count the cost of financing.

Q. IF YOUR THEORETICAL ARGUMENT REGARDING FLOTATION COSTS IS CORRECT, WHY HAS THERE BEEN SO MUCH DISCUSSION ON THIS ISSUE IN THE TRADITIONAL REGULATORY RATE HEARING CONTEXT?

A. The regulatory context is really a different issue. In the regulatory world, a main purpose is to identify costs which can be charged back to the ratepayers by the telephone operating company. Equity flotation costs have often been disallowed because it would not be fair to burden current ratepayers with all of those costs if the equity capital would be utilized indefinitely. One way that parties have tried to "amortize" these costs so that they could be recovered by the telephone company is to make the flotation cost adjustment to the allowed return, which would in effect charge it back to ratepayers perpetually in very small increments. This is not the issue for this proceeding. In this case, I am interested in the forward-looking cost of capital which fairly compensates for the riskiness of the business. Because telephone holding companies' stock trades efficiently, the market has assessed its prospective cash flows, including financing costs, to arrive at its estimate of the fair price. Consequently, the DCF derived cost of equity estimate is the proper measure for determining forward- looking cost of capital.

IX.

CONCLUDING SUMMARY

Q. COULD YOU SUMMARIZE THE MAIN CONCLUSIONS OF YOUR TESTIMONY.

A. Using publicly-available data and accepted finance procedures I have estimated that the weighted average cost of capital for BellSouth is in a range between 7.94 and 9.05 with a best point estimate of **8.50** percent; for GTE it is in a range between 8.17 and 9.31 with a best point estimate of **8.74** percent; and for Centel and United in a range between 7.97 and 9.12 with a best point estimate of **8.55** percent. However, I have also stressed that these are upward-biased estimates of the cost of capital of diversified telephone holding companies that should be used in this case. In this case, each of the companies in question is not a diversified holding telephone company, but a company in the more specialized (and less risky) business of providing network elements and universal service. Finally, I observed information released by independent parties unrelated to this proceeding which confirm the reasonableness of my cost of capital estimate.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes.

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[1] On Petitions for Review of an Order of the Federal Communications Commission, United States Court of Appeals for the Eight Circuit (submitted: January 17, 1997; Filed: July 18, 1997).

[2] Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Dkt. No. 96-98, First Report & Order, FCC 96-325 (rel. August 8, 1996)

[3] It should be noted that, although the principles cited in the above-mentioned Supreme Court decisions are analogous to TELRIC, in practice state utility regulation has focused on the recovery of embedded costs. The traditional embedded cost methodology is not consistent with TELRIC.

[4] As I discuss later in my testimony, however, operating risks which an investor can diversify away are not compensated with a risk premium according to capital market theory. Competition risks, for example, are diversifiable. In this segment of my testimony I explain all types of operating risks that a company faces, including both diversifiable and nondiversifiable risk.

[5] *Stocks, Bonds, Bills and Inflation, 1996 Yearbook*, Ibbotson Associates, Chicago, Illinois, pg. 146.

[6] The Bond Guide does not always cover all outstanding issues if there are many. It appears that the smaller and shorter term obligations may be excluded. Because interest rates on longer term obligations are generally higher, excluding the smaller and shorter term obligations would have the effect of overstating the cost of debt slightly.

[7] Theoretically, the yield-to-maturity on debt overstates the forward-looking cost of debt because of default risk. The problem raised by risky debt is that only the promised yield is observable, but it is the expected return that is required to estimate the cost of debt. Although the expected return and the default premium sum to the promised yield, neither the expected return nor the default premium can be observed directly. Because of this default risk, the debt cost of capital is actually the yield-to-maturity minus the expected default loss. The default risk of telephone holding company bonds is considered to be minimal and hence is ignored for purposes of this analysis.

[8] Sprint Corp's bonds are issued primarily by its telephone subsidiaries. Therefore, it is appropriate in my opinion to use the weighted average cost of Sprint's actual debt securities, instead of utilizing the average of the costs of debt of all telephone holding companies.

[9] Stewart C. Myers and Lynda S. Borucki, "Discounted Cash Flow Estimates of the Cost of Equity Capital—A Case Study", *Financial Markets, Institutions & Instruments*, vol. 3, no. 3, New York University Salomon Center, 1994.

[10] *Stock, Bonds, Bills and Inflation, 1996 Yearbook*, Ibbotson Associates, Chicago, pp. 158-159.

[11] Dr. Sharpe is a Nobel-prize winning financial economist.

[12] Sharpe, William F., Gordon J. Alexander and Jeffery V. Bailey, *Investments*, Fifth Edition, Prentice Hall, Englewood Cliffs, New Jersey, 1995, pp. 590-591.

[13] Damodaran, Aswath, *Damodaran on Valuation: Security Analysis for Investment and Corporate Finance*, John Wiley & Sons, New York, 1994, pp. 99-101.

[14] Copeland, Tom, Tim Koller, and Jack Murrin, *Valuation: Measuring and Managing the Value of Companies*, John Wiley & Sons, New York, 1994, pg. 295.

[15] There are numerous formulations of the DCF model of varying complexity. Damodaran, for example, describes several different DCF models in his book. It should be noted that what he calls the "three-stage model" is different from the model I employ and is not comparable. Damodaran's "H Model" is more comparable to the model that I use.

[16] I refer to estimation error and the desirability of using averages in several discussions in my testimony. The following excerpt from *A Guide to Econometrics*, (3rd Edition, The MIT Press, Cambridge, MA, 1992) by Peter Kennedy summarizes the purpose for using 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. In many cases it happens that a biased estimator becomes less and less biased as the sample size becomes larger and larger— as the sample size becomes larger its sampling distribution changes, such that the mean of its sampling distribution shifts closer to the true value of the parameter being estimated." (pg. 18)

[17] I utilize an annual DCF model because telephone operating companies receive payments for the use of their network elements on a monthly basis, and consequently, are able to reinvest their cash flows on an approximate monthly basis. Thus, the effective rate that the telephone companies receive is the allowed rate -- as determined in interconnection or universal service proceedings-- compounded monthly, regardless of the fact that telephone companies only pay dividends quarterly. Consequently, the use of a DCF cost of equity determined using the annual formula is conservatively high.

[18] Ibbotson, Roger, and Gary P. Brinson, *Global Investing: The Professional's Guide to the World Capitol Markets*, McGraw-Hill, 1993, at p. 45.

[19] To address the question of whether the 5-year betas are sufficiently forward-looking, I also obtained predicted betas calculated by BARRA, which are discussed later.

[20] Note that the judgmental weighting which I utilized in estimating the average DCF cost of equity is not necessary because betas can be unlevered to adjust for the capital structure leverage of the companies in the sample.

[21] The CAPM cost of equity for Centel and United is estimated by taking the weighted average of the CAPM cost of equity estimated for all the companies in the sample.

[22] Copeland, Tom, Tim Koller, and Jack Murrin, *Valuation: Measuring and Managing the Value of Companies*, John Wiley & Sons, New York, 1994, at pg. 264.

[23] With the recent increase in the equity values of S&P 500 companies, the dividend yield calculations produce lower results than in previous years, even though no reduction in dividends occurred. The average dividend yield of the market is about 2%. Therefore, I consider a 2% cut-off to be reasonable.

[24] Bodie, Zvi, Alex Kane, and Alan J. Marcus, *Investments*, Irwin, 1993.

[25] Copeland, Tom, Tim Koller and Jack Murrin, *Valuation: Measuring and Managing the Value of Companies*, Wiley and McKinsey & Company, New York, NY, 1995, at p. 260.

[26] Damodaran, Aswath, *Damodaran On Valuation: Security Analysis for Investment and Corporate Finance*, John Wiley & Sons, 1994, at p. 22.

[27] *Stocks, Bonds, Bills and Inflation, 1996 Yearbook*, Ibbotson Associates, Chicago, Illinois.

[28] Clements, Jonathan, "Getting Going, Keeping Perspective: Lower Expectations May Bring Happier Long-Term Results", *The Wall Street Journal*, November 26, 1996. See also, Ibbotson, Roger G., and Gary P. Brinson, *GLOBAL INVESTING: The Professional's Guide to the World Capital Markets*, McGraw Hill, Inc., New York, 1993, pg. 171.

[29] Brown, Stephen J., William N. Goetzmann and Stephen A. Ross, "Survival", *The Journal of Finance*, Vol. L., No. 3, July 1995.

[30] Siegel, Jeremy, *Stocks for the Long Run*, Irwin, New York, 1994. See also, Siegel, Jeremy J., "Risk and return: start with the building blocks", *The Financial Times*, May 12, 1997.

[31] Blanchard, Oliver, "Movements in the Equity Premium", *Brookings Papers on Economic Activity*, 75 (2) 1993.

[32] Rappaport, Alfred, *Creating Shareholder Value*, The Free Press, New York, 1998.

[33] Damodaran, *Id*, at p. 22, and Copeland *et al.*, *Id*, at p. 260.

[34] Kuhn, Susan E., "Personal Fortune: Why Bonds May Beat Stocks," *Fortune*, October 28, 1996.

[35] "Will Investors Run for Cover? When the Rain Comes," *The Economist*, vol. 345, October 25, 1997.

[36] In the Matter of Represcribing the Authorized Rate of Return for Interstate Services of Local Exchange Carriers. FCC 90-315, Adopted September 19, 1990; Released December 7, 1990. ¶'s 136 & 139, p. 7523

[37] Ross, Stephen A., Randolph W. Westerfield and Jeffrey Jaffe, *Corporate Finance*, Fourth Edition, Irwin, Chicago, 1996, pg. 441.

[38] Shapiro, Alan C., *Modern Corporate Finance*, Macmillan Publishing Company, 1990, pgs. 291-292.

[39] Copeland, Tom, Tim Koller and Jack Murrin, *Valuation: Measuring and Managing the Value of Companies*, Wiley and McKinsey & Company, New York, NY, 1995, at p. 251.

[40] The credit-rating agencies have noted the increasing risk-profile of the telephone holding companies in comparison to core telephone operations. For example, Standard & Poor's states in its Global Sector Review (November 1996, p. 288) that "[p]artially offsetting the solid position of its local exchange companies is the higher-risk profile of GTE's diversified activities, including its wireless and international ventures."

[41] As previously discussed in my testimony, however, under capital market theory competitive risks are not relevant for computing the cost of capital because they can be diversified away.

REBUTTAL TESTIMONY OF

JOHN I. HIRSHLEIFER

ON BEHALF OF AT&T COMMUNICATIONS

OF THE SOUTHERN STATES, INC

AND

MCI TELECOMMUNICATIONS CORPORATION

DOCKET NO. 980696-TP

Q. PLEASE STATE YOUR FULL NAME AND OCCUPATION.

A. My name is John I. Hirshleifer and my business address is FinEcon, 10877 Wilshire Blvd., Los Angeles, California 90024. I am Vice President and Director of Research of FinEcon, a firm which provides financial economic consulting services to corporations, law firms and government agencies.

Q. ARE YOU THE SAME JOHN HIRSHLEIFER WHO PREVIOUSLY SUBMITTED PREPARED DIRECT TESTIMONY ON BEHALF OF AT&T COMMUNICATIONS OF THE SOUTHERN STATES, INC. AND MCI TELECOMMUNICATIONS CORPORATION IN THIS PROCEEDING?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to comment on BellSouth's, and Sprint/United and Sprint/Centel's[1], proposal to adopt a 11.25% cost of capital as supported by Dr. Randall S. Billingsley, BellSouth Telecommunications' ("BellSouth") cost of capital expert witness. I will also provide rebuttal to the testimony of Dr. James Vander Weide, who advocates an overall 12.65% cost of capital for GTE.

Q. WHAT IS YOUR VIEW OF THE COST OF CAPITAL ESTIMATE SUBMITTED IN THIS PROCEEDING ON BEHALF OF BELLSOUTH, SPRINT AND GTE?

A. I believe that the 11.25% cost of capital advocated by BellSouth and Sprint, and the 12.65% cost of capital advocated by GTE are far in excess of the forward-looking cost of capital for the provision of network elements or universal service, and are inconsistent with publicly-available cost of capital estimates by parties outside the context of this proceeding.

Q. IS THE 11.25% RATE ADVOCATED BY BELL SOUTH FORWARD-LOOKING?

A. No. It was determined by the FCC in 1990. The FCC stated in Paragraph 250.(4) of its May 8, 1997 Universal Service Order that:

"... the cost of debt has decreased since we last set the authorized rate of return. The reduction in the cost of borrowing caused the Common Carrier

Bureau to institute a preliminary inquiry as to whether the currently authorized federal rate of return is too high, given the current marketplace cost of equity and debt. We will reevaluate the cost of capital as needed to ensure that it accurately reflects the market situation for carriers." Pursuant to Paragraph 250.(4), the Florida Commission is free to use a state-prescribed rate which can be based on more forward-looking data.

Q. DR. BILLINGSLEY TESTIFIED THAT HE HAD PERFORMED INDIRECT TESTS OF REASONABLENESS IN SUPPORT OF THE 11.25% COST OF CAPITAL. DO YOU BELIEVE THAT DR. BILLINGSLEY'S TWO "TESTS OF REASONABLENESS" ARE PERSUASIVE?

A. No. They are mathematically self-fulfilling: i.e., they assume the desired conclusion. If you take the 11.25% cost of capital and assume that it is correct (which there is no reason to do), and you assume Dr. Billingsley's cost of debt estimate is correct, and you assume that historical or previously-allowed capital structures are correct, then you have to get a high implied cost of equity. However, this Commission does not have to assume that 11.25% is the correct cost of capital *a priori*.

Q. DR. BILLINGSLEY HAS TESTIFIED THAT TELEPHONE HOLDING COMPANIES ARE NOT ACCURATE PROXIES FOR BELLSOUTH. THEREFORE, HE CALCULATES A DCF COST OF EQUITY ON A

SAMPLE OF COMPANIES DERIVED BY A STATISTICAL CLUSTER ANALYSIS. DO YOU AGREE WITH HIS PREMISE AND APPROACH?

A. No. First, he has provided no convincing argument or evidence showing that the telephone holding companies are not the closest available set of comparables for the business of unbundled network element leasing. As I have discussed in my direct testimony, the telephone holding companies are riskier than the network element leasing business because of their many riskier businesses. Therefore, use of telephone holding companies as proxies will yield a conservatively high cost of capital estimate. Although Dr. Billingsley has performed an arcane statistical analysis, his results do not, in my opinion, pass the tests of reason and common sense. If one were to accept the results of his cluster analysis, then one would have to believe that the risk of the network element leasing business was more similar to the risks faced by Coca Cola, McDonalds and Wal-Mart stores, as examples, than to the risks faced by BellSouth's parent company (which owns LEC's and the underlying network elements). It is clear on its face, however, that the risk of the network element leasing business has virtually nothing in common with the risks of a McDonalds or Wal-Mart.

I am further convinced of the inaccuracy of Dr. Billingsley's approach by my experience as a witness in several of Ameritech's state network element hearings. In those proceedings Ameritech's own cost of capital expert used a set comparable companies which was almost exactly the same as the set of

telephone holding companies that I have used. I note also that major brokerage firms and investment banks which issue analyst reports for BellSouth and other telephone holding companies see no need to resort to statistical cluster analysis when choosing proxy companies for valuing these companies. They view other telephone holding companies to be the best proxies for the subject telephone holding company being valued. This is true even though the telephone holding companies do not participate in exactly the same businesses or to the same proportionate degree. Ameritech, for example, is one of the largest providers of home security alarm services in the nation. BellSouth, in contrast, has no involvement in this business whatsoever.

Q. IN REBUTTALS TO YOUR TESTIMONIES FILED IN OTHER STATES, DR. BILLINGSLEY CLAIMS THAT HIS STATISTICAL MODEL GIVES "OBJECTIVE" RESULTS, IMPLYING THAT YOUR CHOICE OF COMPARABLES IS INHERENTLY SUBJECTIVE. IS THIS CORRECT?

A. No. Dr. Billingsley has glossed over the fact that the formulation of his model and the data he chooses to analyze are subjective. The factors he has chosen to consider in the model are based on his subjective judgment, and there is no basis to conclude the formulation of his model is necessarily correct or the best one for the purposes it was intended. The results of his model— which fly in the face of common sense— dramatically highlight this issue. Moreover, it is not clear how many different model formulations Dr. Billingsley considered

before selecting the model used in his testimony. When all of these issues are taken into consideration, I do not believe that Dr. Billingsley has offered a plausible reason for abandoning the basic notion that telephone holding companies are the best available comparables to use as a starting point for estimating the cost of capital for the network element leasing business.

Q. FROM YOUR KNOWLEDGE AND EXPERIENCE, DO INVESTORS USE CLUSTER ANALYSIS TO DETERMINE COMPARABLE COMPANIES FOR COST OF CAPITAL ESTIMATION PURPOSES?

A. No. And as previously stated, the sophisticated investments banks do not either.

Q. IN REBUTTALS TO YOUR TESTIMONIES FILED IN OTHER STATES, DR. VANDER WEIDE HAS SAID THAT THE USE OF MULTIPLE STAGE DCF MODELS IS NOT NECESSARY. DR. BILLINGSLEY HAS SUGGESTED THAT THE PERPETUAL GROWTH ASSUMPTION IN THE DCF MODEL MOST ACCURATELY REFLECTS THE EXPECTATIONS OF INVESTORS, AND THAT THE THREE-STAGE DCF MODEL REFLECTS SOLELY YOUR SUBJECTIVE ASSUMPTIONS. IS THIS TRUE?

A. No. Quite to the contrary. The perpetual growth assumption systematically guarantees an inaccurately high cost of equity estimate inconsistent with investor expectations. Prominent economists familiar with current cost of

capital research have recognized that the simple perpetual growth DCF model using short-run forecasts is inappropriate to use if a company's short-run growth rate is expected to exceed the long-run growth rate of the economy, or the cost of equity will be overestimated. I have cited these economists and practitioners extensively in my direct testimony.

Neither Dr. Billingsley nor Dr. Vander Weide have cited any credible support for the naïve application of the perpetual growth DCF model using short-run growth forecasts in this circumstance.

Q. DO YOU BELIEVE THAT THIS COMMISSION SHOULD NECESSARILY USE THE PERPETUAL GROWTH DCF MODEL IF IT HAS BEEN USED IN THE PAST?

A. No. As highlighted by the excerpts of academics and practitioners cited in my direct testimony, one must understand when the perpetual growth DCF model is— and is not— suitable. In the case of a regulated utility in the traditional regulation setting, growth has traditionally been limited and has not exceeded the growth rate of the economy. If the growth rate does not exceed the economy-wide growth rate, and the growth rate is expected to be very stable, the use of the perpetual growth model is reasonable. In this case, however, I use a set of comparables comprised of holding companies which are engaged in numerous businesses that are, in the short-run, expected to grow at rates much greater than the aggregate economy. The wireless business, as an

example, has forecasted growth rates exceeding 30% (see exhibit JH-1). It is absolutely clear that this business will not grow at such a high rate indefinitely.

Q. BOTH DR. VANDER WEIDE AND DR. BILLINGSLEY HAVE FILED REBUTTAL TESTIMONIES IN OTHER STATES IMPLYING THAT DR. DAMODARAN SAYS IN HIS BOOK THAT THE BEST USE FOR THE THREE-STAGE DCF MODEL IS FOR COMPANIES WITH GROWTH RATES IN EXCESS OF 25 PERCENT. WHAT ARE YOUR COMMENTS?

A. That assertion indicates a very inaccurate and incomplete reading of Dr. Damodaran's book. Dr. Damodaran describes in his book numerous DCF models with varying formulations and characteristics. Dr. Damodaran attempts to distinguish the circumstances under which each type of model might be most appropriate. It is obvious that the three-stage model described by Dr. Damodaran is a complex model which is not the model I employ, as I have stated in my direct testimony. Dr. Damodaran's three-stage model requires year-specific payout ratios, growth rates and betas. In contrast, the "H Model" described by Dr. Damodaran appears to be most analogous to the model I have used.

Dr. Damodaran states that:

"The H model is a two-stage model for growth, but unlike the classical two-stage model, the growth rate in the initial growth phase is not constant but declines linearly over time to reach the stable-growth rate in steady stage."[2]

Dr. Damodaran indicates that the best use for this model is for firms that are growing rapidly at the present, but for which the growth is expected to decline gradually over time as their differential advantage over their competitors declines.

Q. DOES DR. DAMODARAN SUGGEST ANY GROWTH RATE LIMITATIONS FOR THE USE OF THE "H MODEL"?

A. No. It appears from Dr. Damodaran's extensive analysis that the "H Model" is intended for companies which will grow at rates lower than those for which his formulation of a 3-stage model would be appropriate.

Q. DOES DR. DAMODARAN ALSO DESCRIBE THE CLASSICAL TWO-STAGE MODEL IN HIS BOOK?

A. Yes.

Q. WHAT DOES DR. DAMODARAN SAY ABOUT COMPANIES WHICH MIGHT BE APPROPRIATE FOR THE CLASSICAL TWO-STAGE DCF MODEL?

A. Damodaran suggests that one type of company for which this would be a suitable model is a company:

"...in an industry that is enjoying supernormal growth because significant barriers to entry (either legal or as a consequence of infrastructure requirements) can be expected to keep out new entrants for several years.

The assumption that the growth rate drops precipitously from its level in the initial phase to a stable rate also implies that this model is more appropriate for firms with modest growth rates in the initial phase. It is more reasonable, for instance, to assume that a firm growing at 12% in the high-growth period will see its growth rate drop to 6% after that than it is for a firm growing at 40% in the high-growth period."[3]

Q. IF YOU ASSUMED THAT THE CLASSICAL TWO-STAGE MODEL WAS THE MOST APPROPRIATE MODEL TO USE, WHAT IMPACT WOULD IT HAVE HAD ON YOUR DCF COST OF EQUITY ESTIMATE?

A. If I had instead utilized this model— which certainly appears applicable in this case based on Dr. Damodaran's analysis— it would have resulted in a lower cost of equity than what I actually calculated. This again provides evidence that my cost of capital estimate is conservatively high.

Q. DR. BILLINGSLEY HAS CLAIMED IN PRIOR STATE REBUTTAL TESTIMONIES THAT IT IS SUBJECTIVE OF YOU TO ASSUME THAT THE 5-YEAR *I/B/E/S* GROWTH RATES FOR YOUR GROUP OF COMPARABLE COMPANIES WILL NOT PERSIST INDEFINITELY IN THE FUTURE. HE IMPLIES THAT INVESTORS WOULD ASSUME PERPETUAL GROWTH AT THESE RATES. HOW DO YOU RESPOND TO THIS ASSERTION?

A. I believe that it is quite the opposite. Dr. Billingsley argues that investors take 5-year forecasts, which in the case of the telephone holding companies include subsidiaries with growth rates exceeding 30%, and assume uncritically that such growth rates will last forever. However, there is no reason to believe that investors are so unsophisticated. Investors recognize that five-year forecasts mean that they are intended for five years. They appreciate the fact that even five-year forecasts become less accurate in the later years of the forecast period, and they understand that high growth businesses by necessity will slow down as their markets saturate. The comments by academics and practitioners cited in my direct testimony support this view. Dr. Billingsley has himself stated in previous rebuttal testimony that U.S. financial markets are "highly efficient" (Billingsley Georgia Rebuttal Testimony, p. 41[4]), which also supports my belief that investors are sophisticated in evaluating information available in the marketplace.

Q. IS DR. VANDER WEIDE'S AND DR. BILLINGSLEY'S PERPETUAL GROWTH ASSUMPTION BASED ON FIVE-YEAR ANALYST FORECASTS SUBJECTIVE?

A. Absolutely, and as I have shown above, it is in this instance an incorrect assumption which would not be made by investors.

Q. IN PRIOR STATE REBUTTAL TESTIMONIES, DR. BILLINGSLEY AND DR. VANDER WEIDE HAVE ARGUED THAT SOME

COMPANIES HAVE GROWN AT HIGH RATES FOR LONGER THAN FIVE YEARS. DR. BILLINGSLEY HAS SPECIFICALLY REFERRED TO MCI'S HISTORICAL GROWTH RATES INDICATED IN VALUE LINE. DOES THIS INVALIDATE YOUR APPROACH AND MAKE THE PERPETUAL GROWTH MODEL MORE SUITABLE?

A. Not at all. In the real world, individual companies participating in a particular line of business will have differing growth rates which will occur over different time periods. Clearly, a few companies will do extraordinarily well, and may grow at high rates for many years. In fact, in my analysis I assume above average growth for most telephone companies over the next twenty years. Other companies will perform very poorly, and may experience low or negative growth (or go out of business entirely). The greatest proportion of industry participants will experience growth somewhere between the highest-growth stars and the weak underperformers. Investors today cannot definitively predict which companies in an industry will be the winners and which will be the losers. On average, no reasonable analyst would expect high growth in excess of the economy's growth for all of the industrys' companies forever.

What was particularly interesting about Dr. Billingsley's example in his prior rebuttal testimony is that he pointed out that MCI's current 5-year growth forecasts were in the 12% range, even though he stated that average earnings growth over the past 10 years had been 28% according to Value Line (Billingsley Georgia Rebuttal Testimony, p. 50[9]). Dr. Billingsley did not

mention that the same Value Line report indicated that MCI's growth rate over the past 5 years was only 5%. Clearly then, a tapering off of the high growth rate is occurring, consistent with the use of multiple stage DCF models and inconsistent with the perpetual DCF model. The use of a perpetual growth DCF model when MCI was growing at rates exceeding 28% would have dramatically overestimated MCI's true cost of equity at that time. Given that MCI's forecast growth rate of around 12% is significantly in excess of the growth rate of the economy, the same error arises by using a perpetual growth rate DCF model today.

Q. IN HIS PRIOR REBUTTAL TESTIMONIES, DR. BILLINGSLEY APPEARS TO ARGUE THAT INVESTORS SUBSUME ALL OF THE INFORMATION REGARDING THE DIFFERENTIAL GROWTH RATES OF SUBSIDIARY COMPANIES INTO THE PERPETUAL GROWTH MODEL. DOES THAT MAKE SENSE?

A. No. It is clear that it would be an extraordinarily difficult analysis to arrive at a single, perpetual growth rate estimate that accurately reflects the average growth of various businesses, some of which are relatively low-growth, such as the local exchange business, and other businesses which will grow astronomically for some period and then taper off to lower growth rates. Furthermore, there would not be the overwhelming support for multiple-stage DCF models as cited in my direct testimony if Dr. Billingsley's assertion were true.

Q. BOTH DR. VANDER WEIDE AND DR. BILLINGSLEY HAVE ALSO ARGUED IN PRIOR REBUTTAL TESTIMONIES THAT THE PERPETUAL GROWTH ASSUMPTION IS SOMEHOW INCONSEQUENTIAL BECAUSE LATER CASH FLOWS HAVE LITTLE IMPACT ON PRESENT VALUE. IS THIS CORRECT?

A. This is plainly wrong, as evidenced by the enormous difference between Bellsouth's, GTE's and my cost of equity estimates using the DCF model. Their argument overlooks the tremendous impact of compounding over time. By assuming perpetual dividend growth compounding at unrealistically high rates, but at the same time holding the price of the subject company's stock constant in the DCF model, the discount rate— or cost of equity— must get much higher by mathematical necessity in order to equate the enormous assumed dividends over time to the current price. In contrast, a more logical alternative assumption would be that— if the market genuinely believed that high growth would be realized forever— the price of the subject company would rise.

Q. BOTH DR. VANDER WEIDE AND DR. BILLINGSLEY DISCUSS THE RISKS OF THE TELECOMMUNICATIONS BUSINESS. IS THE TELECOMMUNICATIONS BUSINESS THE SUBJECT OF THIS PROCEEDING?

A. No. The telecommunications business is a very broad category which includes such businesses as GTE's and BellSouth's wireless communications

endeavors. It therefore appears that they have incorrectly blurred the risks of various othe. risky businesses with that of the low-risk network element leasing business in their analyses.

Q. ARE THE RISKS OF COMPETITION, TECHNOLOGICAL INNOVATIONS, AND REGULATORY CHANGE DISCUSSED AT GREAT LENGTH BY DR. BILLINGSLEY AND DR. VANDER WEIDE SOMETHING THAT THE FINANCIAL MARKETS ACCOUNT FOR IN VALUING THE COMMON STOCKS OF COMPANIES?

A. Yes. The financial markets have been continuously absorbing and incorporating information about competition, and technological and regulatory change. This is evident from financial analyst reports and the public disclosures of the telephone holding companies themselves over the past several years. As Dr. Billingsley has stated, the U.S. financial markets are highly efficient. Dr. Vander Weide similarly testified in his direct testimony that "[e]conomists and investors consider all the risks that a firm might incur over the future life of the company" [Vander Weide direct, pg. 13]. If investors are aware of new risks which impact a company's value, they incorporate it into the cost of equity immediately. Consequently, Dr. Billingsley's and Dr. Vander Weide's arguments that the incumbent LEC's are facing dramatic new risks which require an increase to the market-determined cost of capital are puzzling. One would have to assume— contrary to their own statements— that the investing public is totally naive and would not

account for these various risks, even though the information about risks have been widely disseminated and discussed. I have read many of Dr. Vander Weide's testimonies filed in recent years and note that-- both before and after the passage of the 1996 Telecommunications Act— he has described these kinds of risk in great detail based on publicly-available information.

Q. ASSUMING THAT MORE COMPETITION ARISES AT THE RETAIL TELEPHONE BUSINESS LEVEL, IS THERE EVIDENCE THAT INCREASED RETAIL COMPETITION WOULD MAKE THE WHOLESALE BUSINESS OF LEASING UNBUNDLED NETWORK ELEMENTS LESS RISKY?

A. Yes. Bell Atlantic is a large regional Bell holding company comparable to BellSouth. Bell Atlantic has recently agreed to merge with GTE. Bell Atlantic had indicated in a Strategic Overview previously published on its Internet web site (attached as Rebuttal JH-2) that the business of leasing network elements, in and of itself, represented an opportunity for the company, since retail competition would increase utilization of its network at the wholesale level without the need to make any additional investment.

Q. IS THE PROSPECT OF INCREASED COMPETITION IN THE RETAIL PHONE SERVICE RELEVANT FOR PURPOSES OF DETERMINING THE COST OF CAPITAL IN THIS PROCEEDING?

A. No. The FCC in its August 8 Order explicitly defined the relevant risk as the risk incurred in the business of leasing unbundled network elements at wholesale [August 8 Order at ¶702]. (That the FCC has indicated that "the risk adjusted cost of capital need not be uniform for all elements," further indicates that the relevant risks are those inherent in the business of leasing elements itself, not the risks entailed with retail phone service. [Id. at ¶702.])

Q. IN PRIOR REBUTTAL TESTIMONY FILED IN OTHER STATES, DR. BILLINGSLEY CONTENDED THAT YOUR MENTION OF THE RISK OF PHYSICAL BYPASS, PARTICULARLY FOR BUSINESS CUSTOMERS, WAS INCONSISTENT WITH YOUR DISCUSSION OF CAPITAL MARKET THEORY, WHICH SHOWS THAT COMPETITIVE RISKS CAN BE DIVERSIFIED AWAY AND WOULD NOT BE COMPENSATED BY THE MARKET WITH A RISK PREMIUM. WOULD YOU PLEASE EXPLAIN THE IMPLICATIONS OF CAPITAL MARKET THEORY WITH RESPECT TO YOUR TESTIMONY REGARDING RISK?

A. I discuss many potential risks of the network element leasing business in my testimony so that the Commission can get an accurate picture of the risks this business faces, particularly in relation to other businesses engaged in by telephone holding companies. Some of these risks could be viewed as systematic, meaning that they could not be diversified away, and others nonsystematic, such as the risk of competition. According to capital market

theory, an investor will not require extra compensation in the form of a higher cost of equity for risks that he or she can diversify away simply by acquiring a portfolio of companies in that business. Dr. Billingsley's inference is that because I describe both types of risks, I am assuming that BellSouth must be compensated for both in its cost of equity. I do not make that statement. Instead, my goal is to elucidate capital market theory regarding diversifiable risks. Ironically, Dr. Billingsley is criticizing me for fully discussing the issues of risk in my testimony (which he has not done), both from the point of view of those who consider competitive risks to be significant and from the viewpoint of capital market theory.

The question for this Commission to decide is whether it accepts the premise of capital market theory with regard to competitive risks. If it does not, then the risk of physical bypass should be considered. If it is considered, the current reality is that there are only small in-roads in facility bypass and the likelihood of it developing significantly over the near term is low. The August 8 Order describes the current competitive position of the incumbent LEC's network element business as being natural or bottleneck monopolies which do not now face significant competition (August 8 Order at ¶'s 11, 702). BellSouth's own trade association agrees with this view. In a brochure which the United States Telephone Association distributes to public consumers, it states:

"Be a smart consumer and arm yourself with information, especially about what long-distance companies don't want you to know— such as the fact that

they don't own, invest in or repair the local networks they'll use to carry your local calls. Those networks have been built and are maintained by your local telephone companies."[6] [emphasis added].

In the same vein, the findings of the Florida Commission's draft report on local telecommunications competition dated September 19. 1997 are that "local competition is developing much more slowly than many expected three years ago."

On the other hand, if the Commission concludes that capital market theory is correct, then competitive risks simply are not relevant.

While I see room for debate on this subject, my sense is that capital market theory is correct on this issue. The following hypothetical helps to analyze this question. Assume first that there are only two companies in the network element leasing business, BellSouth and GTE. In addition, assume that GTE becomes a much better competitor, that this is known to the market, and that GTE wins significant business away from BellSouth.[7] Under such circumstances, BellSouth's market has become more competitive and its market share will drop. In valuing the two companies, investors will forecast future cash flows for each company. BellSouth's forecasted cash flows will be reduced, while GTE's will be increased. BellSouth's stock price will fall and GTE's will rise. If competitive risk also affects cost of equity, investors will additionally increase BellSouth's cost of equity, which will cause its stock price to fall further. GTE's market in turn has become relatively less competitive, so investors will reduce GTE's cost of capital and the price will go

up even further. Looked at in this light, it is questionable that investors would require the second reduction in BellSouth's price by additionally increasing its cost of equity, particularly since the operating risks of the two companies are the same.

Finally assume that an investor buys both GTE and BellSouth. This investor now owns 100% of the profits from the network element leasing business, and bears no risk of competition whatsoever, even though BellSouth and GTE continue to compete with one another. If competition affects the cost of equity, this creates a puzzle for the investor who has just bought all of the competitors. Before he acquired both companies, he assigned a higher cost of equity to BellSouth. What cost of equity does he use after the acquisition to value his interest in BellSouth? BellSouth's competitive risks have not changed at all, but the investor does not bear any of that risk. His industry-wide profits remain constant regardless of which individual company wins the competitive war. Similarly, the investor receives no added benefit from the fact that GTE is the better competitor, even though he paid an added premium for this company by reducing the cost of equity. The most plausible answer to this puzzle is that competitive risk does not change the cost of equity to begin with, precisely because an investor does not consider unsystematic risks which can be diversified away easily. This is why capital market theory states that when determining the cost of equity, investors are concerned with the fundamental operating risks of a business, not the idiosyncracies affecting the individual competitors.

Q. DOES THE FACT THAT THE NETWORK ELEMENT BUSINESS LEASING BUSINESS FACES SOME RISKS TURN IT INTO A HIGH-RISK BUSINESS AS DR. BILLINGSLEY AND DR. VANDER WEIDE SUGGEST?

A. No. All businesses face some risks, including low-risk businesses. As discussed above, both the FCC and Bell Atlantic view it as a low-risk business in their public pronouncements.

Q. IN REBUTTAL TESTIMONIES FILED IN OTHER STATES, DR. BILLINGSLEY HAS QUESTIONED THE APPLICABILITY OF CAPITAL MARKET THEORY WHICH YOU HAVE DESCRIBED ABOVE. IS DR. BILLINGSLEY INCONSISTENT IN HIS USE OF THE CAPITAL ASSET PRICING MODEL?

A. Yes. On the one hand, Dr. Billingsley uses the capital asset pricing model in his analysis. Yet on the other, he attacks its "pristine theory" (Billingsley Georgia Rebuttal Testimony, pg. 60[8]) as being impractical because it inconveniently negates his argument that competitive risks are highly significant to BellSouth.[9] However, the foundation of the model is that diversifiable risks do not increase the cost of capital. As Ibbotson Associates states: "...unsystematic risk is that portion of total risk that can be avoided by diversifying; the CAPM concludes that unsystematic risk is not rewarded with a risk premium. For example, the possibility that a firm will lose market share

to a competitor is a source of unsystematic risk for the stock of a particular company."[10] [emphasis added]

Q. IN REBUTTAL TESTIMONY FILED IN OTHER STATES, DR. BILLINGSLEY HAS ASSERTED THAT THE FCC CONSIDERS COMPETITIVE RISKS IMPORTANT TO THE COST OF CAPITAL. HAS THE FCC SPECIFICALLY ADDRESSED THE CAPITAL MARKET THEORY QUESTION?

A. Not to my knowledge. Looking at Dr. Billingsley's specific citation to the FCC's Third Report and Order (FCC-96-488), the FCC stated that "potential competition could increase the risk facing the incumbent LECs, and thus increase their cost of capital, thus mitigating, to some extent, the factors suggesting that incumbent LECs cost of capital has decreased since 1990. [emphasis added] (Billingsley Georgia Rebuttal Testimony, p. 13[11]) However, the FCC's May 8 Order regarding universal service at paragraph 250.(4) states that:

"There are other factors however, that may mitigate or offset any potential increase in the cost of capital associated with additional competition. For example, until facilities-based competition occurs, the impact of competition on the ILEC's risk associated with the supported services will be minimal because the ILEC's facilities will still be used by competitors using either resale or purchasing access to the ILEC'S unbundled network elements."

Consequently, it does not appear that the FCC has definitively concluded that these risks will increase the LECs' cost of capital, but that they are leaving them open for consideration.

Q. DOES THIS FCC STATEMENT ALSO INDICATE THAT, EVEN IF COMPETITIVE RISKS DO INCREASE LEC COST OF CAPITAL, THAT ON NET THE COST OF CAPITAL HAS DECLINED SINCE THE TIME THAT THE FCC DETERMINED THE 11.25% ACCESS CHARGE RATE?

A. Yes. While I believe that the FCC is leaving the final decision to state Commissions, it is clearly its position that, if all of the factors are considered including competitive risks, the net cost of capital has declined from the time the 11.25% was adopted. One clear indication of this is the significant decline in interest rates since the FCC's Rate Represcription Order adopted in September of 1990 which I have discussed in my direct testimony. In its May 8 Order regarding universal service at paragraph 250.(4), the FCC stated that "[t]he reduction in the cost of borrowing caused the Common Carrier Bureau to institute a preliminary inquiry as to whether the currently authorized federal 11.25 percent rate of return is too high given the current marketplace cost of equity and debt."

Q. IN PRIOR REBUTTAL TESTIMONIES, DR. BILLINGSLEY HAS CRITICIZED YOUR ESTIMATION OF THE COST OF DEBT. IS DR. BILLINGSLEY CORRECT THAT NETWORK ELEMENTS WOULD ONLY BE FINANCED WITH LONG-TERM DEBT?

A. No. The network elements have varied expected economic lives, not all of which are necessarily long-term. In addition, the network element leasing business, like any other business, would be financed using a variety of sources and maturities. Dr. Billingsley would be hard-pressed to name any companies which are financed with 100% long-term debt.

Q. IN OTHER STATE REBUTTALS, DR. VANDER WEIDE AND DR. BILLINGSLEY HAVE INDICATED THAT YOUR USE OF THE ANNUAL DCF MODEL UNDERSTATES THE COST OF CAPITAL ESTIMATE. IS THIS TRUE?

A. No. When calculating the cost of equity applicable to an investor, the investor assumes that he or she will get quarterly dividends. As investors normally receive dividends quarterly, they will reinvest them and get the benefit of quarterly compounding. In other words, investors earn their cost of equity as calculated by the quarterly DCF model by reinvesting their cash flows quarterly. The purpose of this proceeding, however, is to determine the cost of capital which the telephone operating companies should be allowed. In contrast to investors, telephone operating companies are able to reinvest their cash flows on an approximate monthly basis. Consequently, if the

Commission allows a rate which is estimated using an annual DCF model, then the operating phone company gets an effective rate higher than the allowed rate because of monthly compounding. This effective rate will in fact exceed the rate calculated using a quarterly DCF basis. Thus, it would be entirely inappropriate to calculate the DCF cost of equity on a quarterly compounding basis for purposes of this proceeding, because this would give the operating phone company the benefit of both quarterly and monthly compounding. If the Commission were to decide that it preferred the quarterly DCF model, then a decompounding adjustment would have to be made to remove the benefit of monthly compounding.

Q. DR. VANDER WEIDE BELIEVES THAT TELEPHONE HOLDING COMPANIES ARE LESS RISKY THAN THE BUSINESS OF NETWORK ELEMENT LEASING. IN PRIOR REBUTTAL TESTIMONIES, DR. BILLINGSLEY BELIEVES THAT YOU HAVE MADE INCONSISTENT ARGUMENTS REGARDING DIVERSIFICATION IN RELATION TO TELEPHONE HOLDING COMPANIES. IS THAT THE CASE?

A. No. In the case of telephone holding companies, engaging in businesses which are systematically riskier than the network element leasing business will always make the risk of the telephone holding company greater than that of the network leasing business. Overall risk can never fall because of the acquisition of systematically riskier businesses. This can be illustrated with a simple

example. If you hold a one-asset portfolio comprised of a productive local oil well with enormous proven reserves, you will not make that oil well less risky by undertaking wildcat oil drilling in Iraq. Your overall holdings become more risky by making a fundamentally riskier investment. In the context of the telephone holding companies, the FCC and the major rating agencies have recognized that investments in businesses outside of local exchange have made them riskier.

Q. DR. BILLINGSLEY'S RISK PREMIUM ANALYSIS DIFFERS FROM YOURS, AND LEADS TO A SIGNIFICANTLY HIGHER COST OF EQUITY ESTIMATE. HOW DO YOU VIEW HIS APPROACH?

A. The equity risk premium is a subject of great research and debate in finance, and no definitive consensus has been reached. In my analysis, I attempted to consider all of the prevailing research by leading academics which I thoroughly discuss in my direct testimony. It is clear that Dr. Billingsley has not addressed recent research, particularly that of Blanchard, Siegel and Ross et al. which indicates that the forward-looking market premium over U.S. Treasury bonds is in the 2 to 5% range, far lower than what Dr. Billingsley estimates. My direct testimony also cites to a number of other sources regarding market estimates of the risk premium, including articles in *Fortune*, *The Economist* and the FCC's 1990 Rate Represcription Order.

Q. HAVE YOU SEEN OTHER OPINIONS REGARDING THE MAGNITUDF OF THE EQUITY RISK PREMIUM NOT REFERENCED IN YOUR DIRECT TESTIMONY?

A. Yes. Scholars at the American Enterprise Institute stated in the Wall Street Journal the following:

"Allow us now to suggest a hypothesis about the huge returns posted by the stock market over the past few years: As mutual funds have advertised the reduction of risk required by taking the long view, the risk-premium required by shareholders has gradually drifted down. Since Siegel's results suggest that the correct risk premium might be zero, this drift downward— and, the corresponding trend toward higher stock prices— may not be over."[12]

In addition, Alfred Rappaport states that:

"The premium should be based on expected rates of return rather than average historical rates. This approach is crucial because with the increased volatility of interest rates over the past two decades the relative risk of bonds has increased, thereby lowering risk premiums to a range from 3 to 5 percent. Those who estimate the market risk premium as the long-run average excess of stock returns over government bond returns will typically obtain a figure in the 7 to 9 percent range. This historical approach ignores that market risk premiums vary over time and at the present time can lead to significant undervaluation."[13]

Q. DO YOU HAVE ANY INFORMATION REGARDING THE MARKET RISK PREMIUM USED BY WALL STREET BROKERAGES?

A. Yes. My staff was able to obtain the July-end 1998 market risk premium estimated by Merrill Lynch. As of that time, Merrill Lynch estimated the market risk premium over the long-term Treasury yield to be 5.07%. This is 43 basis points lower than the 5.50% market risk premium over long-term Treasuries which I used in my study.

Q. HOW DOES DR. BILLINGSLEY ARRIVE AT SUCH A HIGH RISK PREMIUM?

A. Dr. Billingsley arrives at a large risk premium by making the same mistake with the market that he made for individual companies. That is, he assumes growth for an infinite period at a rate exceeding the growth rate of the aggregate economy. Had he properly taken account of the fact that growth must eventually slow, as I do in my direct testimony, he would have arrived at a market risk premium more consistent with that which I recommend.

Q. DR. VANDER WEIDE INDICATES IN HIS DIRECT TESTIMONY THAT THE COST OF CAPITAL IS FORWARD-LOOKING. HE STATES FURTHER THAT "FORWARD-LOOKING ECONOMIC COST STUDIES ARE PREDICATED ON THE ASSUMPTION THAT THE MARKET FOR ALL LOCAL EXCHANGE SERVICES IS FULLY

COMPETITIVE" [VANDER WEIDE DIRECT, PG. 38]. DOES THE FCC AGREE WITH DR. VANDER WEIDE'S ASSUMPTION?

A. No. In its August 8 Order, the FCC states explicitly at paragraph 702 that, "Based on the current record, we conclude that the currently authorized rate of return at the federal or state level is a reasonable starting point for TELRIC calculations, and incumbent LECs bear the burden of demonstrating with specificity that the business risks that they face in providing unbundled network elements and interconnection services would justify a different risk-adjusted cost of capital or depreciation rate. These elements generally are bottleneck, monopoly services that do not now face significant competition. We recognize that incumbent LECs are likely to face increased risks given the overall increases in competition in this industry, which generally might warrant an increased cost of capital, but note that, earlier this year, we instituted a preliminary inquiry as to whether the currently authorized federal 11.25 percent rate of return is too high given the current marketplace cost of equity and debt. On the basis of the current record, we decline to engage in a time-consuming examination to determine a new rate of return, which may well require a detailed proceeding. States may adjust the cost of capital if a party demonstrates to a state commission that either a higher or lower level of cost of capital is warranted, without that commission conducting a "rate-of-return or other rate based proceeding." We note that the risk-adjusted cost of capital need not be uniform for all elements. We intend to re-examine the issue of the appropriate risk-adjusted cost of capital on an ongoing basis, particularly in

light of the state commissions' experiences in addressing this issue in specific situations. [emphasis added] [footnotes omitted]

It is clear that none of the above provisions stated in paragraph 702 which I have highlighted would be necessary if the FCC intended a presumption of full competition.

Q. IF THE ILEC'S HAVE A STRICT BURDEN OF PROOF REQUIREMENT (AS STATED IN PARAGRAPH 702) FOR DEMONSTRATING THAT THE MARKET FOR NETWORK ELEMENTS IS RISKIER FOR PURPOSES OF COST OF CAPITAL ESTIMATION, CAN DR. VANDER WEIDE MERELY ASSUME THAT THE NETWORK ELEMENT MARKET—WHICH IS AT THIS TIME A NEAR-MONOPOLY— IS COMPETITIVE?

A. No, he cannot. Dr. Vander Weide has "assumed away" the requisite burden of proof. As Dr. Vander Weide provides no evidence that the business of network element leasing has become fully competitive, this inappropriate foundational assumption appears to moot his entire analysis.

Q. DID THE FCC IN FACT CONSIDER AND REJECT THE ASSUMPTION OF FULL COMPETITION?

A. Yes. At paragraph 688 of the FCC's August 8 Order, it stated that "...USTA's argument unrealistically assumes that competitive entry would be

instantaneous. The more reasonable assumption of entry occurring over time will reduce the costs associated with sunk investment."

Q. IS THERE ANY CONNECTION BETWEEN DR. VANDER WEIDE'S HYPOTHETICAL ASSUMPTION OF A FULLY COMPETITIVE MARKET AND A FORWARD-LOOKING COST OF CAPITAL?

A. None at all. Economic costs of capital are by definition forward looking. In other words, when assessing the cost of capital of any publicly-traded company as of today, the market accounts for all known risks existing currently and the possibility of risks that could develop or increase in the future. In the context of a publicly-traded telephone holding company, which owns local exchange companies and network elements, the market does not hypothetically assume that the network element leasing business will immediately become competitive when the real-world evidence indicates that facilities competition exists only to a very limited degree and may take years to develop due to its high cost. Instead, the market continuously evaluates real-world information regarding all relevant risks, including those which may arise or increase in the future, and incorporates the likelihood of those risks occurring into the current costs of capital of the telephone holding companies. Consequently, Dr. Vander Weide has calculated a hypothetical cost of capital, not a forward-looking economic cost of capital as required for this proceeding.

Q. DOES DR. VANDER WEIDE DISAGREE WITH YOUR ASSERTION THAT THE MARKET HAS ALREADY ACCOUNTED FOR THE RISK OF POTENTIAL COMPETITION?

A. It does not appear so (although we do disagree as to the extent of competition that the market actually expects). At page 31 of his direct testimony, he stated that "[i]nvestors are primarily interested in future expected competition when they assess the investment risk of GTE because expected future competition is a primary determinant of volatility in the expected returns on their investment."

Q. IF DR. VANDER WEIDE IS CORRECT THAT THE MARKET HAS INCORPORATED THIS INFORMATION ALREADY, IS THERE ANY NEED TO HYPOTHETICALLY ASSUME A FULLY COMPETITIVE MARKET AND THEREBY USE S&P INDUSTRIALS AS COMPARABLE COMPANIES INSTEAD OF TELEPHONE HOLDING COMPANIES?

A. None whatsoever. The DCF method for estimating the cost of equity is based on market prices which incorporate all available information in the marketplace.

Q. WHAT DID THE FCC SAY SPECIFICALLY WITH REGARD TO THE EFFECT OF COMPETITION ON THE PROVISION OF UNIVERSAL SERVICE?

A. The discussion at Paragraph 250.(4) of the FCC's May 8, 1997 Universal Service Order is virtually the same as appeared at paragraph 702 of the FCC's August 8 Order discussed above. It states that:

"We realized that, with the passage of the 1996 Act, the level of local service competition may increase, and that this competition might increase the ILECs' cost of capital. There are other factors, however, that may mitigate or offset any potential increase in the cost of capital associated with additional competition. For example, until facilities-based competition occurs, the impact of competition on the ILEC's risks associated with the supported services will be minimal because the ILEC's facilities will still be used by competitors using either resale or purchasing access to the ILEC's unbundled network elements. In addition, the cost of debt has decreased since we last set the authorized rate of return. The reduction in the cost of borrowing caused the Common Carrier Bureau to institute a preliminary inquiry as to whether the currently authorized federal rate of return is too high, given the current marketplace cost of equity and debt. We will reevaluate the cost of capital as needed to ensure that it accurately reflects the market situation for carriers." [emphasis added]

Q. TO THE EXTENT THAT THERE IS RISK INVOLVED IN THE PROVISION OF UNIVERSAL SERVICE AS DISCUSSED IN DR. VANDER WEIDE'S TESTIMONY, IS THIS ALSO A RISK WHICH THE MARKET ANTICIPATES AND ACCOUNTS FOR?

A. Yes.

Q. IS THE USE OF A LARGE, DIVERSE PROXY GROUP LIKE THE S&P INDUSTRIALS TO ESTIMATE COST OF CAPITAL CONSISTENT WITH REAL-WORLD FINANCIAL PRACTICE?

A. No. A fundamental objective in estimating the cost of capital is choosing the correct target. The most widely-accepted technique for determining the cost of capital therefore begins with the capital costs experienced by companies with businesses comparable to the line of business under consideration. In this case, therefore, the first step is to identify a group of comparable companies (or proxy group) with characteristics as similar as possible to the business of providing network elements and universal service, which is the business for which the cost of capital is being determined.

Q. DR. VANDER WEIDE TESTIFIED THAT GTE HAD A VALUE LINE BETA OF .95, WHICH HE ARGUES JUSTIFIES THE USE OF THE S&P INDUSTRIALS AS A PROXY FOR ESTIMATING THE LEC'S COST OF EQUITY. IS THIS POSITION CONSISTENT WITH PRIOR ARGUMENTS WHICH HE HAS MADE REGARDING BETAS?

A. No. In numerous rebuttal testimonies filed in other states, Dr. Vander Weide has vigorously objected to the use of historical betas computed over a 5-year time period because in his opinion they were not sufficiently forward looking proxies for risk. It is therefore extraordinary that he now uses a 5-year beta to support such an integral element of his analysis. As I noted in my direct testimony, BARRA betas are forward-looking and can be used as a check

against any betas utilized. If Dr. Vander Weide had instead used the forward-looking BARRA beta of .75 as of December 31, 1997, he would have properly concluded that GTE is actually far less risky than either the S&P Industrials or the market as a whole. I also note that the forward-looking BARRA beta of .75 is less than the beta of .78 which I estimated for GTE and utilized in my analysis.

Q. IN PRIOR REBUTTAL TESTIMONIES, DR. VANDER WEIDE SUGGESTS THAT TELEPHONE HOLDING COMPANIES CANNOT BE USED AS PROXIES FOR OTHER TELEPHONE HOLDING COMPANIES BECAUSE THE ANALYSTS' FORECASTS DO NOT CORRECTLY ACCOUNT FOR POST-MERGER GROWTH FORECASTS, WHILE STOCK PRICES DO. IS THIS A SOLID ARGUMENT FOR NOT USING TELEPHONE HOLDING COMPANIES AS THE PROXY GROUP?

A. No. Dr. Vander Weide provides no evidence that this is the case. The impact of anticipated mergers on stock prices is complex. Stock prices can fluctuate up and down over time in anticipation of merger benefits, merger detriments and the probability that the merger will be consummated. Empirical finance research indicates that the acquiring company in an acquisition or merger sometimes overpays, which causes the price of the acquiring company to fall. This could cause cost of equity estimates to be too high for acquiring companies according to Dr. Vander Weide's premise, which would have an

offsetting impact. In his own S&P Industrial sample, Dr. Vander Weide has not provided an analysis of which, if any, of these companies were going through, or perhaps affected by the anticipation of, a merger. When all these implications are considered, I do not believe that Dr. Vander Weide has offered a supportable reason for not using the appropriate proxy group.

Q. WHY IS DR. VANDER WEIDE'S DCF COST OF EQUITY ESTIMATE HUNDREDS OF BASIS POINTS HIGHER THAN YOUR ESTIMATE?

A. As I have already mentioned in regard to Dr. Billingsley's approach, the most significant assumption which would causes this difference is the incorrect use of a single-stage DCF model that assumes that five-year analyst forecast growth rates which exceed the growth rate of the economy will persist forever for the sample companies. The fallacy of such growth assumptions is easily demonstrated. Consider this: if any one of the companies in the 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. The impossibility of such a result proves that rapidly growing companies can continue such growth only for a relatively finite period of time, at which point their growth must converge with the growth rate of the overall economy.

Q. DR. VANDER WEIDE TESTIFIED IN PRIOR STATE REBUTTAL TESTIMONIES THAT VALUE LINE PROVIDED LONG-RUN

GROWTH ESTIMATES IN EXCESS OF 5 YEARS WHICH SOMEHOW JUSTIFIED HIS PERPETUAL GROWTH ASSUMPTION. IS HE CORRECT?

A. No. Value Line does not provide long-run growth estimates, which is readily apparent from the Value Line reports themselves and which my staff confirmed directly with Value Line. Value Line provides 5 year forecasts, similar to the term of the IBES forecasts.

Q. WHY ARE YOU CRITICAL OF DR. VANDER WEIDE'S USE OF THE S&P INDUSTRIALS AS A COMPARISON GROUP FOR ESTIMATING THE COST OF CAPITAL FOR THE BUSINESS OF LEASING UNBUNDLED NETWORK ELEMENTS OR FOR THE PROVISION OF UNIVERSAL SERVICE?

A. While Dr. Vander Weide agrees with me that the cost of equity capital is largely a function of risk, he does not attempt to identify a comparable group consisting of companies with similar risk. Instead the analysis is performed on a group consisting of virtually all the S&P Industrials, including such diverse firms as automobile manufacturers, oil companies, producers of food and food ingredients, publishing and entertainment companies and pharmaceutical giants. Because Dr. Vander Weide's analysis is based on the performance of large industrial companies generally rather than a group of comparable companies, his results are of no relevance to the wholesale telephone business or the provision of universal service. It simply makes no sense to select a

proxy group that has nothing in common with firms providing local retail phone service, much less a company set up solely for the purpose of leasing unbundled network elements at wholesale. Under his approach, Dr. Vander Weide must strain to identify similarities among a diverse group of companies — i.e., between companies in the telephone business and large businesses in general — out of a sea of differences.

It makes far more sense to begin with a group of companies — i.e., telephone holding companies — that have some similarity to the firm that will sell access to telephone facilities at wholesale. At that point, we can discuss intelligently any differences in risk between a telephone holding company which owns many risky businesses — such as wireless and international ventures — and the lower-risk business of providing unbundled network elements and universal service.

Q. **ARE YOU AWARE OF ANY MAJOR COMPANIES THAT USE THE S&P INDUSTRIALS TO ESTIMATE THEIR COST OF CAPITAL INSTEAD OF A PROXY GROUP OF COMPANIES PARTICIPATING IN THE SAME LINE OF BUSINESS?**

A. No. And as I have previously noted, Ameritech's own cost of capital expert witness used a set comparable companies which was almost exactly the same as the set of telephone holding companies which I have used.

Q. DO INVESTMENT BANKS USE THE S&P INDUSTRIALS AS THE COMPARABLES FOR TELEPHONE COMPANIES?

A. No. Major brokerage firms and investment banks which issue analyst reports for GTE view other telephone holding companies to be the best proxies for the subject telephone holding company being valued.

Q. DR. VANDER WEIDE INDICATES THAT THE THEORETICALLY CORRECT CAPITAL STRUCTURE TO BE USED IN COST OF CAPITAL ESTIMATION SHOULD BE BASED ON MARKET WEIGHTS. WOULD MARKET-WEIGHTED WACC CALCULATIONS FOR EITHER THE S&P INDUSTRIALS OR FOR GTE PROVIDE AN ACCURATE ESTIMATE OF THE COST OF CAPITAL FOR THE NETWORK ELEMENT LEASING BUSINESS?

A. No. Such estimates would be too high. It is critical to emphasize that the target market value capital structure should be used to determine the cost of capital for the business in question, which is clearly understood by all academics. In this proceeding, the business is the provision of network elements and universal service. This is a distinctly different, and far less risky business than the overall combined businesses of the publicly-traded GTE holding company, or of the S&P industrials. Therefore, I have utilized the market-weighted WACC estimate for the riskier GTE holding company as the upper bound of my WACC range estimate for the network element leasing business.

Q. WHY DO YOU USE A BOOK VALUE CAPITAL STRUCTURE TO ESTABLISH THE LOWER BOUND OF YOUR WACC ESTIMATE RANGE?

A. I believe that GTE and other telephone holding companies have not issued more debt due largely to increased risks entailed in other lines of business such as cellular, long-distance, airphone, international ventures and paging. As there are no publicly-traded companies involved solely in the business of network element leasing, the true market-weighted capital structure for this business is not observable and can only be estimated. The purpose for using a book value capital structure (which has been commonly used in traditional rate of return hearings) is to approximate a capital structure which may better reflect the risk of the network element leasing business, rather than the risk of telephone holding companies engaged in many riskier businesses. At the time that the equity proceeds were recorded on their books at what was then market value, the telephone holding companies were much more focused on the traditional local exchange business. This is much closer to the business of providing unbundled network elements and universal service when compared to the various endeavors undertaken by telephone holding companies today. Therefore, the book value is used to provide the lower-bound of my range estimate. As discussed in my direct testimony, I believe that the midpoint of the range is the most reasonable WACC estimate.

Q. HAS EITHER DR. BILLINGSLEY OR DR. VANDER WEIDE PROVIDED ANY REAL-WORLD EVIDENCE THAT THE COST OF CAPITAL APPLICABLE TO THE PROVISION OF NETWORK ELEMENTS AND UNIVERSAL SERVICE IS AS HIGH AS THEY SUGGEST?

A. No. In particular, neither have been able to cogently address the real-world, investor-oriented evidence described in my direct testimony which provides independent assurance that my estimate is in the correct range. For example, in the Bell Atlantic/NYNEX merger proxy statement dated September 9, 1996 (after the passage of the 1996 Telecommunications Act and the release of the FCC's August 8 Order), Merrill Lynch as part of its fairness opinion performed a DCF analysis of the companies using an 8 to 10% discount rate for their telephone company operations. It is notable that this was disclosed in a securities filing seeking investor approval of a multi-billion dollar merger which subjected Merrill Lynch and the officers and directors of both NYNEX and Bell Atlantic to federal and state securities laws with onerous disclosure requirements. I also noted in my direct testimony that a Salomon Brothers analyst report dated January 1996 estimated the cost of capital for the regional Bell holding companies to be 8.6%. Salomon disclosed in that report that it had been an underwriter for BellSouth, Bell Atlantic and several other RBHC's.

Morever, interest rates have dropped dramatically since the FCC determined the 11.25% access charge rate in 1990. Using this 304 basis point

decline from September 1990 to December 1997 as a rough guide implies a current cost of capital of 8.21% (11.25% minus 3.04%).

Consequently, I see no real-world evidence indicating that a hypothetical cost of capital posited to be hundreds of basis points higher by Dr. Billingsley or Dr. Vander Weide is anything close to the true cost of capital for either the business of unbundled network element leasing or the provision of universal service.

Q. DOES THAT CONCLUDE YOUR PRESENT TESTIMONY?

A. Yes, it does.

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[1] For ease of understanding, I will hereinafter refer to Sprint/United and Sprint/Centel collectively as "Sprint".

[2] Damodaran, Aswath. Security Analysis for Investment and Corporate Finance, John Wiley and Sons, New York, 1994, p. 115.

[3] *Ibid.*, pp. 108-109.

[4] In Re Review of Cost Studies, Methodologies, and Cost-Based Rates for Interconnection and Unbundling of BellSouth Telecommunications Services, Before The Georgia Public Commission, Docket No. 7061-U, Rebuttal Testimony of Dr. Randall S. Billingsley, August 29, 1997, p. 41, at 16.

[5] *Ibid.*, p. 50, at 17-20.

[6] *"Call Them On It! 4 Questions the Long-Distance Companies Don't Want You To Ask"*, United States Telephone Association.

[7] The conclusions of this hypothetical would continue to hold if one alternatively assumed that BellSouth and GTE were equally efficient and competitive, and that the market became much more competitive due to the entry of several new competitors.

[8] In Re Review of Cost Studies, Methodologies, and Cost-Based Rates for Interconnection and Unbundling of BellSouth Telecommunications Services, Before The Georgia Public Commission, Docket No. 7061-U, Rebuttal Testimony of Dr. Randall S. Billingsley, August 29, 1997, p. 60, at 13.

[9] Dr. Sharpe won the Nobel prize for his work in developing this "pristine theory".

[10] Ibbotson Associates, *Stock, Bonds, Bills and Inflation, 1996 Yearbook*, Chicago, pg. 148.

[11] In Re Review of Cost Studies, Methodologies, and Cost-Based Rates for Interconnection and Unbundling of BellSouth Telecommunications Services, Before The Georgia Public Commission, Docket No. 7061-U, Rebuttal Testimony of Dr. Randall S. Billingsley, August 29, 1997, p. 13, at 15-21.

[12] Glassman, James K. and Kevin A. Hassett, *Are Stocks Overvalued? Not a Chance.* The Wall Street Journal, March 30, 1998.

[13] Rappaport, Alfred. Creating Shareholder Value, The Free Press, New York, 1998, p. 39.

MR. COX: The next witness is James H. Vander Weide of GTE Florida.

MS. CASWELL: Mr. Vander Weide has both direct and rebuttal testimony, and Exhibits JVW-1 through JVW-8. We would like those marked for identification and inserted into the record, and we would like his testimony inserted into the record as though read.

CHAIRMAN JOHNSON: His testimony will be inserted into the record as though read. JVW-1 through 8 will be identified as Exhibit 6 and admitted into the record without objection.

MS. CASWELL: Thank you.

(Exhibit 6 marked for identification and received in evidence.)

GTE FLORIDA INCORPORATED

DIRECT TESTIMONY OF DR. JAMES H. VANDER WEIDE

DOCKET NO. 980896-TP

I. INTRODUCTION

Q. WHAT IS YOUR NAME AND BUSINESS ADDRESS?

A. My name is James H. Vander Weide. I am Research Professor of Finance and Economics at the Fuqua School of Business of Duke University. I am also President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to clients in the electric, gas, insurance, telecommunications, and water industries. My business address is 3606 Stoneybrook Drive, Durham, North Carolina.

Q. WOULD YOU PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PRIOR ACADEMIC EXPERIENCE?

A. I graduated from Cornell University in 1966 with a Bachelor's Degree in Economics. I then attended Northwestern University where I earned a Ph.D. in Finance. In January 1972, I joined the faculty of the School of Business at Duke University and was named Assistant Professor, Associate Professor, and then Professor.

Since joining the faculty, I have taught courses in corporate finance, investment management, and management of financial institutions.

I have taught a graduate seminar on the theory of public utility pricing and lectured in executive development seminars on the cost of capital, financial analysis, capital budgeting, mergers and acquisitions, cash management, short-run financial planning, and competitive strategy. I have also served as Program Director of several executive education programs at the Fuqua School of Business, including the Duke Advanced Management Program, the Duke Executive Program in Telecommunications, Competitive Strategies in Telecommunications, and the Duke Program for Manager Development for managers from the former Soviet Union.

I have conducted seminars and training sessions on financial analysis, financial strategy, cost of capital, cash management, depreciation policies, and short-run financial planning for a wide variety of U.S. and international companies, including ABB, Allstate, Ameritech, AT&T, Bell Atlantic, BellSouth, Carolina Power & Light, Contel, Fisons, Glaxo Wellcome, GTE, Lafarge, MidAmerican Energy, New Century Energies, Norfolk Southern, Pacific Bell Telephone, The Rank Group, Siemens, Southern New England Telephone, TRW, and Wolseley Plc.

In addition to my teaching and executive education activities, I have written research papers on such topics as portfolio management, the cost of capital, capital budgeting, the effect of regulation on the performance of public utilities, and cash management. My articles

have been published in *American Economic Review*, *Financial Management*, *Journal of Finance*, *Journal of Financial and Quantitative Analysis*, *Journal of Bank Research*, *Journal of Accounting Research*, *Journal of Cash Management*, *Management Science*, *The Journal of Portfolio Management*, *Atlantic Economic Journal*, *Journal of Economics and Business*, and *Computers and Operations Research*. I have written a book titled *Managing Corporate Liquidity: an Introduction to Working Capital Management*, and a chapter for *The Handbook of Modern Finance*, "Financial Management in the Short Run."

Q. HAVE YOU PREVIOUSLY TESTIFIED ON FINANCIAL OR ECONOMIC ISSUES?

A. Yes. I have submitted testimony and/or testified on the cost of capital, investment risk, incentive regulation, pricing, depreciation, accounting, and other financial and economic issues before the Federal Communications Commission, the Federal Energy Regulatory Commission, the National Telecommunications and Information Administration, the Canadian Radio-Television and Telecommunications Commission, the U.S. Congress, the public service commissions of 39 states and the District of Columbia, and the insurance commissions of five states.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have been asked by GTE Florida Incorporated ("GTE") to make an independent appraisal of the average cost of capital to be used as input in the cost model selected by the Commission for determining the cost of providing basic local telecommunications service.

Q. WHAT AVERAGE COST OF CAPITAL DO YOU RECOMMEND FOR USE IN FORWARD-LOOKING STUDIES OF THE COST OF PROVIDING BASIC LOCAL TELECOMMUNICATIONS SERVICE?

A. I recommend that an average cost of capital of 12.65 percent be used in forward-looking studies of the cost of providing basic local telecommunications service.

Q. IS THIS COMMISSION REQUIRED TO USE A FORWARD-LOOKING COST METHODOLOGY IN THIS PROCEEDING?

A. Yes. The Florida Legislature has ordered this Commission to determine the "total forward-looking cost" of providing basic service (Fla. Stat. ch. 364.025(4)(b)). When referring to the long-run forward-looking economic cost of providing services, economists sometimes use the term, total service long-run incremental cost ("TSLRIC"). I have therefore determined the economic cost of capital to GTE on a forward-looking economic basis. As I discuss later in my testimony, an economic cost study of a service that is being offered by a firm such as GTE operating in a competitive environment should include an economic cost of capital that is forward-looking, rather than backward-looking and accounting based. The forward-looking

economic cost of providing services must also include both the forward-looking investment that GTE will make in the telecommunications facilities that are required to provide services and the economic depreciation that is associated with that investment.

II. FUNDAMENTAL ECONOMIC PRINCIPLES

Q. HOW DO ECONOMISTS DEFINE THE REQUIRED RATE OF RETURN, OR COST OF CAPITAL, ASSOCIATED WITH PARTICULAR INVESTMENT DECISIONS SUCH AS THE DECISION TO INVEST IN TELECOMMUNICATIONS NETWORK FACILITIES?

A. Economists define the required rate of return on a particular investment as the return that investors forego by making that investment instead of an alternative investment of equal risk.

Q. HOW DOES THE COST OF CAPITAL AFFECT A FIRM'S INVESTMENT DECISIONS?

A. The goal of a firm is to maximize the value of the firm. This goal can be accomplished by accepting all investments in plant and equipment with an expected rate of return greater than or equal to the cost of capital. Thus, a firm should continue to invest in plant and equipment only so long as the return on its investment is greater than or equal to its cost of capital.

Q. HOW DOES THE COST OF CAPITAL AFFECT INVESTORS' WILLINGNESS TO INVEST IN A COMPANY?

A. The cost of capital measures the return investors can expect on investments of comparable risk. Rational investors will not invest in a particular investment opportunity if the expected return on that opportunity is less than the cost of capital. Thus, the cost of capital is a hurdle rate for both investors and the firm.

Q. DO ALL INVESTORS HAVE THE SAME POSITION IN THE FIRM?

A. No. Debt investors have a fixed claim on a firm's assets and income that must be paid prior to any payment to the firm's equity investors. Since the firm's equity investors have a residual claim on the firm's assets and income, equity investments are riskier than debt investments. Thus, the cost of equity exceeds the cost of debt.

Q. WHAT IS THE OVERALL OR WEIGHTED AVERAGE COST OF CAPITAL?

A. The overall or weighted average cost of capital is a weighted average of the cost of debt and cost of equity, where the weights are the percentages of debt and equity in a firm's capital structure.

Q. CAN YOU ILLUSTRATE THE CALCULATION OF THE OVERALL OR WEIGHTED AVERAGE COST OF CAPITAL?

A. Yes. Assume that the cost of debt is 9 percent, the cost of equity is 15 percent, and the percentages of debt and equity in the firm's

capital structure are 25 percent and 75 percent, respectively. Then the weighted average cost of capital is expressed by 0.25 times 9 percent plus 0.75 times 15 percent, or 13.5 percent.

Q. HOW DO ECONOMISTS DEFINE THE COST OF DEBT COMPONENT OF THE WEIGHTED AVERAGE COST OF CAPITAL?

A. Economists define the cost of debt as the market interest rate that a firm would have to pay on newly-issued debt obligations. In efficient markets, the market interest rate is also the best estimate of future interest rates. The correct economic definition of the cost of debt is thus forward looking and market oriented.

Q. HOW DO ECONOMISTS DEFINE THE COST OF EQUITY COMPONENT OF THE WEIGHTED AVERAGE COST OF CAPITAL?

A. Economists define the cost of equity as the return investors expect to receive on alternative equity investments of comparable risk. Since the return on an equity investment of comparable risk is not a contractual return, the cost of equity is more difficult to measure than the cost of debt. There is agreement, however, as I have already noted, that the cost of equity is greater than the cost of debt. There is also agreement among economists that the cost of equity, like the cost of debt, is both forward looking and market based.

Q. WHAT APPROACHES DO ECONOMISTS EMPLOY TO OBTAIN NUMERICAL ESTIMATES OF THE COST OF EQUITY?

A. Economists generally use market models such as the Discounted Cash Flow ("DCF") Model or Capital Asset Pricing Model ("CAPM") to estimate a firm's cost of equity. Both of these models have been used in many cases before the Florida Commission over the years. The DCF Model is based on the assumption that the market price of a firm's stock is equal to the present value of the stream of cash flows that investors expect to receive from owning the stock. The cost of equity in the DCF Model is that discount rate which equates the firm's stock price to the present value of the future stream of cash flows investors expect from owning the stock. The CAPM assumes that the required return on a particular investment is equal to the required return on a risk-free investment, plus the relative risk of that investment times the expected risk premium on the market portfolio of all risky investments.

Q. HOW DO ECONOMISTS MEASURE THE PERCENTAGES OF DEBT AND EQUITY IN A FIRM'S CAPITAL STRUCTURE?

A. Economists measure the percentages of debt and equity in a firm's capital structure by first calculating the market value of the firm's debt and the market value of its equity. Economists then calculate the percentage of debt by the ratio of the market value of debt to the combined market value of debt and equity, and the percentage of equity by the ratio of the market value of equity to the combined

market values of debt and equity. (See, for example, Brealey/Myers, Chapter 9, page 2 .4, *Principles of Corporate Finance*, Fifth Edition, 1996, McGraw-Hill.) For example, if a firm's debt has a market value of $25 million and its equity has a market value of $75 million, then its total market capitalization is $100 million, and its capital structure contains 25 percent debt and 75 percent equity.

Q. WHY DO ECONOMISTS MEASURE A FIRM'S CAPITAL STRUCTURE IN TERMS OF THE MARKET VALUES OF ITS DEBT AND EQUITY?

A. Economists measure a firm's capital structure in terms of the market values of its debt and equity because that is the best measure of the amounts of debt and equity that investors have invested in the company on a going-forward basis. Furthermore, economists generally assume that the goal of management is to maximize the value of the firm, where the value of the firm is the sum of the market value of the firm's debt and equity. Only by measuring a firm's capital structure in terms of market values can its managers choose a financing strategy that maximizes the value of the firm.

Q. HOW DO INVESTORS MEASURE THE RATE OF RETURN ON THEIR INVESTMENT PORTFOLIOS?

A. Investors, like economists, measure the rate of return on their investment portfolios in terms of the market values of the debt and equity in their portfolios. Suppose an investor has a portfolio,

purchased in 1977 for $20,000, which has a market value of $100,000 at the beginning of 1997. Further suppose that the value of the portfolio at the end of 1997 is $112,000 and that the investor earns interest and dividends of $3,000 during the course of 1997. Then, assuming for simplicity that dividends and interest are not reinvested in the portfolio during the year, the investor's rate of return in 1997 is 15 percent [(112 - 100/100) + 3/100 = 15 percent].

Q. DOES THE $20,000 INVESTMENT MADE IN 1977 AFFECT THE CALCULATION OF THE INVESTOR'S RATE OF RETURN ON INVESTMENT IN 1997?

A. No. The fact that the investor purchased the portfolio in 1977 for $20,000 has no bearing on the investor's earned rate of return in 1997. Thus, the historical or embedded cost of the investment is irrelevant to the calculation of the rate of return. Investors calculate their rate of return based on market values, not book values.

Q. YOUR EXAMPLE CLEARLY DEMONSTRATES THAT THE INVESTOR'S EARNED RATE OF RETURN IN 1997 DEPENDS ON THE $100,000 MARKET VALUE OF THE PORTFOLIO AT THE BEGINNING OF 1997, NOT ON THE $20,000 HISTORICAL COST, OR BOOK VALUE, OF THE PORTFOLIO AT THE BEGINNING OF 1997. DO INVESTORS MEASURE THE *REQUIRED* RATE OF RETURN FOR 1998 IN TERMS OF THE MARKET VALUE OR THE

BOOK VALUE OF THEIR PORTFOLIO AT THE BEGINNING OF 1998?

A. Investors also measure their required rate of return for 1998 in terms of market values, not book values. Suppose that the investor's required rate of return for 1998 is 15 percent. Since the value of the portfolio at the beginning of 1998 is $112,000 (recall our assumption that the $3,000 of dividends and interest are not reinvested in the portfolio), the investor will require a dollar return of $16,800 in 1998 (15 percent x $112,000 = $16,800) including dividends, interest, and capital gains. If the investor expects a return less than $16,800, he should sell this portfolio and invest his capital in another portfolio which has an expected rate of return of at least 15 percent.

Q. IF A GROUP OF INVESTORS WERE TO CONSTRUCT A PORTFOLIO THAT CONSISTED OF ALL OF A FIRM'S DEBT AND EQUITY, HOW WOULD THEY MEASURE THE REQUIRED RETURN ON THEIR INVESTMENT?

A. These investors would measure their required return by calculating a weighted average of their required returns on the debt and equity portions of the portfolio, where the weights are measured in terms of market values, not book values. For example, if a firm's debt has a market value of $25 million, its equity has a market value of $75 million, the market interest rate on corporate debt of similar risk is 9 percent, and the market required return on equity of similar risk is 15 percent, then the required rate of return on a $100 million portfolio

containing all of the firm's debt and equity securities would be 13.5 percent (.25 x 9 percent + .75 x 15 percent = 13.5 percent).

Thus, the investors' required rate of return from an investment in the company is the same as the company's weighted average cost of capital, where both the required rate of return and the weighted average cost of capital are measured in terms of market value weights.

Q. IS THE ECONOMIC DEFINITION OF THE AVERAGE COST OF CAPITAL CONSISTENT WITH THE WAY COMPETITIVE FIRMS DETERMINE THE REQUIRED RATE OF RETURN ON INVESTMENT DECISIONS?

A. Yes. Competitive firms equate their required rate of return to their average cost of capital, where the average cost of capital is measured in terms of market value capital structure weights.

Q. DOES THE REQUIRED RATE OF RETURN ON AN INVESTMENT VARY WITH THE RISK OF THAT INVESTMENT?

A. Yes. Since investors are averse to risk, they require a higher rate of return on investments with greater risk.

Q. DO ECONOMISTS AND INVESTORS CONSIDER FUTURE INDUSTRY CHANGES WHEN THEY ESTIMATE THE RISK OF A PARTICULAR INVESTMENT?

A. Yes. Economists and investors consider all the risks that a firm might incur over the future life of the company.

Q. DO INVESTORS ALSO USE MARKET VALUE WEIGHTS TO MEASURE THE RISK OF THEIR INVESTMENT PORTFOLIOS?

A. Yes. One measure of investment risk is a company's beta. Using the previous example, where the firm's debt has a market value of $25 million and its equity a market value of $75 million, if the firm's debt has a beta of .5 and its equity a beta of 1.2, then the beta on a $100 million portfolio containing all of the firm's debt and equity would be 1.025 (.25 x .5 + .75 x 1.2 = 1.025).

Q. WHY DO INVESTORS MEASURE THE RISK AND RETURN ON THEIR INVESTMENT PORTFOLIOS USING MARKET VALUE WEIGHTS RATHER THAN BOOK VALUE WEIGHTS?

A. Investors measure the risk and return on their investment portfolios using market value weights because market value weights are the best measure of the amounts the investors currently have invested in each security in the portfolio. From the investor's point of view, the historical cost or book value of his investment is entirely irrelevant to the current risk and return on his portfolio. Thus, the return, and the risk or uncertainty of the return, can only be measured in terms of market values.

Q. IS THE ECONOMIC DEFINITION OF THE AVERAGE COST OF CAPITAL CONSISTENT WITH REGULATORS' TRADITIONAL DEFINITION OF THE AVERAGE COST OF CAPITAL?

A. No. As noted above, the economic definition of the average cost of capital is based on the market costs of debt and equity, the market value percentages of debt and equity in a company's capital structure, and the future expected risk of investing in the company. Regulators, in contrast, have traditionally defined the average cost of capital using the embedded cost of debt, the book values of debt and equity in a company's capital structure, and the risk of investing in a franchised provider of telecommunications services.

Q. WHAT IS THE DIFFERENCE BETWEEN THE MARKET COST OF DEBT AND A COMPANY'S EMBEDDED COST OF DEBT?

A. The market cost of debt is the rate of interest a company would have to pay if it issued debt under today's market conditions. The embedded cost of debt is the company's total interest expense divided by the total book value of its debt. Thus, the embedded cost of debt is an average of the interest rates the company has paid in the past to issue debt securities. This calculation of the embedded cost of debt, however, provides no basis for measuring the market cost of debt.

Q. WHAT IS THE DIFFERENCE BETWEEN THE MARKET VALUE AND THE BOOK VALUE OF A COMPANY'S DEBT?

A. The market value of a company's debt represents the current price in the capital markets of the company's debt obligations. The book value of a company's debt is the historical face value of its debt adjusted for the accounting amortization of premiums and discounts. The market value of a company's debt is approximately equal to the book value of its debt when market interest rates are approximately equal to the average interest rate of the company's previous debt issuances.

Q. WHAT IS THE DIFFERENCE BETWEEN THE MARKET VALUE AND THE BOOK VALUE OF A COMPANY'S EQUITY?

A. The market value of a company's equity is simply the market price of the company's stock times the number of shares outstanding. The book value of equity is more complex; it represents the sum of paid-in capital and retained earnings, where paid-in capital represents the amount of capital a firm has historically obtained from stock issuances, and retained earnings represent the cumulative earnings over the life of the company that have not been paid out as dividends. In addition, the book value of a company's equity is adjusted periodically for accounting events such as changes in accounting rules and regulations, write-offs, and extraordinary events.

Q. DOES THE BOOK VALUE OF A COMPANY'S EQUITY REFLECT THE HISTORICAL COST, OR BOOK VALUE, OF ITS ASSETS?

A. Yes. The book value of a company's equity is defined as the book value of a company's assets minus the book value of the company's debt:

Book Value of Equity = Book Value of Assets - Book Value of Debt

Since the book value of a company's assets, in turn, is equal to the historical cost of a company's assets minus accumulated depreciation, the book value of a company's equity can also be stated as the historical cost of a company's assets, minus the accumulated book depreciation on these assets, minus the book value of a company's debt:

Book Value of Equity = Historical Cost of Assets - Accumulated Book Depreciation - Book Value of Debt

Thus, the book value of a company's equity reflects the historical cost of the company's assets.

Q. WHY HAVE STATE AND FEDERAL REGULATORS DEFINED THE AVERAGE COST OF CAPITAL IN TERMS OF EMBEDDED COSTS AND BOOK VALUES RATHER THAN FORWARD-LOOKING COSTS AND MARKET VALUES?

A. State and federal regulators have defined a company's average cost of capital in terms of embedded costs and book values because these concepts were consistent with the regulators' accounting model of the firm. Economists, in contrast, generally employ an economic model of the firm in which forward-looking costs and market values are the relevant standards.

Q. IS THE TRADITIONAL STATE AND FEDERAL REGULATORY DEFINITION OF THE AVERAGE COST OF CAPITAL CONSISTENT WITH THE ECONOMIC PRINCIPLES UNDERLYING A FORWARD-LOOKING COST STUDY?

A. No. As I have already noted, such studies are based on forward-looking economic costs, as required by the Florida Legislature (as well as the FCC). Economic costs are forward looking and market based, not backward looking and accounting based.

Q. IN SUM, THEN, WHAT IS THE PROPER DEFINITION OF THE AVERAGE COST OF CAPITAL FOR USE IN THE FORWARD-LOOKING COST STUDY THE COMMISSION IS TO CHOOSE IN THIS PROCEEDING?

A. The Telecommunications Act of 1996 ("the Act") removes all barriers to entry for basic local telecommunications services and opens the market to full competition. In a competitive market for basic local telecommunications service, forward-looking economic cost is the appropriate cost benchmark. Furthermore, the average cost of capital

for competitive firms is based on market values rather than book values. Thus, for use in the forward-looking economic cost study to be selected in this proceeding, the average cost of capital should be defined in terms of market interest rates, the market values of debt and equity in a competitive company's capital structure, and investors' expectations regarding the future risk of investing in the company in a competitive environment. This is the only definition of the average cost of capital that is consistent with the underlying assumptions of a forward-looking cost study.

Q. IN YOUR OPINION, IS IT REASONABLE TO USE GTE'S "LAST AUTHORIZED RATE OF RETURN" AS AN ESTIMATE OF THE FORWARD-LOOKING ECONOMIC COST OF CAPITAL IN THE FORWARD-LOOKING ECONOMIC COST STUDY TO BE SELECTED BY THIS COMMISSION?

A. No. The goal of Congress in passing the Act was to introduce competition in the market for local exchange services. As previously noted, in competitive markets, the average cost of capital is based on market values and the risk associated with a competitive market, rather than on historical costs and the risk associated with a protected market. In contrast, GTE's "last authorized rate of return" was based on a book value capital structure, an embedded cost of debt, a book value rate base, and the assumption that GTE operates in a market protected from competition. Thus, using GTE's "last authorized rate of return" would be inconsistent with the competitive

market envisioned by Congress. Sections III and IV of this testimony below further explain with specificity why the business risks faced by GTE in providing basic local telecommunications service justify a different cost of capital rate.

Q. CAN YOU SUMMARIZE YOUR VIEWS ON THE COST OF CAPITAL COMPONENT OF A FORWARD-LOOKING COST STUDY?

A. Yes. Such cost studies measure the forward-looking economic cost of providing service. The only cost of capital definition that is consistent with the forward-looking, economic assumptions of a forward-looking cost model is an average cost of capital based on the market cost of debt, market value percentages of debt and equity in a competitive firm's capital structure, and a forward-looking view of risk.

III. RISK

Q. YOU HAVE STATED THAT THE COST OF CAPITAL DEPENDS ON INVESTMENT RISK. HAVE YOU STUDIED THE RISK OF INVESTING IN THE LOCAL EXCHANGE OPERATIONS OF TELECOMMUNICATIONS COMPANIES SUCH AS GTE?

A. Yes, I have.

Q. WHAT ARE THE MAJOR FACTORS THAT AFFECT THE RISK OF INVESTING IN THE LOCAL EXCHANGE OPERATIONS OF LECS SUCH AS GTE?

A. The risk of investing in the local exchange operations of LEC's such as GTE depends on their operating leverage, the level of competition, rapidly-changing technology, and the regulatory environment.

Q. WHAT IS OPERATING LEVERAGE?

A. The provision of facilities-based telecommunications services is a business that requires a large commitment to fixed costs in relation to variable costs, a situation called high operating leverage. The relatively high degree of fixed costs in the provision of facilities-based telecommunications service exists because of the average LEC's large investment in fixed assets such as central office, transport, and loop facilities. High operating leverage causes GTE's net income to be highly sensitive to fluctuations in revenues.

Q. WHAT IS THE CURRENT STATUS OF COMPETITION FOR LECS SUCH AS GTE?

A. LECs such as GTE offer three basic services: intraLATA toll, carrier access and local exchange. The intraLATA toll market has become highly competitive in recent years. Most states, including Florida, have removed barriers to entry into this market. Customers in GTE's service territory have the opportunity to choose alternate carriers for intraLATA toll on a 1+ basis. In fact, GTE has suffered significant market share loss in the intraLATA toll market, especially since it completed implementation of 1+ presubscription in February 1997. Indeed, GTE has informed me that approximately two-thirds of new

Services Inc. ("ACSI"), AT&T, BellSouth, City of Lakeland, e.spire, Intermedia Communications Inc. ("ICI"), MCI, MFS, TCG, Time Warner, Teligent, and WorldCom.

Q. DO YOU HAVE ANY EVIDENCE THAT COMPETITIVE LOCAL EXCHANGE CARRIERS INTEND TO COMPETE VIGOROUSLY IN THE LOCAL EXCHANGE MARKET?

A. Yes. On the signing of the Act, the AT&T Chairman declared that AT&T intends to capture a third of the local market within the next few years. He also asserted that AT&T views interconnection with Bell company networks as only one means of entering the local exchange market:

> "We also plan to enter the local market by other means. The technology and the partners are available to us right now. And in some cases we're already using them. For example, we've doubled our use of alternate access providers over the last year. We've already signed contracts with 20 alternate access companies covering 95 cities. We're also pursuing the use of cable based telephony and even fixed wireless technology. As you know, 200 million Americans live within the cellular and PCS territories where we're already licensed. I should also tell you that, on a selective basis, we'll build our own network facilities to

offer local services. We're already designing the networks, and we'll begin installing fiber rings and new switching technology in several cities. Most of our large business customers are already hard-wired to the AT&T network for long distance. A substantial number of the lines serving customers from our digital switching centers are connected directly to the offices of business customers. Under the provisions of the [Telecom] bill, and with some straightforward software changes, we could begin to handle our business customers' local service. The California P.U.C. has already cleared the way for us to do this, and we have similar plans for other states.

Keep in mind that long distance amounts to 70 percent of the total telecommunication services bill for most companies. So I think you'll find that corporations are far more likely to give their local business to a long distance company rather than give their long distance business to the local company." (Robert E. Allen, "The 1996 Telecommunications Bill," remarks delivered at a news conference in Washington, D.C., February 8, 1996.)

A recent statement by AT&T Chief Financial Officer Daniel Somers reiterates AT&T's expectation that it will win 30 percent of the local exchange market. ("AT&T/TCI Alliance Hopes to Gain Up to 30% of Local Market," *Local Competition Report*, Vol. 7, No. 14, July 6, 1998.)

Q. HAS AT&T BEGUN PROVIDING LOCAL EXCHANGE SERVICE TO BUSINESS CUSTOMERS OVER ITS OWN FACILITIES SINCE MR. ALLEN'S REMARKS?

A. Yes. AT&T provides local exchange service to business customers through its Digital Link service, which has the capability to provide both inbound and outbound calls to local destinations over existing dedicated digital access links. The service already operates in 49 states.

Q. HAS AT&T'S NEW CHAIRMAN MICHAEL ARMSTRONG INDICATED THAT HE INTENDS FOR AT&T TO COMPETE VIGOROUSLY IN THE LOCAL EXCHANGE?

A. Yes. Mr. Armstrong is pushing AT&T to be a strong competitor in the local exchange market. In fact, Mr. Armstrong was the driving force behind AT&T's offers to purchase Teleport Communications Group, the largest competitive local exchange carrier in the industry, and TCI, Inc., the second-largest multiple systems cable operator in the country. Teleport currently operates in the nation's top 66 markets, with 9,400 fiber route miles, 41 local switches, 5,000 on-net buildings,

13,500 buildings passed, and 490,000 business lines in service. TCI currently provides cable TV service either directly or indirectly (that is, through affiliates) to approximately 20.5 million subscribers. In addition, TCI's cables pass approximately 49 million homes, one-third of the homes in the U. S. (*Local Competition Report*, Vol. 7, No. 2, January 19, 1998, page 1, and "At Last, Telecom Unbound," *Business Week*, July 6, 1998, pp. 24-31.)

The $11.3 billion acquisition of Teleport and the $48 billion acquisition of TCI will give AT&T a tremendous boost in its efforts to provide a complete package of long distance, wireless, Internet access, and local exchange services to business and residential customers throughout the country. In addition, Mr. Armstrong has expressed his intention for AT&T to reach agreements with other cable providers so that AT&T can provide local service through direct connections to 50 million of its 90 million customers by the end of 1999. ("AT&T Board to end Year With Talks on Cost Cuts, Possibly Huge Investments," *The Wall Street Journal*, December 17, 1997, p. B6.)

Q. DO YOU HAVE ANY EVIDENCE THAT INVESTORS EXPECT ALECS TO BE HIGHLY SUCCESSFUL IN THEIR COMPETITION WITH INCUMBENT LOCAL EXCHANGE CARRIERS SUCH AS GTE?

A. Yes. Investors' opinions about the likely success of the ALECs in attracting business from incumbents is reflected in the ALECs' rapidly rising stock valuations. WorldCom recently paid $14 billion for one ALEC, MFS, and $2.9 billion for another ALEC, Brooks Fiber. WorldCom has also offered $37 billion for MCI, at least in part because WorldCom places a high valuation on MCI's local exchange facilities; and AT&T has offered $48 billion for TCI because AT&T places a high valuation on TCI's direct wireline connection to potential customers of its communications services. The stock prices of companies such as ICG and Teleport have also increased dramatically since mid-1997. Indeed, Teleport's stock price increased by 70 percent from July 1997 to January 1998, when AT&T agreed to acquire Teleport for $11.3 billion. These companies' high market valuations reflect investors' assessment that the competitive local exchange carriers will wrest considerable market share from incumbents such as GTE.

Q. WHY HAVE ALECS SUCH AS AT&T, MCI, BROOKS FIBER, TELEPORT, AND ICG FOCUSED PRIMARILY ON OFFERING FACILITIES-BASED SERVICE TO BUSINESS CUSTOMERS?

A. ALECs have focused primarily on providing facilities-based service to business customers because telecommunications prices have historically been set well above the cost of providing service for business customers in order to provide support to high-cost residential customers, especially those in rural areas. Because of the

current price structure in telecommunications, competitors can achieve a high percentage of industry profits by attracting a relatively small percentage of industry customers.

Q. DO THE ALECS ALSO HAVE PLANS TO PROVIDE FACILITIES-BASED LOCAL EXCHANGE SERVICE TO RESIDENTIAL CUSTOMERS?

A. Yes. At the time the AT&T/TCI merger was announced, AT&T reported that it plans to offer facilities-based communications services, including local exchange service, to residential customers through a new operating unit, AT&T Consumer Services, which "will own and operate the nation's most extensive, broadband local network platform" and "provide the broadest set of consumer communications services--including local, long distance, wireless and international communications, cable TV, dial-up and high-speed Internet access services--all under the AT&T brand name." ("AT&T, TCI to Merge, Create new AT&T Consumer Services Unit," AT&T press release, June 24, 1998.) Indeed, as previously noted, AT&T proclaims that it "expects to win up to 30% of the local market and boost TCI's cable subscriber base when the two companies complete their recently announced $48-billion merger." (*Local Competition Report*, Vol. 7, No. 14, July 6, 1998.)

Q. IS THE TECHNOLOGY CURRENTLY AVAILABLE FOR AT&T AND OTHERS TO PROVIDE BROADBAND TELECOMMUNICATIONS

SERVICES, INCLUDING VOICE, TO RESIDENTIAL CUSTOMERS OVER WIRELINE FACILITIES SUCH AS THOSE AT&T IS ACQUIRING FROM TCI?

A. Yes. As *Business Week* notes in its cover story article, July 6, 1998, page 26, "The technology for providing telephone service over the cable network is now developed enough to offer an economically feasible--and potentially much better--alternative to the existing copper wire." Cox Communications has already demonstrated the feasibility of offering local exchange service over its cable network, having launched local phone service in four markets where it has signed 17 percent of the homes where its services are offered. (*Business Week*, July 6, 1998, p. 30.)

Q. ARE THERE OTHER TECHNOLOGIES FOR PROVIDING FACILITIES-BASED LOCAL EXCHANGE SERVICE TO RESIDENTIAL CUSTOMERS?

A. Yes. In addition to its plan to offer bundled communications services to residential customers over TCI's cable network, AT&T has developed a new fixed wireless technology that will allow it to bypass the local network for both residential and business customers that are not currently in the service territories of TCI and its affiliates. AT&T's new fixed wireless technology will have the capability of carrying high-speed digital communications directly to most households in the country at many times the capacity of traditional copper wire. The service, to be priced at local rates, will allow AT&T to enter the local

market without having to access the network of the incumbent LEC. According to investment analysts, AT&T's fixed wireless service has capital costs lower than those associated with incumbent LEC networks, and it provides service comparable in quality to, or better than, landline service.

AT&T and other carriers are also preparing to offer local exchange service through mobile wireless technologies. AT&T is the largest provider of cellular service in the U.S., and potentially the largest provider of PCS services in the country. According to a Deutsche Morgan Grenfell report, the "widely held assumption of 10-15 years ago" that wireless mobility poses no threat to the wireline network "is now almost certainly wrong." ("Investing in a World Without Wires," Deutsche Morgan Grenfell, September 18, 1997.) An article in *The Wall Street Journal* indicates that approximately 25 percent of current wireline customers will shift exclusively to wireless by 2002; and within ten years, by 2007, they predict that half of current wireline customers will shift exclusively to wireless. ("The Communications Battleground," p. R4, *The Wall Street Journal Special Report on Telecommunications*, September 11, 1997.)

Q. HAVE ANY OTHER ALECS SPECIFICALLY TARGETED RESIDENTIAL CUSTOMERS IN GTE'S SERVICE TERRITORY IN FLORIDA?

A. Yes. Utilicore Corp, a startup phone company with headquarters in downtown Sarasota, has targeted "concentrated clusters of residential customers throughout the state." ("Wired for Success," *The Sarasota Herald Tribune*, May 11, 1998, p. 12.) Utilicore already has signed interconnection agreements with all of Florida's major local phone companies and plans to use its own switches and billing technology to offer a complete package of local and long distance service and Internet access to every unit in an apartment or condominium complex at significant discounts to GTE's tariffed rates.

Q. DOES GTE FACE COMPETITION FROM OTHER INCUMBENT LOCAL EXCHANGE COMPANIES?

A. Yes. BellSouth has announced plans to begin offering PCS and other local exchange services in GTE's service territory in Florida. In addition, SBC has announced with respect to its proposed merger with Ameritech that it plans to deliver fully competitive local exchange service in 30 new major metropolitan markets throughout the country, including the Tampa Bay area currently served by GTE. ("Full Competition at the Heart of SBC-Ameritech Merger," SBC press release, May 12, 1998; "SBC Could Be Coming," *St. Petersburg Times*, May 15, 1998, p. 1E.)

Q. ARE INVESTORS PRIMARILY CONCERNED WITH CURRENT OR FUTURE EXPECTED COMPETITION WHEN THEY ASSESS THE INVESTMENT RISK OF GTE?

A. Investors are primarily interested in future expected competition when they assess the investment risk of GTE because expected future competition is a primary determinant of volatility in the expected returns on their investment.

Q. CAN GTE'S INVESTMENT RISK BE MEASURED BY GTE'S CURRENT SHARE OF THE LOCAL EXCHANGE MARKET?

A. No. GTE's current share of the local exchange market reflects its historical position as the franchised provider of local exchange services in its service territory. GTE's privileged position as the franchised provider has been eliminated. As a result of this elimination and recent technological advances in telecommunications, some 240 firms have been certificated to provide local exchange service in Florida. There can be no doubt that GTE's future market share of the local exchange market will be less than its current market share. Indeed, GTE's experience with competition in the intraLATA toll market suggests that its market share will rapidly decline as certificated carriers begin offering local exchange services.

Q. HAVE AT&T AND OTHER COMPETITORS RESTRICTED THEIR LOCAL EXCHANGE OFFERINGS TO MAJOR CITIES?

A. No. Wireless North and McLeodUSA, for example, have been formed to offer competitive local exchange service in rural areas of the country. Wireless intends to use its PCS licenses in Iowa, Minnesota, North Dakota, South Dakota, and Wisconsin along with a 2,500 mile

fiber backbone which runs through its territory, to offer "feature-rich, mobile telephone service that is priced competitively with existing landline service." ("Personal 'Community' Services," *America's Network*, June 1, 1997, page 59.) McLeod intends to offer local exchange service both through resale and through the building of its own 10,000 mile-long fiber optic network. ("No Telecom Hayseed," *Business Week*, February 9, 1998, pp. 98-100.)

Q. YOU NOTED PREVIOUSLY THAT THE COST STUDY TO BE SELECTED IN THIS PROCEEDING IS TO BE BASED ON THE PRINCIPLE OF FORWARD-LOOKING ECONOMIC COST. IS THE FORWARD-LOOKING ECONOMIC COST PRINCIPLE CONSISTENT WITH THE USE OF GTE'S CURRENT MARKET SHARE AS AN INDICATOR OF INVESTMENT RISK?

A. No. First, the forward-looking economic cost principle is economically relevant only in a competitive market for telecommunications services. Thus, the forward-looking economic cost principle, at its heart, is based on the assumption that the market for local exchange services is fully competitive.

Second, the forward-looking economic cost principle requires a consideration of the level of competition and investment risk over the entire future life of GTE's investment in network facilities. Given the rapid changes in the telecommunications industry and the certainty

that competition will increase, GTE's current market share is a poor indicator of future competition and risk.

Q. IS GTE ABLE TO COMPETE ON EQUAL TERMS WITH COMPETITORS IN THE LOCAL EXCHANGE?

A. No. GTE faces a number of disadvantages in its efforts to compete in a fully competitive local exchange market. As the incumbent LEC, GTE has the obligation to provide telecommunications services to all customers, even those whose rates fail to cover the cost of providing service. Telecommunications prices have historically been set to provide subsidies to high-cost customers in low density geographic areas. Such subsidies are inconsistent with the competitive framework of the Act. Although the Act requires the FCC and the States to implement mechanisms that eliminate the implicit subsidies that have previously financed the provision of basic local telecommunications service, the Act fails to identify how such subsidies can be replaced. In truly competitive markets, there are no sources to subsidize prices that are lower than cost. Investors are concerned that the universal service support mechanisms that will be put in place may not be sufficient to balance the incumbent LEC's obligation to continue to provide service in high-cost areas, while competitors are free to serve only the most profitable markets.

Q. WHAT IS THE IMPACT OF RAPIDLY CHANGING TECHNOLOGY ON TELECOMMUNICATIONS COMPETITION?

A. Rapid advances in telecommunications technology are a primary driver behind the increasing level of competition faced by the local exchange companies. Advances in semiconductor technology have both increased the capability and lowered the cost of telecommunications equipment, so other firms can compete more easily with local exchange companies. Breakthroughs are also occurring in fiber optic, data communications, and wireless technologies. The capacity of fiber optic networks is increasing dramatically, thus allowing fiber-based competitive access providers to offer more services. Recent advances in data communications and Internet protocol technologies, especially technologies for transporting voice signals over data communications networks, offer yet another opportunity for bypassing the local loop. Sprint recently announced plans to offer local exchange services over a new nationwide packet-switched data network. New data networking and Internet protocol technologies are also the major factors reducing the cost of providing local exchange services over cable networks. AT&T has announced its intention to rely on these technologies in its upgrade of the TCI network. Wireless technology is also changing rapidly. Analysts anticipate that AT&T's new fixed wireless technology will allow AT&T to completely bypass the local loop in areas not served by its recently acquired cable TV facilities. In sum, technological developments have substantially eroded the competitive advantage once enjoyed by local exchange companies.

Q. HOW DOES RAPIDLY CHANGING TECHNOLOGY AFFECT THE RISK OF INVESTING IN LOCAL EXCHANGE COMPANIES SUCH AS GTE?

A. Rapidly changing technology increases GTE's risk in two ways. First, it threatens GTE's ability to recover the investment cost of its new telecommunications plant. Second, it reduces the cost of entry for competitors. Rapid advances in fiber optics, wireless, and multimedia transmission technologies, for example, have shortened the economic lives of the LECs' current investments in copper-based facilities and allowed cable TV, interexchange, and wireless companies to compete efficiently to offer local exchange service. Advances in these technologies further threaten the LECs' heavy investment in landline telecommunications service.

Q. HOW DOES REGULATION AFFECT THE RISK OF GTE?

A. Since regulation impairs GTE's ability to compete on the same terms as its competitors, regulation increases the risk of investing in GTE.

Q. HOW DOES THE FORWARD-LOOKING RISK OF INVESTING IN GTE'S LOCAL EXCHANGE BUSINESS IN FLORIDA COMPARE TO THE FORWARD-LOOKING RISK OF INVESTING IN GTE'S PARENT COMPANY?

A. The forward-looking risk of investing in GTE's local exchange business in Florida is greater than the forward-looking risk of investing in GTE's parent company because GTE's local exchange

business in Florida has less geographic diversity, less diversity of products and services, less ability to realize economies of scale and scope, and less access to the capital markets.

Q. HOW DOES THE FORWARD-LOCKING RISK OF INVESTING IN GTE'S LOCAL EXCHANGE BUSINESS IN FLORIDA COMPARE TO THE FORWARD-LOOKING RISK OF INVESTING IN THE S&P INDUSTRIALS?

A. The forward-looking risk of investing in GTE's local exchange business in Florida is approximately equal to the forward-looking risk of investing in the S&P Industrials.

Q. DO YOU HAVE ANY EVIDENCE THAT THE FORWARD-LOOKING RISK OF INVESTING IN GTE'S LOCAL EXCHANGE BUSINESS IN FLORIDA IS APPROXIMATELY EQUAL TO THE FORWARD-LOOKING COMPOSITE RISK OF INVESTING IN THE S&P INDUSTRIALS?

A. Yes. I noted previously that the forward-looking risk of investing in GTE's local exchange business in Florida is greater than the forward-looking risk of investing in GTE's parent company. The average Value Line market-weighted beta for the Regional Bell Holding Companies ("RHCs") and GTE's parent company is .95, as compared to the average beta of approximately 1.0 for the companies included in the S&P Industrials. A beta of .95 cannot be statistically distinguished from a beta of 1.0. Since the forward-looking risk of GTE is greater

than the forward-looking risk of GTE's parent, and the forward-looking risk of GTE's parent is approximately equal to the forward-looking risk of the S&P Industrials, the S&P Industrials are a conservative proxy for the forward-looking risk of investing in GTE.

IV. GTE'S COST OF CAPITAL ESTIMATE

Q. HOW DID YOU CALCULATE THE COST OF CAPITAL THAT YOU RECOMMEND FOR USE IN THE COST STUDY THE COMMISSION WILL CHOOSE IN THIS PROCEEDING?

A. I calculated the weighted average cost of capital to be used in the forward-looking cost study by employing the market-based percentages of debt and equity in the capital structures of competitive firms, the market cost of debt, and the market required rate of return on an equity investment in competitive firms of comparable risk.

Q. HOW DID YOU MEASURE THE MARKET-BASED PERCENTAGES OF DEBT AND EQUITY IN THE CAPITAL STRUCTURE OF COMPETITIVE FIRMS?

A. I calculated the average market-based percentages of debt and equity in the capital structures of the S&P Industrials, a composite of all large competitive companies in the U.S. economy for each of

the five years ending December 31, 1997. To determine the market value of the equity in the S&P Industrials at the end of each year, I multiplied the closing stock price for each company at year end by the number of shares outstanding at that time. To determine the market value of debt of the S&P Industrials, I used each company's book value of debt at year end. The book value of debt is a good proxy for the market value of debt when the embedded interest rate is approximately equal to the market interest rate, as it is at this time.

Q. WHY DID YOU USE THE AVERAGE MARKET-BASED PERCENTAGES OF DEBT AND EQUITY IN THE CAPITAL STRUCTURE OF THE S&P INDUSTRIALS?

A. I used the average market-based percentages of debt and equity in the capital structure of the S&P Industrials because forward-looking economic cost studies are predicated on the assumption that the market for all local exchange services is fully competitive. As the FCC has noted, the rationale for the use of forward-looking economic costs is that local exchange prices would move toward forward-looking economic costs if local exchange markets were fully competitive. The average market-based capital structure of the S&P Industrials is a good proxy for the target capital structure of competitive firms on a forward-looking economic basis. It would be inconsistent to use forward-looking competitive assumptions in the investment and expense components of a cost study, but

backward-looking monopoly assumptions in the cost of capital component.

Q. WHAT IS THE AVERAGE MARKET-BASED CAPITAL STRUCTURE OF THE S&P INDUSTRIALS?

A. As shown in Schedule JVW-1, the market-based capital structure of the S&P Industrials at December 31, 1997, contains 18.28 percent debt and 81.72 percent equity. The average market-based capital structure of the S&P Industrials for the five-year period ending December 31, 1997, contains 22.45 percent debt and 77.55 percent equity. From the data I have examined, I believe the five-year average capital structure of the S&P Industrials is a conservative estimate of the target capital structure GTE would employ in the competitive local exchange environment assumed by a forward-looking economic cost study

Q. HOW DOES THE AVERAGE MARKET-BASED CAPITAL STRUCTURE OF THE S&P INDUSTRIALS COMPARE TO THE AVERAGE MARKET-BASED CAPITAL STRUCTURE OF THE LOCAL EXCHANGE COMPANIES?

A. The market-based capital structures of the local exchange companies cannot be determined because their stock is not publicly traded. Thus, a comparison of the average market-based capital structure of the S&P Industrials to the average market-

based capital structure of the local exchange companies is not possible.

Q. HOW DOES THE AVERAGE MARKET-BASED CAPITAL STRUCTURE OF THE S&P INDUSTRIALS COMPARE TO THE AVERAGE MARKET-BASED CAPITAL STRUCTURE OF THE RHCS AND GTE?

A. As shown in Schedule JVW-2, the market-based capital structure of the RHCs and GTE at December 31, 1997, contains 19.86 percent debt and 80.14 percent equity, and their five-year average market-based capital structure contains 22.77 percent debt and 77.23 percent equity. Thus, the average market-based capital structure of the RHCs and GTE is approximately equal to the average market-based capital structure of the S&P Industrials.

Q. DO THE MAJOR INTEREXCHANGE CARRIERS EMPLOY APPROXIMATELY THE SAME PERCENTAGE OF DEBT AS THE RHCS AND GTE?

A. No. As also shown in Schedule JVW-2, the major interexchange carriers employ significantly less debt and more equity than the RHCs and GTE. Their average market-based capital structure at December 31, 1997, contains 12.88 percent debt and 87.12 percent equity, while their five-year average market-based capital structure contains 18.75 percent debt and 81.25 percent equity.

Q. HOW DID YOU MEASURE THE MARKET COST OF DEBT INVESTMENTS?

A. I used the 6.94 percent yield to maturity on Moody's A-rated industrial bonds for March 1998, as reported in Moody's Investors Service Credit Survey April 1998. This estimate is conservative because it does not include the flotation costs that must be paid to issue the debt securities required to finance the building of local exchange facilities on a forward-looking basis.

Q. HOW DID YOU MEASURE THE MARKET COST OF AN EQUITY INVESTMENT IN GTE?

A. I applied the DCF Model to the S&P Industrials.

Q. WHY DID YOU APPLY THE DCF MODEL TO THE S&P INDUSTRIALS?

A. As noted above, a proper forward-looking economic cost study for the provision of basic local exchange service is based on the assumption that the market for local exchange services is competitive. At the present time, there are no publicly-traded companies that have built telecommunications networks solely for the purpose of providing local exchange services in a competitive market. Since the S&P Industrials are a well-known sample of publicly-traded competitive companies whose risk, on average, approximates the risk of providing telecommunications services in

a competitive market, I believe the S&P Industrial group is a good proxy for the risks of investing in the facilities required to provide local exchange services on a forward-looking basis.

Q. WHAT DCF RESULT DID YOU OBTAIN FROM YOUR APPLICATION OF THE DCF MODEL TO THE S&P INDUSTRIALS?

A. As shown on Schedule JVW-3, I obtained a market-weighted average DCF cost of equity of 14.30 percent for the S&P Industrials.

Q. WHAT IS YOUR ESTIMATE OF GTE'S OVERALL COST OF CAPITAL?

A. I estimate GTE's overall cost of capital to be 12.65 percent, based on a 6.94 percent market cost of debt, a capital structure containing 22.45 percent debt and 77.55 percent equity, and a cost of equity of 14.30 percent.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

GTE FLORIDA INCORPORATED

REBUTTAL TESTIMONY OF DR. JAMES H. VANDER WEIDE

DOCKET NO. 980696-TP

I. INTRODUCTION

Q. WHAT IS YOUR NAME AND BUSINESS ADDRESS?

A. My name is James H. Vander Weide. I am Research Professor of Finance and Economics at the Fuqua School of Business of Duke University. I am also President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to clients in the electric, gas, insurance, telecommunications, and water industries. My business address is 3606 Stoneybrook Drive, Durham, North Carolina.

Q. ARE YOU THE SAME JAMES H. VANDER WEIDE THAT PREVIOUSLY FILED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. I have been asked by GTE Florida Incorporated ("GTE") to review the direct testimony of Mr. John I. Hirshleifer on behalf of AT&T and MCI and to respond to his recommendation regarding the appropriate cost of capital input for use in studies of the forward-looking economic cost of providing basic local telecommunications service in Florida.

II. SUMMARY

Q. WHAT ARE YOUR MAJOR CRITICISMS OF MR. HIRSHLEIFER'S TESTIMONY?

A. My major criticisms of Mr. Hirshleifer's testimony are summarized as follows:

A. Economic Principles

Mr. Hirshleifer claims (direct page 13) that his cost of capital estimate for GTE is consistent with the forward-looking economic cost principles established by the FCC in its First Report and Order In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996 ("First Report and Order"). This claim is incorrect. Contrary to the FCC's guidelines, Mr. Hirshleifer incorrectly assumes that: 1) GTE is a monopoly provider of basic local service; 2) GTE's capital structure can be measured in terms of book, or embedded, costs; and 3) GTE's cost estimates should not consider the flotation costs GTE would incur to finance and construct the facilities required to provide basic local service for the first time.

B. Risk

Mr. Hirshleifer's low cost of capital recommendation for GTE depends on his faulty assumption that GTE is a low-risk monopoly provider of basic local service. His assumption that GTE is a low-risk monopoly provider of basic local service is contradicted by the evidence presented in my direct testimony at pages 19-37 that GTE faces

significant competition for its local exchange service in Florida, and that large, financially strong competitors have both the technological capability and the economic incentive to compete vigorously with GTE in the local exchange.

C. Capital Structure

Mr. Hirshleifer calculates GTE's weighted average cost of capital for forward-looking economic cost study purposes using both book and market value capital structure weights. The use of book value capital structure weights is inconsistent with his assumption that the cost of basic local service should be measured on the basis of forward-looking economic costs, not accounting costs, and with the economic and financial theory of corporate valuation. Economic and financial theory incontrovertibly require the sole use of market value capital structure weights to calculate a company's weighted average cost of capital. Since book value equity weights are significantly lower than market value equity weights, the use of book value equity weights by itself causes Mr. Hirshleifer to underestimate GTE's weighted average cost of capital input by at least 57 basis points.

D. Proxy Companies

Mr. Hirshleifer applies DCF and CAPM methodologies to a group of telecommunications holding companies ("THCs") to estimate GTE's cost of capital. The THCs are poor proxies for the purpose of estimating GTE's cost of capital because the traditional DCF and

CAPM models understate cost of equity estimates for companies such as the THCs that are experiencing deregulation, competitive entry, dramatic industry restructuring, and profound technological change. Mr. Hirshleifer could have avoided the difficulties of applying the DCF and CAPM Models to the THCs by relying entirely on a broad group of competitive firms such as the S&P Industrials.

Furthermore, Mr. Hirshleifer's cost of capital estimates are intended to be used as an input to forward-looking economic cost studies, which, according to the FCC, should be based on the assumption of a competitive telecommunications market. If the competitive market assumption is used to value GTE's investment in network facilities on a going-forward basis, the competitive market assumption must also be used to measure the forward-looking cost of capital associated with these facilities. Thus, the basic competitive market assumption of forward-looking economic cost studies provides further support for the use of competitive firms such as the S&P Industrials to measure the cost of capital component of the long-run incremental cost of providing network elements.

E. Discounted Cash Flow ("DCF") Model

Mr. Hirshleifer uses an Annual DCF Model to estimate GTE's cost of equity, even though the companies in his analysis all pay dividends quarterly. His Annual DCF Model combines an annual dividend with a market price that necessarily includes investor's knowledge that

dividends are paid quarterly. Since an investor attributes some value to the quarterly payment of dividends, a firm's stock price will be higher when it pays dividends quarterly than when it pays the same amount of dividends annually. Even though Mr. Hirshleifer uses the higher price which reflects the quarterly payment of dividends, he does not similarly reflect quarterly dividends in calculating the dividend component of the DCF cost of equity. Therefore, he creates a clear mismatch of data sets which causes him to understate GTE's cost of equity by an additional 30 to 40 basis points.

In addition to incorrectly assuming that dividends are paid annually, Mr. Hirshleifer also fails to implement his Annual DCF Model correctly. The Annual DCF Model requires that the first dividend be equal to the current dividend times 1 plus the growth rate. Mr. Hirshleifer has incorrectly eliminated the growth component in the first dividend payment.

F. Flotation Costs

Mr. Hirshleifer fails to include an allowance for flotation costs in his estimates of the forward-looking costs of debt and equity, even though AT&T's and MCI's cost studies are supposed to measure the forward-looking economic cost of building a new telecommunications network for the purpose of offering basic local service. No firm could raise the millions of dollars in new debt and equity capital required to finance the construction of a new local exchange network without

paying substantial fees to the investment bankers who help them issue debt and equity securities. Mr. Hirshleifer's failure to include flotation costs causes him to underestimate the forward-looking economic cost of capital by an additional 20 to 30 basis points.

G. Growth

Mr. Hirshleifer employs a three-stage DCF model in which his proxy companies' earnings are expected to grow in line with analysts' earnings growth expectations for only the next five years. After this initial five-year period, Mr. Hirshleifer arbitrarily assumes that his proxy companies' earnings will decline over a 15-year period to his current expected growth in the GNP, 5.5 percent, and then grow at 5.5 percent forever. Mr. Hirshleifer's basic growth assumptions are not only arbitrary, but also inconsistent with the evidence that a company's earnings can grow at the analyst's expected growth rate for many years. Mr. Hirshleifer's incorrect and arbitrary assumptions regarding future growth cause him to significantly underestimate GTE's cost of equity.

H. Capital Asset Pricing Model ("CAPM")

The CAPM approach requires estimates of the required rate of return on a risk-free security, estimates of a company-specific risk factor, or beta, and estimates of the required rate of return on the market portfolio. Mr. Hirshleifer's CAPM analysis is compromised by his

procedure for estimating his proxy companies' average beta and the expected rate of return on the market portfolio.

To estimate his proxy companies' betas, for example, Mr. Hirshleifer uses five years of historical data on the market rates of return for his proxy companies and the market portfolio. These historical data surely do not reflect the momentous changes in telecommunications industry risk caused by the passage of the Telecommunications Act of 1996. In fact, betas calculated using weekly data over the two and a half year period January 1996 to June 1998 indicate that THC betas are significantly higher than Mr. Hirshleifer's five-year betas, approximating the overall beta of 1.0 for the S&P Industrials.

Mr. Hirshleifer works at FinEcon with its founder, Professor Cornell, and they have collaborated in preparation of cost of capital testimony for AT&T and MCI in numerous proceedings regarding implementation of the Telecommunications Act. Mr. Hirshleifer and his FinEcon colleague Professor Cornell estimate the expected return on the market portfolio from historical risk premium data on returns to stock and bond investors. Prior to FinEcon's testimony for AT&T and MCI, Professor Cornell recommended in his published work the use of the commonly accepted arithmetic mean risk premium advocated by Ibbotson Associates, which was 7.5 percent at the time of Mr. Hirshleifer's studies. In their testimony for AT&T and MCI, FinEcon recommends a risk premium that is almost 200 basis points less than

the Ibbotson risk premium FinEcon's founder Professor Cornell previously recommended.

Mr. Hirshleifer's use of a five-year historical beta, rather than the higher one-year beta, and of a significantly lower risk premium than the widely-accepted Ibbotson risk premium, causes him to significantly underestimate GTE's CAPM cost of equity. A correct application of the CAPM would produce cost of equity estimates at least 280 basis points higher than Mr. Hirshleifer's.

I. Tests of Reasonableness

Mr. Hirshleifer's cost of capital estimates fail the common sense standard that the cost of capital should increase with the risk of an investment. Mr. Hirshleifer's estimates fail to conform to this standard in several areas. First, among Mr. Hirshleifer's telecommunications companies, the companies with the highest betas have the lowest DCF results, while companies with low betas have high DCF results.

Second, Mr. Hirshleifer claims that local exchange service is less risky than interexchange service. Yet, his methodology produces significantly lower DCF results for the interexchange carriers AT&T, MCI, and Sprint, than it does for his proxy group of local exchange carriers. Indeed, the average DCF result for AT&T, MCI, and Sprint using his methodology is only 7.75 percent, as compared to his result of 9.41 percent for the local carriers.

Third, although Mr. Hirshleifer claims that his telecommunications proxy group is significantly less risky than the S&P 500, Mr. Hirshleifer's DCF results for the S&P 500 are virtually identical to his DCF results for his telecommunications proxy group.

Fourth, contrary to a reasonable expectation, Mr. Hirshleifer's DCF methodology produces approximately the same DCF results for Florida electric utilities as for the S&P 500.

These anomalous results provide convincing evidence that Mr. Hirshleifer's DCF methodology simply does not provide reasonable cost of equity estimates.

III. REBUTTAL OF MR. HIRSHLEIFER

A. Economic Principles

Q. ARE YOU FAMILIAR WITH AT&T'S AND MCI'S STUDIES OF THE COST OF PROVIDING BASIC LOCAL SERVICE?

A. Yes, I am.

Q. DO AT&T AND MCI MAKE ANY CLAIMS REGARDING THE FUNDAMENTAL ECONOMIC PRINCIPLES UNDERLYING THEIR COST STUDIES?

A. Yes. AT&T and MCI claim that their cost studies are consistent with the forward-looking economic costing principles established in the FCC's First Report and Order.

Q. CAN YOU SUMMARIZE THE FORWARD-LOOKING ECONOMIC COSTING PRINCIPLES ESTABLISHED IN THE FCC'S FIRST REPORT AND ORDER?

A. Yes. According to the FCC, the cost of providing basic local service must:

- Be forward looking.
- Be measured relative to a hypothetical situation in which the supplier does not currently provide local service, and thus must construct the facilities required to provide this service for the first time.
- Be based on the market values of a company's assets.
- Create the right investment incentives for competitive facilities-based entry.
- Approximate the costs a competitive facilities-based entrant would incur by entering the market as a facilities-based provider.
- Reflect the costs over a period long enough that all of a firm's costs become variable or avoidable.

Q. ARE MR. HIRSHLEIFER'S COST OF CAPITAL ESTIMATES CONSISTENT WITH THE FORWARD-LOOKING ECONOMIC COSTING PRINCIPLES THAT AT&T AND MCI CLAIM UNDERLIE THEIR COST STUDIES?

A. No. Mr. Hirshleifer's cost of capital estimates violate these principles in several important respects. First, Mr. Hirshleifer incorrectly

assumes in estimating GTE's cost of capital that GTE is a monopoly provider of basic local service. Mr. Hirshleifer fails to recognize that: 1) Congress passed the Telecommunications Act specifically for the purpose of making local service competitive; 2) local service is already competitive for many high-volume customers; and 3) forward-looking economic costs must approximate the costs a competitive entrant would incur by entering the market as a facilities-based provider.

Second, Mr. Hirshleifer's cost of capital estimate is heavily based on the average book value capital structure of his proxy companies, even though his clients AT&T and MCI claim to have accepted the FCC's forward-looking economic costing principle that local service costs must be forward looking and must reflect the market values, not the embedded or historical costs, of a company's investments in telephone plant and equipment. Because the value of a company's assets must equal the sum of its liabilities and equity, Mr. Hirshleifer's book value capital structures necessarily reflect the embedded or historical costs of his proxy companies' investments in telephone plant and equipment.

Third, Mr. Hirshleifer's cost of capital estimate does not include the flotation costs that would undoubtedly be incurred in order to finance an investment in a new telecommunications network to supply basic local service. Mr. Hirshleifer's failure to include flotation costs is not

consistent with the FCC's requirement that cost estimates must be measured relative to a hypothetical situation in which the supplier does not currently provide local service, and thus must construct the facilities required to provide basic local service for the first time.

B. Risk

Q. WHAT IS MR. HIRSHLEIFER'S VIEW OF THE BUSINESS FOR WHICH THE COST OF CAPITAL IS BEING ESTIMATED IN THIS PROCEEDING?

A. On page 49 of his testimony, Mr. Hirshleifer states:

> "The business for which the cost of capital is being estimated in this case is essentially the business of "leasing" local exchange telephone network elements to retail providers and the provision of universal service."

Q. DO YOU AGREE WITH MR. HIRSHLEIFER'S OPINION THAT THE PURPOSE OF THIS CASE IS TO ESTIMATE THE COST OF CAPITAL FOR "THE BUSINESS OF 'LEASING' LOCAL EXCHANGE TELEPHONE NETWORK ELEMENTS TO RETAIL PROVIDERS"?

A. No. I understand that the purpose of this proceeding is to determine the cost of providing basic local service.

Q. DOES MR. HIRSHLEIFER ATTEMPT TO DISTINGUISH THE RISK OF PROVIDING BASIC LOCAL SERVICE FROM THE RISK OF THE NETWORK ELEMENT LEASING BUSINESSES?

A. Yes. On page 52 of his testimony, Mr. Hirshleifer states,

> "Whereas those BellSouth units involved in providing local service are in businesses that (if prices are set appropriately in these proceedings) will be faced with new competitors, the unit involved in leasing the network which all the competitors need to use has virtual monopoly power and faces much less risk."

Thus, Mr. Hirshleifer believes that the local service business is significantly more risky than the network elements leasing business.

Q. IF MR. HIRSHLEIFER'S COST OF CAPITAL ESTIMATE APPLIES TO THE NETWORK ELEMENT LEASING BUSINESS, AND MR. HIRSHLEIFER BELIEVES THAT THE NETWORK ELEMENT LEASING BUSINESS IS LESS RISKY THAN THE LOCAL SERVICE BUSINESS, DOES IT FOLLOW THAT MR. HIRSHLEIFER'S COST OF CAPITAL ESTIMATE UNDERSTATES THE APPROPRIATE COST OF CAPITAL FOR GTE'S LOCAL SERVICE BUSINESS?

A. Yes. Since Mr. Hirshleifer estimates the cost of capital for the network element leasing business, and he believes the network element leasing business is less risky than the local service business, it follows, as a matter of pure logic, that Mr. Hirshleifer has underestimated the cost of capital for GTE's local service business.

Q. DO YOU AGREE WITH MR. HIRSHLEIFER'S ASSESSMENT ON PAGE 50 OF HIS TESTIMONY THAT "THERE IS CURRENTLY VERY LITTLE FACILITIES-BASED COMPETITION" FOR LOCAL EXCHANGE SERVICES?

A. No. Mr. Hirshleifer fails to recognize that significant competition already exists for local exchange services in Florida, and investors expect future competition to increase rapidly. In my discussion of risk in my direct testimony, pages 19-37, I noted that some 240 competitors have been certificated to operate as competitive local exchange carriers in Florida. Many of these companies are large, well-financed facilities-based competitors that have every intention of wresting a significant share of the local service market from incumbent local exchange carriers such as GTE. In addition, analysts are forecasting that as many as half of current wireline subscribers will use wireless telephony as a substitute for wireline within the next ten years.

C. Capital Structure

Q. HOW DOES MR. HIRSHLEIFER ATTEMPT TO CALCULATE GTE'S FORWARD-LOOKING ECONOMIC COST OF CAPITAL?

A. Mr. Hirshleifer attempts to calculate GTE's forward-looking economic cost of capital by computing a weighted average of GTE's forward-looking cost of debt and its forward-looking cost of equity.

Q. WHAT CAPITAL STRUCTURE WEIGHTS DOES MR. HIRSHLEIFER USE IN HIS ESTIMATE OF GTE'S FORWARD-LOOKING ECONOMIC COST OF CAPITAL?

A. Mr. Hirshleifer uses both book and market value capital structure weights to estimate GTE's forward-looking economic cost of capital. Using book value capital structure weights containing 57 percent debt and 43 percent equity, Mr. Hirshleifer estimates GTE's economic cost of capital to be 8.17 percent. Using market value capital structure weights containing 20 percent debt and 80 percent equity, Mr. Hirshleifer estimates GTE's economic cost of capital to be 9.31 percent. His final recommended economic cost of capital of 8.74 percent is the midpoint of the range of estimates he found using book and market value capital structure weights.

Q. DO FINANCIAL AND ECONOMIC THEORY PROVIDE ANY GUIDANCE ON THE CORRECT CAPITAL STRUCTURE WEIGHTS TO USE IN CALCULATING THE WEIGHTED AVERAGE COST OF CAPITAL?

A. Yes. As I explained on pages 5-19 of my direct testimony, financial and economic theory require the use of market value weights to calculate the weighted average cost of capital because market values are the best measures of the amounts of debt and equity investors have invested in the company on a going-forward basis. Furthermore, investors measure the risk and return on their investment portfolios using market value weights because they purchase a company's

stocks and bonds at market price, not at book value. Thus, the return, and the risk or uncertainty of the return, can only be measured in terms of market values.

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 have never encountered a financial or economic text that recommended anything other than the use of market value weighs 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. On page 11 of his testimony, 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 GTE's common stock, which is fundamentally a claim on the net assets GTE

uses to conduct its varied businesses, such investor would only be willing to pay the ***market value*** of those assets." [emphasis added]

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.

Q. DO YOU AGREE WITH MR. HIRSHLEIFER'S STATEMENT ON PAGE 44 OF HIS TESTIMONY THAT "THERE REMAINS A DEBATE AMONG ACADEMICS, PRACTITIONERS, AND FORENSIC EXPERTS REGARDING THE CHOICE BETWEEN BOOK AND MARKET WEIGHTS"?

A. No. Academic experts and well-trained practitioners unanimously agree that market value weights should be used to estimate the weighted average cost of capital. For example, the following well-known texts recommend the use of market value weights to estimate the weighted average cost of capital: Copeland/Weston, *Financial Theory and Corporate Policy*, Chapter 13, Third Edition, 1988, Addison-Wesley, Reading, MA.; Brealey/Myers, *Principles of Corporate Finance*, Chapter 9, page 190, Fourth Edition, 1991, McGraw-Hill; Robert C. Higgins, *Analysis for Financial Management*, Chapter 8, Fourth Edition, 1995, Irwin.

Q. DO YOU AGREE WITH MR. HIRSHLEIFER'S STATEMENT ON PAGE 44 OF HIS TESTIMONY THAT "IN TRADITIONAL RATE OF

RETURN HEARINGS, CAPITAL STRUCTURE IS TYPICALLY PRESENTED IN TERMS OF BOOK VALUE WEIGHTS"?

A. Yes, I do. However, as I explain on pages 16-17 of my direct testimony, traditional rate of return hearings are inherently based on historical, or accounting, costs, not forward-looking costs. I understand that the cost of service in this proceeding will be measured on the basis of forward-looking economic costs. Mr. Hirshleifer's book value capital structures are not consistent with the use of forward-looking economic costs.

Q. ON EXHIBIT JH-1, MR. HIRSHLEIFER INDICATES THAT HE IS VICE-PRESIDENT AND DIRECTOR OF RESEARCH FOR A COMPANY CALLED FINECON. WHO IS THE PRESIDENT OF FINECON?

A. Professor Bradford Cornell is President of FinEcon. Professor Cornell has provided testimony in a number of states on behalf of AT&T and MCI that is virtually identical to Mr. Hirshleifer's testimony in this proceeding.

Q. HAS MR. HIRSHLEIFER'S BOSS, 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 FERC'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 PAGE 38 OF HIS 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."

Q. DOES MR. HIRSHLEIFER EXPLAIN WHY HE USED BOTH BOOK AND MARKET VALUE CAPITAL STRUCTURE WEIGHTS TO CALCULATE GTE'S WEIGHTED AVERAGE COST OF CAPITAL, WHEN ACADEMIC EXPERTS UNANIMOUSLY RECOMMEND THE USE OF MARKET VALUE CAPITAL STRUCTURE WEIGHTS ALONE?

A. Yes. On page 52 of his testimony, Mr. Hirshleifer argues that: 1) the local service business is less risky than the THCs' other businesses; and 2) the local service business should thus have more leverage than the THCs' other businesses. He then speculates that the "higher debt weight [in the THCs' average book value capital structure] may be more representative of the target capital structure" of the local service business.

Q. DO YOU AGREE WITH MR. HIRSHLEIFER'S OPINION THAT HIS TELEPHONE HOLDING COMPANIES ARE MORE RISKY THAN GTE'S LOCAL SERVICE BUSINESS?

A. No. Even if GTE's local service business were less risky than each of Mr. Hirshleifer's THCs' other businesses, it does not follow that the local service business is less risky than the THCs as a whole. Telecommunications holding companies such as the THCs are experiencing a high degree of technological uncertainty. As a facilities-based provider, GTE must place very large bets on the best technology for providing wireline telecommunications service in Florida. The THCs 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, the THCs can invest in both wireline and wireless technologies, while GTE cannot. In addition, as compared to GTE, the THCs 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 only local service in a limited geographical territory.

Q. DO YOU AGREE WITH MR. HIRSHLEIFER'S OPINION THAT THE LOCAL SERVICE BUSINESS SHOULD HAVE A MORE HIGHLY LEVERAGED MARKET VALUE CAPITAL STRUCTURE?

A. No. Since the local service business is at least as risky as Mr. Hirshleifer's THCs, it should have a market value capital structure that

contains at least as much equity as the THCs' average market value capitrl structure.

Q. DO YOU AGREE WITH MR. HIRSHLEIFER'S STATEMENT ON PAGE 52 THAT THE "HIGHER DEBT WEIGHT [IN THE BOOK VALUE CAPITAL STRUCTURE] MAY BE MORE REPRESENTATIVE OF THE TARGET CAPITAL STRUCTURE" OF GTE'S LOCAL SERVICE BUSINESS?

A. No. First, since book value capital structures are inherently backward looking, they can provide no useful information on the target market value capital structure of GTE's local service business.

Second, Mr. Hirshleifer simply asserts that the reported book value capital structures of his THCs ***"may be"*** representative of the target market value capital structure of GTE's local service business. However, he provides no evidence to support his conjecture. If the book value capital structures are not representative of the target market value capital structure of GTE's local service business, they should not be used in cost studies which estimate the forward-looking cost of basic local service.

Third, local exchange companies such as GTE have traditionally employed target book value capital structures containing at least 60 percent equity. However, economists recognize that the cost of capital must be measured using a ***market value*** capital structure. Since the

market value of equity generally exceeds the book value of equity by a significant margin, a capital structure which contains less equity than GTE's book value capital structure cannot be a reasonable estimate of GTE's market value capital structure.

Fourth, Mr. Hirshleifer's reported book value capital structures for his proxy THCs reflect economic depreciation rates that are significantly higher than the regulatory depreciation rates AT&T and MCI use in their cost studies. It is inconsistent for AT&T and MCI to use economic depreciation rates in one part of their cost studies, and regulatory depreciation rates in another.

Q. DO YOU HAVE ANY EVIDENCE TO SUPPORT YOUR ASSERTION THAT "LOCAL EXCHANGE COMPANIES HAVE TRADITIONALLY EMPLOYED TARGET BOOK VALUE CAPITAL STRUCTURES, BASED ON REGULATORY ACCOUNTING, CONTAINING 40 PERCENT DEBT AND 60 PERCENT EQUITY"?

A. Yes. Local exchange companies file their book value capital structures with the FCC in ARMIS 43-02. As shown in Vander Weide Rebuttal Exhibit JVW-4, the average book value capital structure for the local exchange companies, based on regulatory accounting for the period 1995 to 1997, contains 39.25 percent debt and 60.75 percent equity.

Q. YOU NOTE THAT LOCAL EXCHANGE COMPANIES TYPICALLY EMPLOY A BOOK VALUE CAPITAL STRUCTURE CONTAINING APPROXIMATELY 40 PERCENT DEBT AND 60 PERCENT EQUITY. IS THERE ANY WAY TO DETERMINE WHAT A LOCAL EXCHANGE COMPANY'S MARKET VALUE CAPITAL STRUCTURE WOULD BE IF ITS STOCK WERE PUBLICLY TRADED?

A. Yes. As shown in Vander Weide Rebuttal Exhibit JVW-5, public utilities are currently trading at market prices between 1.8 and 2.3 times book values. Since telecommunications companies trade at higher market to book ratios than public utilities, the local exchange companies would probably trade at a market value in excess of 2.5 times their book value. Multiplying the 60 percent book value equity in the local exchange company's book value capital structure by 2.5 produces a market value capital structure of approximately 21 percent debt and 79 percent equity [percent debt = 40 /190, and percent equity = 150/190].

Q. IF LOCAL EXCHANGE COMPANIES EMPLOY A BOOK VALUE CAPITAL STRUCTURE CONTAINING 60 PERCENT EQUITY, WHY DO MR. HIRSHLEIFER'S THCS HAVE BOOK VALUE CAPITAL STRUCTURES CONTAINING 57 PERCENT DEBT AND ONLY 43 PERCENT EQUITY?

A. Mr. Hirshleifer's THCs have book value capital structures containing 57 percent debt and only 43 percent equity because they have taken

very large extraordinary accounting write offs in recent years. As shown on Vander Weide Rebuttal Exhibit No. JVW-6, the equity in the book value capital structure of Mr. Hirshleifer's THCs was reduced by at least $28.8 billion as a result of the discontinuation of regulatory accounting principles established in Financial Accounting Standard 71 ("FAS 71") and for write-offs for Other Post Employment Benefits ("OPEB"). These write-offs represent more than 52 percent of the total equity in Mr. Hirshleifer's THCs' capital structures. Since extraordinary write-offs, by definition, are infrequent and unusual, capital structures that include these write-offs cannot be representative of his firms' long-run target capital structures. Thus, Mr. Hirshleifer has clearly erred in using his THCs' book value capital structures for the purpose of estimating GTE's forward-looking economic cost of capital. The THCs' book value capital structures are neither forward looking nor economic.

Q. WHY DID MR. HIRSHLEIFER'S THCS DISCONTINUE THE USE OF REGULATORY ACCOUNTING PRINCIPLES FOR FINANCIAL REPORTING PURPOSES?

A. The THCs discontinued the use of regulatory accounting principles for financial reporting purposes because regulatory-prescribed depreciation lives overstated the likely economic lives of their telephone plant and equipment in the increasingly competitive environment in which their telephone subsidiaries operate.

Q. DO AT&T AND MCI RECOMMEND THE USE OF ECONOMIC DEPRECIATION LIVES, SUCH AS THOSE PRESENTED IN GTE CORP'S ANNUAL REPORTS, FOR USE IN STUDIES OF GTE'S COST OF PROVIDING BASIC LOCAL SERVICE?

A. No. AT&T and MCI recommend the use of regulatory-prescribed depreciation lives. AT&T and MCI strongly denounce the use of economic depreciation lives such as those presented in GTE Corp's Annual Reports.

Q. IS MR. HIRSHLEIFER'S RECOMMENDATION TO USE THE BOOK VALUE CAPITAL STRUCTURES OF HIS THCS AS PRESENTED IN THEIR ANNUAL REPORTS TO SHAREHOLDERS CONSISTENT WITH AT&T'S AND MCI'S POSITION THAT REGULATORY-PRESCRIBED DEPRECIATION LIVES SHOULD BE EMPLOYED IN FORWARD-LOOKING COST STUDIES?

A. No. If Mr. Hirshleifer wants to use book value capital structures, for consistency, those book value capital structures should be adjusted for the large economic write-offs the THCs have taken as a result of the move from regulatory to economic depreciation lives. It is incorrect for Mr. Hirshleifer to recommend book value capital structures that reflect the extraordinary write-offs associated with the move from regulatory-approved to economic depreciation lives, at the same time that his clients AT&T and MCI are recommending the use of regulatory-approved depreciation lives to measure the economic cost of providing basic local service.

Q. IS MR. HIRSHLEIFER'S USE OF BOOK VALUE CAPITAL STRUCTURES CONSISTENT WITH AT&T'S AND MCI'S POSITION THAT GTE'S INVESTMENT IN NETWORK FACILITIES SHOULD BE MEASURED ON A MARKET VALUE BASIS?

A. No. Mr. Hirshleifer's recommendation on behalf of AT&T and MCI to use a book value capital structure along with a forward-looking economic valuation of GTE's network facilities is an ill-disguised attempt by AT&T and MCI to "have their cake and eat it too." They want to measure the cost of investment in network facilities on a ***forward-looking economic basis*** because they estimate that value to be lower than the historical value of GTE's investment in network facilities; and they want to value GTE's capital structure on a ***book value or historical basis*** because using a book value capital structure also provides a lower estimate of GTE's cost of capital. Mr. Hirshleifer and his clients, AT&T and MCI, fail to recognize the inconsistency of their recommendations. It is unreasonable to use forward-looking economic costs to measure the value of the investment while at the same time using backward-looking book values to measure the company's weighted average cost of capital.

Q. WHAT IS THE IMPACT OF MR. HIRSHLEIFER'S USE OF BOOK VALUE CAPITAL STRUCTURE WEIGHTS ON HIS COST OF CAPITAL RECOMMENDATION?

A. Mr. Hirshleifer obtained a 9.31 percent estimate of GTE's weighted average cost of capital using market value capital structure weights,

and an 8.17 percent estimate of GTE's cost of capital using book value capital structure weights. Mr. Hirshleifer's final recommended 8.74 percent cost of capital 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 GTE's overall cost of capital by 57 basis points.

D. Cost of Equity

1. Proxy Group

Q. DOES MR. HIRSHLEIFER ESTIMATE THE COST OF EQUITY FOR GTE FROM MARKET DATA ON GTE'S STOCK?

A. No. Mr. Hirshleifer estimates GTE's cost of equity from market data for a group of risk proxy companies.

Q. WHAT COMPANIES DOES MR. HIRSHLEIFER CHOOSE AS HIS RISK PROXY GROUP FOR GTE?

A. Mr. Hirshleifer chooses a group of ten THCs from Standard & Poor's telephone operating companies as cost of capital proxies for GTE. His ten THCs include the five Regional Bell Holding Companies, Alltel, Century Telephone, Cincinnati Bell, GTE Inc., and SNET.

Q. DID MR. HIRSHLEIFER EXCLUDE ANY COMPANIES FROM STANDARD & POOR'S LIST OF TELEPHONE OPERATING COMPANIES FROM HIS RISK PROXY GROUP?

A. Yes. Mr. Hirshleifer excluded Aliant Communications, Telephone and Data Systems, and Frontier Corp.

Q. WHY DID MR. HIRSHLEIFER EXCLUDE ALIANT, TELEPHONE AND DATA SYSTEMS, AND FRONTIER CORP.?

A. On page 15 of his testimony, Mr. Hirshleifer states his reasons for deleting these companies:

> "Among the independents, Aliant Communications (formerly Lincoln Communications) was excluded because it has less than 500,000 access lines in service and is an order of magnitude smaller than the RBHCs. Telephone and Data Systems was excluded because a majority of its operations are focused on higher-risk endeavors rather than the more traditional telephone and network operations. Frontier Corp. was excluded because 73% of its revenues are derived from unregulated long-distance operations and only 25% from local service."

Q. USING HIS OWN CRITERIA, SHOULD MR. HIRSHLEIFER HAVE INCLUDED CINCINNATI BELL IN HIS PROXY GROUP?

A. No. Like Telephone and Data Systems, the majority of CBI's operations are focused on endeavors other than telephone and network operations. In 1997, CBI's telephone subsidiary CBT accounted for only 38 percent of CBI's revenue. The percentage of

revenue CBI receives from local telephone operations is expected to decline in the future as a result of CBI's acquisition of AT&T's customer care operations. Furthermore, like Aliant, CBI is "an order of magnitude smaller than the RBHCs." Thus, according to his own criteria, Mr. Hirshleifer should have excluded Cincinnati Bell from his proxy group.

A. SHOULD MR. HIRSHLEIFER HAVE INCLUDED CENTURY TELEPHONE IN HIS PROXY GROUP?

A. No. In previous testimonies, Mr. Hirshleifer excluded Century Telephone from his proxy group on the basis of his statement that, "Among the independents, Century Telephone Enterprise Inc. was excluded because of its small number of access lines dispersed over a wide 14 state geographical region" [pages 13-14 in his testimony in North Carolina, for example]. Century Telephone still has a relatively small number of access lines which are dispersed over a wide geographic area. Furthermore, Century's service territory is heavily concentrated in rural areas and, like Aliant, Century is "an order of magnitude smaller than the RBHCs."

Q. ARE MR. HIRSHLEIFER'S DCF RESULTS FOR CBI AND CENTURY BELOW HIS AVERAGE RESULTS FOR THE RBHCS AND GTE?

A. Yes. CBI's DCF result is 8.95 percent, and Century Telephone's DCF result is 7 53 percent, as compared to Mr. Hirshleifer's market-weighted average DCF result for his group of 9.41 percent.

Q. ARE THERE OTHER DIFFICULTIES WITH THE USE OF A GROUP OF TEN THCS AS A RISK PROXY GROUP FOR GTE?

A. Yes. The DCF and CAPM Models provide understated estimates of the cost of capital for companies such as the THCs that are experiencing radical restructuring and profound regulatory, organizational, and technological change.

Q. CAN YOU EXPLAIN WHY THE DCF MODEL PROVIDES UNDERSTATED ESTIMATES OF THE COST OF EQUITY FOR MR. HIRSHLEIFER'S GROUP OF THCS?

A. Yes. Mr. Hirshleifer's companies are part of an industry that is experiencing radical restructuring and profound regulatory, organizational, and technological change. In response to these changes, Bell Atlantic has merged with NYNEX, and SBC has merged with Pacific Telesis and is in the process of merging with SNET. In addition, SBC has agreed to merge with Ameritech and Bell Atlantic has agreed to merge with GTE. Although the financial community expects these companies to achieve significant earnings growth as a result of their mergers, the projected earnings growth associated with the mergers is not yet reflected in the analysts' growth rates Mr. Hirshleifer relied on in his DCF analysis. However, the expected

earnings growth anticipated through the mergers is necessarily included in these companies' stock prices. The use of a stock price that includes anticipated merger-related earnings growth, along with growth rates that cannot include merger-related growth, produces a downwardly-biased DCF estimate of the cost of equity.

Q. WOULD THE SAME BIAS IN DCF RESULTS OCCUR FOR COMPANIES THAT ARE LIKELY MERGER CANDIDATES?

A. Yes. If investors believe that a telecommunications company such as ALLTEL, Century, or Cincinnati Bell, for example, are likely merger candidates, they will bid up the stock prices in anticipation of merger-related revenue opportunities and cost savings. The analysts, however, do not include merger-related revenue opportunities and cost savings in their growth estimates until after the merger has been completed. Thus, the DCF results for companies that are likely merger candidates will understate these companies' true cost of equity.

Q. WHAT COST OF EQUITY PROXIES DO YOU RECOMMEND BE USED TO ESTIMATE THE COST OF EQUITY FOR GTE'S INVESTMENT IN THE FACILITIES REQUIRED TO PROVIDE BASIC LOCAL SERVICE?

A. I recommend the S&P Industrials as a cost of equity proxy for GTE's investment in the facilities required to provide basic local service.

Q. WHY DO YOU RECOMMEND THE S&P INDUSTRIALS AS A COST OF EQUITY PROXY FOR GTE'S INVESTMENT IN THE FACILITIES REQUIRED TO PROVIDE BASIC LOCAL SERVICE?

A. I recommend the S&P Industrials because the purpose of this proceeding is to determine the cost of providing basic local service using forward-looking economic costing principles. The forward-looking economic cost standard is intended to approximate the cost a competitive local service provider would incur if they were to enter the market for the first time. Thus, the use of forward-looking economic cost as a relevant cost standard presumes that the market for local service is competitive. The competitive market assumption also follows from the basic intent of Congress in passing the Telecommunications Act. Since the S&P Industrials are a group of competitive firms whose composite risk is average, I have selected them as a reasonable proxy for GTE's risk of providing basic local service in a competitive market. In addition, the S&P Industrials, as a group, are not experiencing the same degree of radical restructuring and technological change as the THCs; thus, the DCF and CAPM methods provide more reliable estimates for these companies, on average, than for the THCs.

Q. WHY IS IT NECESSARY TO ESTIMATE THE COST OF CAPITAL FOR COMPETITIVE COMPANIES WHEN FORWARD-LOOKING ECONOMIC COST PRINCIPLES ARE USED TO ESTABLISH THE COST OF BASIC LOCAL SERVICE?

A. The cost of capital must be linked to the specific investment under consideration. Under forward-looking economic costing principles, the market for basic local service is assumed to be competitive. If the competitive market assumption is used to estimate the investment in facilities and software required to provide basic serve, then the competitive market assumption must also be used to estimate the cost of capital. Any other assumption would not produce forward-looking economic costs.

2. DCF Model

Q. WHAT DCF MODEL DID MR. HIRSHLEIFER USE TO ESTIMATE GTE'S COST OF EQUITY CAPITAL?

A. Mr. Hirshleifer used a three-stage Annual DCF Model to estimate GTE'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. DOES MR. HIRSHLEIFER MEASURE THE FIRST ANNUAL DIVIDEND IN HIS ANNUAL DCF MODEL CORRECTLY?

A. No. Mr. Hirshleifer fails to include the dividend growth that occurs during the first period of his Annual DCF Model. Under the assumption of the Annual DCF Model, the first dividend is equal to the current annual dividend times one plus the growth rate, g. Mr. Hirshleifer simply uses the current dividend as the first expected dividend. Mr. Hirshleifer's failure to include the growth in dividend during the first period causes his results to be lower.

a) Growth

Q. HOW DOES MR. HIRSHLEIFER ESTIMATE THE THREE GROWTH COMPONENTS OF HIS THREE-STAGE ANNUAL DCF MODEL?

A. Mr. Hirshleifer assumes that his proxy companies' earnings are expected to grow in line with the I/B/E/S analysts' earnings growth forecasts for only the next five years. After this initial five-year period, Mr. Hirshleifer assumes that his proxy companies' earnings will decline over a fifteen-year period to his estimate of the current expected growth in the GNP, 5.5 percent, and then grow at 5.5 percent forever.

Q. WHY DID MR. HIRSHLEIFER EMPLOY A THREE-STAGE, RATHER THAN A ONE-STAGE, DCF MODEL?

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

Q. DO YOU AGREE WITH MR. HIRSHLEIFER'S ARGUMENT THAT A COMPANY'S EARNINGS CANNOT GROW AT A RATE GREATER THAN THE RATE OF GROWTH IN THE GNP FOREVER?

A. Yes. If a company were to grow at a rate greater than the growth in the GNP forever, at some point far in the future, perhaps 400 years or more out, that company would represent most of the economy.

Q. DOES THE FACT THAT A COMPANY CANNOT GROW AT A RATE GREATER THAN THE RATE OF GROWTH IN THE GNP FOREVER PRECLUDE THE USE OF A SINGLE-STAGE DCF MODEL?

A. No. The DCF Model assumes that the price of a company's stock is equal to the discounted, or present, value of its future stream of dividends. Because future dividends are discounted, dividends beyond a specific finite period have very little impact on the firm's stock price. Thus, to employ the single-stage DCF Model, it is only necessary to assume that companies can grow at a rate greater than the rate of growth in the GNP for a specific finite period.

Q. IS IT POSSIBLE FOR COMPANIES TO GROW AT RATES GREATER THAN THE RATE OF GROWTH IN THE GNP FOR LONG PERIODS OF TIME?

A. Yes. Not only is it possible, it is common for companies to grow at rates significantly greater than the rate of growth in the GNP for long periods of time. In fact, the earnings of companies such as Wal-Mart, MCI, Intel, Philip Morris, Merck, Gillette, Coca-Cola, and Johnson & Johnson have all grown at rates exceeding 14 percent per year, a rate that is obviously greater than the 9.07 percent weighted average I/B/E/S growth rate for Mr. Hirshleifer's THCs. Furthermore, this growth has occurred over a 19-year time period, almost four times the five-year period of I/B/E/S growth arbitrarily assigned by Mr. Hirshleifer in his DCF model.

In addition, as discussed in a recent I/B/E/S study, the companies included in stock indices such as the S&P 500 grow at rates far in excess of the rate of growth of the economy as a whole because these companies are a select group of the best companies. Their productivity growth far exceeds the productivity growth of the economy as a whole, and the gap between the growth being experienced by the companies in the S&P 500 as compared to the rest of the economy seems to be growing. (Edward F. Keon, Jr., "S&P 500 Productivity Growth," I/B/E/S international Inc., September 22, 1997.)

Q. MR. HIRSHLEIFER ASSUMES THAT HIS PROXY COMPANIES' EARNINGS CAN GROW AT THEIR 9.07 PERCENT I/B/E/S

GROWTH RATE FOR ONLY FIVE YEARS. IS THIS A REASONABLE ASSUMPTION?

A. No. As I have just stated, it is common for companies to grow at rates in excess of his companies' average 9.07 percent I/B/E/S growth rate for periods far longer than five years.

Q. DOES MR. HIRSHLEIFER PROVIDE ANY EVIDENCE TO SUPPORT HIS ASSUMPTION THAT HIS PROXY COMPANIES CAN GROW AT THE 9.07 PERCENT I/B/E/S GROWTH RATE FOR ONLY FIVE YEARS?

A. No. Mr. Hirshleifer's assumption is arbitrary, and he provides no evidence in support of his assumption.

Q. DO YOU HAVE ANY EVIDENCE THAT INVESTORS EXPECT MR. HIRSHLEIFER'S THCS TO GROW AT A RATE HIGHER THAN HIS COMPANIES' 9.07 PERCENT AVERAGE I/B/E/S GROWTH RATE IN THE PERIOD BEYOND FIVE YEARS?

A. Yes. Value Line publishes an estimate of each company's long-run growth from internal sources beyond the period beginning in 2001-2003. Growth from internal sources is measured by the product of the company's forecasted rate of return on equity and its forecasted retention ratio. As shown on Vander Weide Rebuttal Exhibit JVW-7, Value Line's long-run internal growth rate for the THCs used by Mr. Hirshleifer is 13.5 percent, indicating that Value Line expects the

TH'Cs to grow at rates higher than the 9.07 percent average I/B/E/S growth rate in the period beyond five years.

Q. DO YOU HAVE ANY OTHER EVIDENCE THAT REFUTES MR. HIRSHLEIFER'S ARBITRARY ASSUMPTION THAT HIS PROXY COMPANIES CAN GROW AT THE 9.07 PERCENT I/B/E/S GROWTH RATE FOR ONLY FIVE YEARS?

A. Yes. Morgan Stanley recently published growth forecasts for Mr. Hirshleifer's client, AT&T, for periods extending both five and ten years out. Contrary to the prediction of Mr. Hirshleifer that no company can grow in excess of its I/B/E/S growth rate for more than five years, Morgan Stanley predicts an increase in AT&T's growth rate, from 8 percent for the first five years, to 13 percent during the following five years. ("AT&T: Going Local," Morgan Stanley, U.S. Investment Research, February 28, 1997.)

Q. AS NOTED PREVIOUSLY, MR. HIRSHLEIFER REFERS TO MR. DAMODARAN TO SUPPORT POSITIONS ESPOUSED IN HIS TESTIMONY. DOES MR. DAMODARAN SUGGEST A LONG-TERM GROWTH RATE FOR USE IN A MULTI-STAGE DCF MODEL DIFFERENT FROM THE 5.5 PERCENT CHOSEN BY MR. HIRSHLEIFER?

A. Yes. Mr. Damodaran in his lectures on the topic Discounted Cash Flow Valuation suggests that a suitable long-term growth rate for use

in a multi-stage DCF Model would range from a lower end of 7 percent to an upper end of 10 percent.

Q. DOES MR. DAMODARAN OFFER ANY SUGGESTION REGARDING WHEN AN ANALYST SHOULD USE A THREE-STAGE DCF MODEL?

A. Yes. Mr. Damodaran suggests that the best use for a three-stage DCF Model is for firms that are growing at an extraordinary rate at present, a definition he characterizes as being subjective; but he suggests that growth rates in excess of 25 percent would qualify. (Aswath Damodaran, *Damodaran on Valuation*, p. 119, Wiley, New York, 1994.)

Q. ARE ANY OF THE COMPANIES IN MR. HIRSHLEIFER'S GROUP OF TELECOMMUNICATIONS COMPANIES OR IN THE S&P INDUSTRIAL GROUP YOU RECOMMEND AS A PROXY GROUP EXPECTED TO GROW AT RATES IN EXCESS OF 25 PERCENT?

A. No. There are no companies in either Mr. Hirshleifer's proxy group or my proxy group which have I/B/E/S growth rates in excess of 25 percent.

b) Data Mismatch

Q. DO YOU AGREE WITH MR. HIRSHLEIFER'S USE OF THE 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 tell us 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.

Q. DO BANKS USE AN ANNUAL DCF MODEL WHEN VALUING MORTGAGE LOANS?

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

Q. DOES MR. HIRSHLEIFER'S BOSS, PROFESSOR CORNELL, IN HIS PUBLISHED WORK, RECOGNIZE THE NEED TO USE A QUARTERLY DCF MODEL FOR A COMPANY THAT PAYS DIVIDENDS QUARTERLY?

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

3. Flotation Expenses

Q. YOU NOTE THAT MR. HIRSHLEIFER ASSUMES THAT FIRMS INCUR NO FLOTATION COSTS WHEN THEY ISSUE EQUITY SECURITIES. IS HIS ASSUMPTION REASONABLE?

A. No. All firms which have sold securities in the capital markets have incurred some level of flotation costs, including underwriters' commissions, legal fees, printing expense, etc. These costs are withheld from the proceeds of the stock sale or are paid separately, and must be recovered over the life of the equity issue. Costs vary depending upon the size of the issue, the type of registration method used and other factors, but in general these costs range between three and five percent of the proceeds from the issue [see Clifford W. Smith, "Alternative Methods for Raising Capital," *Journal of Financial Economics* 5 (1977) 273-307]. In addition to these costs, for large equity issues (in relation to outstanding equity shares), there is likely to be a decline in price associated with the sale of shares to the public. On average, the decline due to market pressure has been estimated at two to three percent [see Richard H. Pettway, "The Effects of New Equity Sales Upon Utility Share Prices," *Public Utilities Fortnightly*, May 10, 1984, 35-39].

From the above evidence, the total flotation cost, including both issuance expense and market pressure, could range anywhere from five to eight percent of the proceeds of an equity issue. I believe a combined five percent allowance for flotation costs is a conservative

estimate that can be used in applying the DCF Model in this proceeding.

Q. WHY IS IT NECESSARY TO INCLUDE FLOTATION COSTS WHEN ESTIMATING THE COST OF EQUITY FOR USE IN LONG-RUN INCREMENTAL COST STUDIES SUCH AS THOSE PREPARED BY AT&T AND MCI?

A. The purpose of AT&T's and MCI's long-run incremental cost study is to estimate the forward-looking economic cost a competitive provider would incur if they were to build a new telecommunications network to provide basic local service. Companies who build a telecommunications network for the first time would obviously have to issue debt and equity securities to finance their investment in the facilities required to provide network elements. Flotation costs are a necessary expense of firms issuing such securities. Therefore, they should be included in any study of the forward-looking economic cost of providing local service.

Q. DO YOU AGREE WITH MR. HIRSHLEIFER'S STATEMENT ON PAGES 54-55 OF HIS TESTIMONY THAT IT IS NOT NECESSARY TO INCLUDE FLOTATION COSTS BECAUSE HIS PROXY COMPANIES' STOCK PRICES ALREADY REFLECT FLOTATION COSTS?

A. No. If Mr. Hirshleifer's argument were true, there would be no requirement to include any forward-looking expenses in GTE's

forward-looking cost study, because all these expenses are reflected in his proxy companies' stock prices. Obviously, this is an absurd conclusion.

4. Capital Asset Pricing Model

Q. PLEASE DESCRIBE THE CAPM.

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

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

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

Q. HOW DID MR. HIRSHLEIFER ESTIMATE THE BETA COMPONENT OF HIS CAPM ANALYSIS?

A. Mr. Hirshleifer used the beta estimates of Dow Jones Beta Analytics, which are based on five years of historical data.

Q. DO YOU AGREE WITH THE USE OF BETAS BASED ON FIVE YEARS OF HISTORICAL DATA TO ESTIMATE THE FORWARD-LOOKING COST OF CAPITAL FOR USE IN TELRIC STUDIES?

A. No. Mr. Hirshleifer's historical betas significantly underestimate the future risk of the THCs. The Telecommunications Act of 1996 removed all barriers to entry in GTE's local exchange business. As a result of this legislation, the risk of investing in the THCs has increased significantly, and the THCs' forward-looking betas are undoubtedly greater than the five-year historical betas used by Mr. Hirshleifer.

Q. DO YOU HAVE ANY ADDITIONAL EVIDENCE THAT THE THCS' BETAS HAVE INCREASED AS A RESULT OF THE INCREASED RISK IN THE TELECOMMUNICATIONS INDUSTRY?

A. Yes. I have calculated betas for the Regional Bell Holding Companies and GTE using two and a half years of weekly data since the passage of the Telecommunications Act. The average beta for these companies using weekly data for the two and a half years ending June 1998 is .94, as compared to Mr. Hirshleifer's average beta using five-year data of approximately .74.

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 estimated the DCF cost of equity for the S&P 500 using the same three-stage DCF Model used in his DCF method. 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. DO YOU AGREE WITH MR. HIRSHLEIFER'S DCF METHOD OF ESTIMATING THE RISK PREMIUM ON THE MARKET PORTFOLIO?

A. No. Mr. Hirshleifer's DCF method is based on the same three-stage DCF Model Mr. Hirshleifer used in his DCF calculation of the cost of equity. As noted above, his DCF Model is based on the arbitrary and incorrect assumption that companies can grow at the I/B/E/S growth rate for only five years, and that their growth must then decline to the rate of growth in GNP over a period of 15 years. This basic assumption, which is contrary to the evidence that firms can grow at the I/B/E/S growth rate for many years, 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 Exhibit JH-8, Mr. Hirshleifer reports both arithmetic mean and geometric mean risk premium results for four periods: 1802-1997, 1926-1997, 1951-1997, and 1971-1997. 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 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."

Q. IN THE STATEMENT YOU HAVE JUST QUOTED, PROFESSOR CORNELL RECOMMENDS THE USE OF EITHER THE PERIOD 1926 TO THE PRESENT OR 1945 TO THE PRESENT. HOW DOES THE ARITHMETIC MEAN RISK PREMIUM FOR THE PERIOD 1926 TO 1997 REPORTED IN JH-8 COMPARE TO MR. HIRSHLEIFER'S

RECOMMENDED RISK PREMIUM OF 7.5 PERCENT FOR TREASURY BILLS AND 5.5 PERCENT FOR TREASURY BONDS?

A. As shown on Mr. Hirshleifer's JH-8, the arithmetic mean risk premium for the period 1926 to 1997 is 9.15 percent over Treasury bills and 7.36 percent over Treasury bonds, approximately 170 to 190 basis points higher than the risk premia Mr. Hirshleifer uses in his cost of equity estimate.

Q. MR. HIRSHLEIFER'S COLLEAGUE PROFESSOR CORNELL ALSO STATES IN HIS BOOK THAT THE PERIOD 1945 TO THE PRESENT MIGHT BE AN ACCEPTABLE ALTERNATIVE TO THE PERIOD 1926 TO THE PRESENT. DID MR. HIRSHLEIFER EMPLOY THE PERIOD 1945 TO THE PRESENT IN HIS CURRENT TESTIMONY?

A. No, he did not.

Q. HAVE YOU CALCULATED THE ARITHMETIC MEAN RISK PREMIUM FOR THE PERIOD 1945 TO 1996?

A. Yes. The arithmetic mean risk premium for the period 1945 to 1996 for stocks over Treasury bills is 9.03 percent, and for stocks over Treasury bonds, 7.79 percent. These risk premia are 160 to 230 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 1997 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 banks, railroads, and a very few 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 1998.

Q. ON PAGE 38 OF HIS 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 and 1998 Yearbooks has 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 *1998 Yearbook* also continues to recommend that arithmetic mean risk premium is the "correct rate for forecasting, discounting, and estimating the cost of capital." They state further that:

> "The geometric mean is backward-looking, measuring the change in wealth over more than one period. On the other hand, the arithmetic mean better represents a typical performance over single periods and serves as the correct rate for forecasting, discounting, and estimating the cost of capital." (Ibbotson Associates' *1998 Yearbook*, page 108.)

> "For use as the expected equity risk premium in the CAPM, the *arithmetic* or *simple difference* of the *arithmetic means* of stock market returns and riskless rates is the relevant number. This is because the CAPM is an additive model where the cost of capital is the sum of its parts. Therefore, the CAPM expected equity risk premium must be derived by arithmetic, *not geometric*,

subtraction." (Original emphasis. Ibbotson Associates' *1998 Yearbook*, page 157.)

Second, I have spoken with Mr. Dominic Falaschetti, Managing Editor of Ibbotson Associates, who assures me that both Professor Ibbotson and Ibbotson Associates continue to recommend the period 1926 to the present as the best period for use in estimating the future equity risk premium. In addition, the historical risk premium reported in the *1998 Yearbook* is 7.8 percent, not the 7.36 percent reported on Mr. Hirshleifer's attachment JH-8.

Q. HAVE YOU CALCULATED A CAPM COST OF EQUITY FOR GTE?

A. Yes. I agree with Ibbotson Associates' recommendation to base a CAPM estimate of the cost of equity on the current yield to maturity on long-term U.S. Treasury bonds (5.7 percent), and on the arithmetic mean risk premium of large company stocks over the yield on long-term Treasury bonds (7.8 percent). I further believe that a conservative estimate of the forward-looking beta for the THCs is the average beta of 1.0 for all companies. Thus, a reasonable CAPM cost of equity estimate for the THCs is 13.5 percent [5.7 percent + (1.0 times 7.8 percent)].

E. Tests of Reasonableness

1. Merrill Lynch

Q. DOES MR. HIRSHLEIFER ATTEMPT TO PROVIDE ANY OTHER EVIDENCE PURPORTING TO SHOW THAT HIS ESTIMATE OF GTE'S COST OF CAPITAL IS "REASONABLE"?

A. Yes. On page 53 of his testimony, Mr. Hirshleifer states that:

> [A]s part of its proposed merger with NYNEX, Bell Atlantic submitted to its shareholders a joint proxy statement/prospectus on September 18, 1996 in which Bell Atlantic's investment advisor, Merrill Lynch, performed a DCF analysis of the two companies' relative market values, estimating a discount rate in the range of 8 to 10 percent for the telephone company portion of its diversified portfolio of businesses.

Q. DID BELL ATLANTIC HIRE MERRILL LYNCH TO PROVIDE AN INDEPENDENT OPINION OF BELL ATLANTIC'S COST OF CAPITAL FOR USE IN TELRIC STUDIES?

A. No. Bell Atlantic hired Merrill Lynch to provide an opinion regarding the fairness of the stock exchange ratio used in the proposed merger agreement between Bell Atlantic and NYNEX, not to estimate its forward-looking cost of capital for the business of leasing network elements.

Q. DID MERRILL LYNCH "ESTIMATE" A DISCOUNT RATE IN THE RANGE OF 8 TO 10 PERCENT FOR THE TELEPHONE PORTION OF BELL ATLANTIC'S DIVERSIFIED PORTFOLIO OF BUSINESSES, AS MR. HIRSHLEIFER ASSERTS ON PAGE 53 OF HIS TESTIMONY?

A. No. Merrill Lynch does not say that it "estimated" a discount rate at all. Merrill Lynch simply states on page 45 of the Joint Proxy/Prospectus that it "used" a discount rate of 8 to 10 percent for the purpose of establishing an exchange ratio for Bell Atlantic and NYNEX. Estimation of a discount rate was not part of Merrill Lynch's assignment. Indeed, it would not have been worthwhile for Merrill Lynch to estimate a discount rate because a discount rate was only a minor input in its analysis.

Q. WHEN MR. HIRSHLEIFER REFERS TO MERRILL LYNCH'S "DCF ANALYSIS," IS HE USING THE TERM "DCF" TO REFER TO MERRILL LYNCH'S METHOD OF ESTIMATING THE COST OF EQUITY?

A. No. Mr. Hirshleifer is using the term "DCF analysis" to refer to the fact that Merrill Lynch calculated a theoretical price for Bell Atlantic and NYNEX by discounting future cash flows to present value using an assumed discount rate. He could not possibly be referring to a method for estimating the cost of equity for Bell Atlantic, because Merrill Lynch did not estimate a cost of equity for Bell Atlantic.

Q. DO YOU AGREE WITH MR. HIRSHLEIFER'S ASSERTION THAT MERRILL LYNCH'S USE OF A DISCOUNT RATE IN THE RANGE OF EIGHT TO TEN PERCENT CORROBORATES MR. HIRSHLEIFER'S OWN CONCLUSION REGARDING GTE'S COST OF CAPITAL?

A. No. First, neither Mr. Hirshleifer nor Merrill Lynch provide any evidence on how Merrill Lynch chose its 8 to 10 percent discount rate for Bell Atlantic's telephone operations. For all we know, Merrill Lynch may have chosen this discount rate arbitrarily. In addition, since Merrill Lynch does not describe how it arrived at its choice of an 8 to 10 percent discount rate, there is no way to determine on the basis of any known information whether Merrill Lynch's use of such a discount rate was reasonable.

Second, Merrill Lynch performed at least ten different analyses to assess the fairness of the stock exchange ratio used in the proposed merger, including analyses of: 1) comparative stock price performance; 2) market values of public comparable; 3) intrinsic values; 4) earnings contributions; 5) market price forecasts; 6) discounted cash flow; 7) pro forma estimates of EPS growth; 8) hypothetical share prices of New Bell Atlantic stock; 9) potential incremental share price impact of the merger; and 10) selected stock-for-stock transactions. Only one of these analyses, the discounted cash flow, involved the use of discount rates, and the impact of the discount rate even in this single analysis is obscured by the fact that

Merrill Lynch used the same discount rate for both companies; and they disclose only discount rate ranges, not point estimates. Given that discount rates were only used in one of Merrill Lynch's ten analyses of the fairness of the Bell Atlantic/NYNEX exchange ratio, and that the discount rate had little impact even in this analysis, it is fair to conclude that Merrill Lynch's specific discount rate had no effect on its assessment of the fairness of the exchange ratio. Merrill Lynch would have arrived at the same judgment even if had not performed a discounted cash flow analysis at all.

Q. ARE INVESTORS ENTITLED TO RELY ON THESE DISCOUNT RATE DISCLOSURES EVEN THOUGH THE DISCOUNT RATES DO NOT IMPACT MERRILL LYNCH'S RELATIVE VALUATION OF BELL ATLANTIC AND NYNEX?

A. No. Merrill Lynch specifically states that investors are not entitled to rely on any single part of their analyses outside of the context for which it was intended. On page 45 of the Joint Proxy/Prospectus, Merrill Lynch states:

> Merrill Lynch believes that its analyses must be considered as a whole and that selecting portions of its analyses and the factors considered by it, without considering all such factors and analyses, could create an incomplete view of the processes underlying its opinion.

Merrill Lynch also states on page 45 of the Joint Proxy/Prospectus that: 1) its estimates "are not necessarily indicative of actual past or future values or results;" 2) its estimates are "inherently subject to uncertainty"; 3) "neither Merrill Lynch nor any other person assumes responsibility for [the estimate's] accuracy"; and 4) analyses relating to the value of individual businesses "do not purport to be appraisals and do not necessarily reflect the prices at which businesses may be sold in the future." In particular, Merrill Lynch states:

> Any estimates incorporated in the analyses performed by Merrill Lynch are not necessarily indicative of actual past or future values or results, which may be significantly more or less favorable than suggested by such estimates or analyses. Because such estimates are inherently subject to uncertainty, neither Merrill Lynch nor any other person assumes responsibility for their accuracy. In addition, analyses relating to the value of businesses do not purport to be appraisals and do not necessarily reflect the prices at which businesses may be sold in the future or at which their shares of capital stock may trade in the future.

Q. DR. VANDER WEIDE, IF YOU STATED IN YOUR TESTIMONY THE SAME DISCLAIMERS THAT MERRILL LYNCH STATES,

WOULD YOU EXPECT THIS COMMISSION TO GIVE MUCH WEIGHT TO YOUR TESTIMONY?

A. No.

Q. TAKEN IN CONTEXT, DOES MERRILL LYNCH PROVIDE ANY SUPPORT FOR MR. HIRSHLEIFER'S LOW ESTIMATE OF GTE'S COST OF CAPITAL?

A. No. Merrill Lynch does not support Mr. Hirshleifer's low estimate of GTE's cost of capital because Merrill Lynch did not estimate a cost of capital for either Bell Atlantic or Bell Atlantic's network element leasing business in the environment of the First Report and Order. In fact, Merrill Lynch did not estimate a cost of capital at all: they simply used a discount rate range in one of their ten analyses of the reasonableness of the Bell Atlantic/NYNEX exchange ratio. Merrill Lynch provides no evidence that the discount rate range they used was based on anything other than an arbitrary assumption. They also provide a strong warning, ignored by Mr. Hirshleifer, that individual data inputs such as discount rates, should not be taken out of context.

2. Salomon Brothers

Q. DOES MR. HIRSHLEIFER ATTEMPT TO PROVIDE ANY OTHER EVIDENCE PURPORTING TO SHOW THAT HIS COST OF CAPITAL ESTIMATE IS "REASONABLE"?

A. Yes. Mr. Hirshleifer also provides a quote from a January 1996 Salomon Brothers report on the Regional Bell Operating Companies which states that, "[b]ased on our estimates, the RBOCs currently have an average weighted cost of capital of approximately 8.6%."

Q. DOES THAT SALOMON BROTHERS STATEMENT HAVE ANY PROBATIVE VALUE IN THIS PROCEEDING?

A. No. This proceeding concerns the proper cost of capital for use in studies of the forward-looking economic cost of providing basic local service under the assumption of a competitive market environment. Salomon Brothers is not a participant in this proceeding, nor have they provided any evidence on the cost of capital within the context of this proceeding. In addition, the Salomon Brothers report was published prior to the passage of the Telecommunications Act of 1996 and prior to the issuance of the FCC's First Report and Order. Finally, since Mr. Hirshleifer has not provided any evidence on Salomon Brothers' methodologies, and since AT&T and MCI have not sponsored a Salomon Brothers witness to testify regarding their methodologies, there is no way to evaluate the accuracy of the Salomon Brothers' estimate.

3. Ibbotson Associates

Q. YOU MENTION THAT MR. HIRSHLEIFER CITES MERRILL LYNCH AND SALOMON BROTHERS IN SUPPORT OF HIS

COST OF CAPITAL ESTIMATES. HAS MR. HIRSHLEIFER PROVIDED A BALANCED OVERVIEW OF AVAILABLE COST OF CAPITAL ESTIMATES FOR TELECOMMUNICATIONS FIRMS?

A. No. Mr. Hirshleifer fails to cite the Ibbotson Associates' cost of capital estimates for telecommunications firms, which, not surprisingly, are significantly higher than Mr. Hirshleifer's estimate of GTE's cost of capital.

Q. WHERE ARE IBBOTSON ASSOCIATES' COST OF CAPITAL ESTIMATES FOR TELECOMMUNICATIONS COMPANIES PUBLISHED?

A. Ibbotson Associates' most recent cost of capital estimates are published in their publication titled, *Cost of Capital Quarterly*, and data has been updated to June 1998.

Q. WHAT ARE IBBOTSON ASSOCIATES' COST OF CAPITAL ESTIMATES FOR TELECOMMUNICATIONS COMPANIES?

A. Using five different methodologies, Ibbotson Associates provides five estimates of the after-tax weighted average cost of capital for the telecommunications industry composite. These estimates range from 10.06 percent to 13.39 percent.

Q. ARE THESE COST OF CAPITAL ESTIMATES COMPARABLE TO THE COST OF CAPITAL ESTIMATES REQUIRED IN THIS TELRIC PROCEEDING?

A. No. The cost of capital in AT&T's and MCI's cost studies is quoted on a before-tax basis, while the Ibbotson Associates' estimates are quoted on a lower, after-tax basis. The Ibbotson Associates' before-tax equivalent cost of capital estimates would be approximately 50 basis points higher than the after-tax cost of capital estimates; and, to be consistent, one should compare the higher Ibbotson Associates' before-tax equivalent estimates to AT&T and MCI's estimates.

Q. WHAT CAPITAL STRUCTURE DOES IBBOTSON ASSOCIATES USE TO ESTIMATE THE OVERALL COST OF CAPITAL FOR THE TELECOMMUNICATIONS INDUSTRY?

A. Ibbotson Associates uses an average market value capital structure containing 80.88 percent equity and 19.12 percent debt.

Q. WHAT COSTS OF EQUITY DOES IBBOTSON ASSOCIATES DERIVE FROM THEIR FIVE COST OF EQUITY METHODOLOGIES?

A. Updated through June 1998, Ibbotson Associates' five cost of equity estimates for the telecommunications industry composite range from 10.93 percent to 14.90 percent.

Q. DO THE IBBOTSON ASSOCIATES' COST OF CAPITAL ESTIMATES SUPPORT MR. HIRSHLEIFER'S COST OF CAPITAL ESTIMATES FOR GTE IN THIS PROCEEDING?

A. No. The Ibbotson Associates' cost of capital estimates for the telecommunications industry composite are all significantly higher than Mr. Hirshleifer's 8.74 percent cost of capital estimate for GTE in this proceeding. The *lowest* Ibbotson Associates' before-tax cost of capital estimate is approximately 10.6 percent, nearly 200 basis points higher than Mr. Hirshleifer's estimate, while the highest Ibbotson before-tax cost of capital estimate is approximately 13.9 percent, more than 500 basis points higher than Mr. Hirshleifer's estimate.

4. Internal Tests of Reasonableness

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 companies than for lower risk companies.

Q. HAVE YOU TESTED THE INTERNAL CONSISTENCY OF MR. HIRSHLEIFER'S TESTIMONY USING THE STANDARD THAT A

HIGHER RISK COMPANY SHOULD HAVE A HIGHER COST OF CAPITAL THAN A LOWER RISK COMPANY?

A. Yes. I have tested the internal consistency of Mr. Hirshleifer's testimony in several different ways that refer to this standard. First, I have compared Mr. Hirshleifer's DCF results to his betas and have found that the companies with the highest betas have the lowest DCF results, reversing the normal expected relationship between risk and return. As shown on Mr. Hirshleifer's Schedules JH-4 and JH-5, Century Telephone and Cincinnati Bell have the highest betas in his proxy group of companies, 1.01 and 1.11, respectively, and the lowest DCF results, 7.53 percent, and 8.95 percent. On the other hand, ALLTEL has the lowest beta, .55, and an above average DCF result, 9.61 percent.

Second, Mr. Hirshleifer claims that a telecommunications company's non-local exchange activities are considerably riskier than their local exchange activities. Mr. Hirshleifer claims, for example, that he could not include Sprint in his proxy group because more than half its revenues are from long distance, which he claims is more risky than local exchange service. Since Sprint has a higher percentage of non-local exchange business activities than any of Mr. Hirshleifer's proxy companies, using his own logic, he should have obtained a higher cost of equity for Sprint than for his proxy companies. In fact, Mr. Hirshleifer obtains a lower cost of

equity estimate for Sprint, 8.63 percent, than the average result of 9.41 percent for his proxy group of local exchange companies.

Third, using Mr. Hirshleifer's methodology, I have calculated DCF results for three interexchange carriers, AT&T, MCI, and Sprint, and three Florida electric utilities, FPL Group, Florida Progress, and TECO Energy. According to Mr. Hirshleifer's logic, the cost of equity for the three interexchange carriers should be significantly higher than the cost of equity for the three Florida electric utilities. As shown on Vander Weide Rebuttal Exhibit JVW-8, however, the average DCF result for the Florida electric utilities are nearly 200 basis points higher than the average DCF result for the interexchange carriers.

Fourth, I have compared Mr. Hirshleifer's average DCF result of 9.82 percent for the companies in the S&P 500 to his 9.41 percent average DCF result for his THC group. Since Mr. Hirshleifer claims that the S&P 500 is significantly more risky than telecommunications companies, he should have obtained significantly higher DCF results for the S&P 500. In fact, his DCF result for the S&P 500 is not significantly different from the average DCF result he obtains for his proxy group of telecommunications companies.

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 capital estimates for GTE fail the common sense test that the cost of capital should increase with the risk of an investment. Contrary to a reasonable expectation, Mr. Hirshleifer consistently obtains lower cost of capital results for companies having demonstrably higher risk.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

(Transcript follows in sequence in Volume 3.)