

**ORIGINAL**

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

In Re: Investigation into Pricing            )  
Unbundled Network Elements, Phase II    )  
  )

Docket 990649-TP

**DIRECT TESTIMONY OF**

**GREGORY D. JACOBSON**

**On Behalf of**

**GTE FLORIDA INCORPORATED**

**SUBJECT: COST OF CAPITAL**

**May 1, 2000**

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DIRECT TESTIMONY OF GREGORY D. JACOBSON

I. INTRODUCTION

**Q. PLEASE STATE YOUR NAME, POSITION, AND BUSINESS ADDRESS.**

A. My name is Gregory D. Jacobson and I am Treasurer of GTE Florida Incorporated (“GTE Florida”). My business address is 1255 Corporate Dr., Irving, Texas.

**Q. WOULD YOU PLEASE DESCRIBE YOUR PROFESSIONAL QUALIFICATIONS, INCLUDING YOUR EDUCATIONAL BACKGROUND?**

A. I graduated from the University of Washington with a Bachelor of Arts in Business Administration degree in 1974 and a Master of Business Administration degree in 1975. Subsequent to completing my studies at the University of Washington, I have been employed by GTE companies in a variety of management positions in accounting, financial management and marketing prior to being elected to my current position in 1994.

My responsibilities as Treasurer of GTE Florida include oversight of all Treasury functions, including administration of capital structure policy and dividend policy and evaluating various financing alternatives for GTE Florida. As Treasurer, I prepare and present

1 testimony related to cost of capital and capitalization issues in  
2 regulatory proceedings. I also have responsibility for managing  
3 company relations and contacts with external investors and debt  
4 rating agencies.

5  
6 I am a Certified Public Accountant ("CPA") in the state of Washington  
7 and a Certified Management Accountant ("CMA"). I have also been  
8 awarded the professional designation of Certified Rate of Return  
9 Analyst ("CRRRA") by the Society of Utility and Regulatory Financial  
10 Analysts ("SURFA"). I hold memberships in SURFA, the American  
11 Institute of Certified Public Accountants, the Washington State  
12 Society of Certified Public Accountants, and the Financial Executives  
13 Institute. I have taught classes in accounting and finance at City  
14 University in Seattle, Washington.

15

16 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE PUBLIC UTILITY**  
17 **REGULATORY COMMISSIONS?**

18 A. Yes. I have testified in proceedings related to capital structure and  
19 cost of capital in Alabama, California, Idaho, Indiana, Kentucky,  
20 Michigan, North Carolina, Oklahoma, Oregon, South Carolina, Texas,  
21 and Virginia.

22

23 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS**  
24 **PROCEEDING?**

25 A. The purpose of my testimony is to present and support the market-

1 based weighted average cost of capital ("WACC") used by GTE  
2 Florida as a cost study input to its Integrated Cost Model ("ICM") that  
3 was submitted in this proceeding. The WACC reflects market-based  
4 costs consistent with prevailing economic theory and market  
5 conditions and is based on a market-valued capital structure and  
6 prevailing interest and cost of equity rates. Specifically, I address  
7 issue 7(c) designated for resolution in this proceeding.

8  
9 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

10 A. Part II describes the fundamental economic principles that must be  
11 applied when determining the WACC to be used in a forward-looking  
12 cost study. Part III describes the group of companies on which I have  
13 based my recommended WACC for GTE Florida. Parts IV, V and VI  
14 describe my determination of GTE Florida's cost of debt, cost of  
15 equity and capital structure, respectively. Part VII summarizes my  
16 conclusions.

17  
18 **Q. HAVE YOU PROVIDED EXHIBITS TO SUPPORT YOUR**  
19 **TESTIMONY?**

20 A. Yes. I have provided the following exhibits:

21 Exhibit GDJ-1 develops GTE Florida's market-based WACC  
22 recommendation.

23  
24 Exhibit GDJ-2 presents the Discounted Cash Flow ("DCF") model  
25 used to calculate GTE Florida's return on equity estimate.

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Exhibit GDJ-3 develops the capital structure recommended by GTE Florida in developing its WACC recommendation.

Exhibit GDJ-4 shows the capitalization of various telecommunications companies.

Exhibit GDJ-5 explains the process in which GTE Florida's Standard & Poor's ("S&P") Industrials proxy group was selected.

Exhibit GDJ-6 is a paper by Dr. James H. Vander Weide, Research Professor of Finance and Economics at the Fuqua School of Business at Duke University, that explains the theory and technical aspects of the DCF model used in developing GTE Florida's return on equity estimate.

**Q. PLEASE SUMMARIZE THE MAIN POINTS OF YOUR TESTIMONY.**

A. Traditional methods of setting an authorized rate of return are inappropriate for determining GTE Florida's cost of capital for use in a forward-looking model to determine the costs of providing unbundled network elements. A forward-looking, market-based approach must be used for all facets of a cost of capital determination: cost of debt, cost of equity and capital structure. Using such a methodology produces an overall 12.74% WACC for GTE Florida, reflecting a 7.03% cost of debt and a 14.36% cost of equity, and based on a capital structure containing 22.17% debt and 77.83%

1 equity, as shown on Exhibit GDJ-1.

2  
3 **II. FUNDAMENTAL ECONOMIC PRINCIPLES**

4  
5 **Q. WHAT IS ICM'S FUNDAMENTAL ASSUMPTION ABOUT THE**  
6 **COST OF PROVIDING SERVICE?**

7 A. As GTE Florida witness Tucek explains in his testimony, GTE's ICM  
8 reflects the costs of providing services in a competitive marketplace.  
9 The market-based WACC used by GTE Florida in the model was  
10 based on this fundamental assumption.

11  
12 **Q. DOES USE OF THE MARKET-BASED COST OF CAPITAL HAVE**  
13 **ANY IMPLICATIONS FOR COMPETITIVE ENTRY AND FOR THE**  
14 **PROVISIONING OF INNOVATIVE TELECOMMUNICATION**  
15 **SERVICES?**

16 A. Yes. Facilities-based local exchange competition will be encouraged  
17 only if new entrants can build their own networks at a cost that is  
18 lower than facilities can be leased from incumbent local exchange  
19 companies. Consequently, the cost of capital input to GTE Florida's  
20 forward-looking cost studies must be based on forward-looking  
21 economic principles and must be at least as large as the return those  
22 potential facilities-based competitors can earn on other investments  
23 of similar risk. If this is not the case, it would make more economic  
24 sense for competitors to lease undervalued unbundled network  
25 elements from GTE Florida than to build their own facilities. To

1 provide correct incentives for entry into local exchange markets, the  
2 Commission must measure GTE Florida's cost of capital in the same  
3 way that potential competitors measure their own costs of capital.

4  
5 The Commission must likewise use a forward-looking economic  
6 definition of the cost of capital if it wishes to promote investment and  
7 innovation in telecommunications services. In competitive markets,  
8 investment in new technologies, products, and services will occur only  
9 if the potential rate of return exceeds that which can be earned on  
10 investments of the same risk.

11  
12 **Q. DOES THE MARKET-BASED ECONOMIC COST OF CAPITAL**  
13 **DIFFER FROM THE COST OF CAPITAL AS DEFINED IN**  
14 **TRADITIONAL REGULATORY PROCEEDINGS?**

15 A. Yes. The cost of capital used as an input to ICM is based on an  
16 economic definition of the cost of capital. This definition utilizes  
17 current costs of debt and equity, which reflect the expected future risk  
18 faced by investors in a company, and the market value percentages  
19 of debt and equity in a company's capital structure. This differs from  
20 the "traditional" –and now outmoded--regulatory view, which defines  
21 the cost of capital using the embedded cost of debt, the book values  
22 of debt and equity in a company's capital structure, and the historical  
23 risk faced by investors in a company. The economic cost of capital  
24 method is also consistent with how competitive firms calculate the  
25 cost of capital to determine the required rate of return on their



1 investments.

2

3 This market-based approach to determining the cost of capital was  
4 embraced by the FCC in its 1996 Interconnection Order. There, the  
5 FCC made clear that the market-based costs of capital (debt and  
6 equity) needed to support investments required to produce a given  
7 element shall be included in the market-based direct cost of that  
8 element. (Local Competition Provisions in the Telecomm. Act of  
9 1996, CC Dkt. No. 96-98, at para. 691 (Aug. 8, 1996).)

10

11 **Q. WHAT HAS OCCURRED IN THE TELECOMMUNICATIONS**  
12 **INDUSTRY TO INCREASE THE RISKINESS OF INVESTMENTS**  
13 **AND CHANGE THE TRADITIONAL REGULATORY MODEL?**

14 A. Since 1994, investors have increased their expected return on equity  
15 for telecommunications companies. In addition, the amount of  
16 leverage utilized by telecommunications companies, as well as  
17 companies in other industries, has decreased sharply. (For example,  
18 GTE Corporation's common equity ratio was 67.6% at December 31,  
19 1994, as compared with 76.3% at December 31, 1998.) The  
20 reduction in leverage utilization is also in line with investor  
21 expectations. These changes in expectations are due to significant  
22 increases in the business risk of telecommunications companies.

23

24 To this end, passage of the Telecommunications Act of 1996 ("Act")  
25 has transformed the "traditional" regulatory model. The removal of

1 entry barriers to the local exchange market, as well as rapid advances  
2 in telecommunications technologies, have promoted competition for  
3 local exchange services, particularly in lucrative business markets.  
4 The likelihood of stranded investment for incumbent local exchange  
5 companies has increased substantially due to facilities-based  
6 competition and innovations in providing telecommunications  
7 services. The resulting increase in business risk has caused investors  
8 to demand a higher risk premium for telecommunications  
9 investments, an effect recognized by the FCC:

10  
11 ... incumbent LECs face potential competition as a  
12 result of the Act that they did not face previously. This  
13 potential competition could increase the risks facing the  
14 incumbent LECs, and thus increase their cost of capital.

15  
16 *(In the Matter of Access Reform, Third R&O and NOI,*  
17 *FCC 96-488, at para. 228 (Dec. 24, 1996).)*

18  
19 **Q. IS THERE DATA TO SUPPORT YOUR CONCLUSION ABOUT**  
20 **INCREASED COMPETITION IN LOCAL EXCHANGE MARKETS?**

21 A. Increased competition in the local exchange markets is well  
22 documented. The FCC Common Carrier Bureau's most recent report  
23 on local competition states that by year-end 1998:

24  
25 (1) Local service revenues for Competitive Local Exchange

1 Companies ("CLECs") increased to \$3.6 billion, from \$2.2  
2 billion in 1997, and \$1.0 billion in 1996;

3

4 (2) For local services provided to other carriers for resale, CLECs  
5 generated 13.1% of all local private line and special access  
6 revenue, 35.4% of pay telephone compensation from toll  
7 carriers, and 30.4% of other local telecommunication service  
8 revenues;

9

10 (3) For local services provided to end users, CLECs generated  
11 9.7% of all local private line and special access revenue,  
12 37.9% of pay telephone coin revenue, and 8.6% of other local  
13 telecommunication service revenues;

14

15 (4) CLECs increased their amount of fiber in place about five-fold  
16 from the end of 1995 to the end of 1998, at which point they  
17 had obtained at least 16 percent of the total fiber optic capacity  
18 available to carry calls within local markets;

19

20 (5) Facilities-based CLECs were doing business in every state and  
21 in all but 18 of the nation's 193 local access and transport  
22 areas ("LATAs");

23

24 (6) CLECs were reselling about 2% of incumbent local exchange  
25 carrier lines ("ILECs"), which was up from 1% a year earlier

1 despite announcements that AT&T and MCI intended to  
2 reduce their use of resold lines;

3

4 (7) CLECs had signed collocation arrangements in ILEC switching  
5 centers serving approximately half of voice-grade customer  
6 lines in the country.

7

8 (FCC, Industry Analysis Div. of the Common Carrier Bureau, "Local  
9 Competition: August 1999" (Aug. 1999.))

10

11 The Association for Local Telecommunications Services  
12 ("ALTS"), likewise, offers "substantial evidence that the Act is  
13 working" in its 2000 annual report. The report finds that  
14 CLECs have doubled their revenues every year since 1996, for  
15 a total of \$26.9 billion during 1999. CLEC local service  
16 revenues almost doubled from \$3.5 billion in 1998 to \$6.3  
17 billion in 1999. Competitive access line growth also jumped  
18 from 5.5 million at year-end 1998 to 10.4 million at year-end  
19 1999. CLECs have invested \$30 billion in new networks since  
20 passage of the Act and are now investing over \$1 billion every  
21 month in their networks. In addition, the report shows that the  
22 CLECs are no longer small "mom and pop" operations and  
23 have little trouble finding investors. Their total capitalization  
24 has increased from \$3.1 billion in 1996 to \$86.4 billion in 1999.  
25 This excludes the capitalization of companies such as AT&T,

1 MCI WorldCom, and Level 3 Communications that do not  
2 operate primarily as CLECs. ("The State of Competition in the  
3 U.S. Local Telecommunications Marketplace," Feb. 2000.)  
4

5 **Q. IS THERE EVIDENCE THAT THIS COMPETITION EXISTS WITHIN**  
6 **THE STATE OF FLORIDA?**

7 A. Yes. With its expanding economy, Florida has been a particularly  
8 attractive target for competitive entry. The trend toward increased  
9 competition can be expected to accelerate as telecommunications  
10 markets further expand. As of April 7, 2000, there were 365 CLECs  
11 authorized to do business on a statewide basis. GTE Florida has 125  
12 interconnection and/or resale agreements with these CLECs,  
13 including 74 with collocation provisions. An additional 160 collocation  
14 agreements are pending. Sixty percent of GTE's lines are served by  
15 offices where collocators (indicating facilities-based competitors) are  
16 present. Total in-service UNE loops in GTE's territory have multiplied  
17 15 times during the last year, from 52 in January 1999 to 860 in  
18 January 2000. Resold switched access lines increased 158% over  
19 the same period (from 35,296 to 91,201).

20  
21 CLECs started to be certificated in Florida as early as 1995, even  
22 before the January 1996 opening of the local exchange market under  
23 Florida law. Intermedia Communications Inc. (ICI), the largest  
24 facilities-based CLEC in the country, is headquartered in GTE's  
25 Tampa Bay area and began local exchange operations in 1996.

1 Today, CLECs own and operate at least 20 switches in GTE's service  
2 area. Facilities-based competitors to GTE include, among others,  
3 AT&T, MCI WorldCom, ICI, Winstar, Teligent, e.spire, Time Warner,  
4 and US LEC.

5  
6 The Commission's own statistics show that CLECs have made  
7 substantial gains, particularly in the lucrative business market. The  
8 Commission's annual reports on local competition show that CLECs  
9 tripled their share of business lines from 1997 to 1998 (1998 Local  
10 Competition Report at 46), and then almost did so again from 1998  
11 to 1999 (1999 Local Competition Report at 7.) In certain areas,  
12 CLECs have captured a substantial portion of the total business  
13 access lines—for example, 15-20% in Orlando and 20-25% in nearby  
14 West Kissimmee; 10-15% in Miami, Jacksonville, and Clearwater; 15-  
15 20% in Ft. Lauderdale; 25-30% in North Cape Coral and Montverde;  
16 20-25% in Coral Springs; and 45-50% in North Key Largo. (1999  
17 Local Competition Report at Table 3-4.) Moreover, these statistics  
18 are likely to be understated, as all CLECs did not respond to the  
19 Commission's data requests associated with the reports.

20

21 **Q. WHAT ARE THE EXPECTATIONS OF INVESTMENT ANALYSTS**  
22 **RELATIVE TO COMPETITION IN THE LOCAL EXCHANGE**  
23 **MARKETS?**

24 A. Analysts' reports confirm that the CLECs' penetration of the local  
25 exchange market is rapidly accelerating. According to Salomon Smith

1 Barney, CLEC penetration of the local exchange market reached a  
2 "watershed" in the first quarter of 1998: the CLECs added more new  
3 business lines than the Regional Bell Operating Companies  
4 ("RBOCs"). ("CLECs Surpass Bells in Net Business Line Additions for  
5 the First Time," Salomon Smith Barney, May 6, 1998.) During the  
6 second quarter 1998, CLECs had a 28% share of total access line net  
7 additions, up from their 22% share during the first quarter 1998.  
8 ("Competitive Local Exchange Review: Continued Strong Growth  
9 Momentum," JP Morgan, Aug. 14, 1998.) By the close of the third  
10 quarter 1998, CLECs provided service to more than 3.7 million  
11 business lines, which represent approximately 6.7 percent of the 55  
12 million business lines in service. ("CLECs Third Quarter Review",  
13 Paine Webber, Nov. 13, 1998, at 2.) The CLECs' penetration rates  
14 in the local exchange business are substantially higher than the  
15 penetration rates of AT&T's competitors in the inter-exchange market  
16 during a comparable period following the removal of entry barriers.

17  
18 These developments are not a passing phenomenon. Future  
19 competition in the local exchange market is expected to continue to  
20 grow rapidly. The Yankee Group projects that the market share of  
21 total U.S. telecommunications revenue for pure CLECs (i.e., excluding  
22 other local service competitors such as AT&T, MCI WorldCom, Sprint  
23 and resellers) will increase from 2% in 1998 to 6% in 2004, whereas  
24 the market share for Incumbent Local Exchange Companies ("ILECs")  
25 will decrease from 32% to 17%. ("CLECs Go Local in Tier 3 Markets,"

1 Executive Summary, The Yankee Group, Dec. 1999.) PaineWebber  
2 forecasts that CLECs will capture 40 to 50 percent of total business  
3 access lines by 2007. ("Telecommunications Services" at 7, Paine  
4 Webber, July 27 1998.)

5  
6 **Q. WHAT ROLE DOES THE COST OF CAPITAL PLAY IN**  
7 **DETERMINING THE COSTS OF PROVIDING SERVICE?**

8 A. The economic cost of providing service includes both capital costs  
9 and expenses. The rate of return, or cost of capital, required by  
10 investors is a key element of consideration in a company's decision  
11 to invest in construction of facilities to provide future service.

12  
13 **Q. HOW HAVE YOU DEFINED THE REQUIRED RATE OF RETURN,**  
14 **OR COST OF CAPITAL, ASSOCIATED WITH INVESTMENT**  
15 **DECISIONS?**

16 A. GTE Florida has adopted the economic definition of the required rate  
17 of return, which is the return investors forego as a result of their  
18 investment choice relative to other available investments of equal risk.

19  
20 **Q. DOES THE REQUIRED RATE OF RETURN ON INVESTMENT**  
21 **AFFECT INVESTORS' WILLINGNESS TO INVEST IN A**  
22 **COMPANY?**

23 A. Yes. The expected return on an investment opportunity determines  
24 whether a rational investor is willing to make an investment. The cost  
25 of capital is a measure of the return that investors would expect on an



1 investment with certain risk characteristics.

2

3 **Q. HOW DOES THE RELATIVE RISK OF AN INVESTMENT AFFECT**  
4 **THE EXPECTED RATE OF RETURN?**

5 A. Investors, in general, are averse to risk. Therefore, they require a  
6 higher rate of return for investments that have greater risk relative to  
7 other investments in order to compensate for that increased risk.

8

9 **Q. WHAT ARE THE RELEVANT FACTORS THAT AN INVESTOR**  
10 **CONSIDERS WHEN EVALUATING THE RISK ASSOCIATED WITH**  
11 **AN INVESTMENT?**

12 A. Risk stems from a number of factors, the most prominent of which are  
13 financial leverage, operating leverage, and business risk.

14

15 Financial leverage reflects the capital structure of the firm and  
16 decisions related to the relative mix of debt and equity capital.  
17 Increased levels of debt relative to the assets pledged to secure that  
18 debt increases the risk that a company will not have sufficient assets  
19 to satisfy claims of debt holders in the event a company must be  
20 liquidated.

21

22 Operating leverage refers to the relative levels of fixed costs in  
23 relation to variable costs within a firm. A relatively high level of fixed  
24 costs causes a company's cash flows to be highly sensitive to  
25 changes in sales volume. This situation exists within GTE Florida due

1 to a large investment in central office, transport and loop assets to  
2 provide facilities based services.

3

4 Business risk is the uncertainty of projected revenue streams based  
5 upon external factors such as competitor actions, changes in  
6 technology, and in the case of the telecommunications industry, the  
7 regulatory environment.

8

9 **Q. HOW WOULD YOU CHARACTERIZE THE RISK FOR AN**  
10 **INVESTOR CONSIDERING AN INVESTMENT IN GTE FLORIDA?**

11 A. Investors base investment decisions primarily on expected future  
12 returns and the risk, or uncertainty, surrounding those returns. One  
13 of the key determinants of uncertainty of future returns is the  
14 expected level of competition facing a firm in the industry in which it  
15 operates. The clearly stated objective of legislative and regulatory  
16 bodies at both the state and federal level is to transition to full market  
17 competition in the telecommunications industry. This has significantly  
18 changed the risk profile for GTE Florida. Investors have reason to  
19 believe that this stated objective will be accomplished in the near  
20 future and that GTE Florida will soon operate in a fully competitive  
21 environment. Investors have incorporated this expectation into their  
22 expected risk-adjusted costs of capital for companies in the  
23 telecommunications industry.

24

25 GTE Florida's carrier of last resort status introduces additional

1           uncertainty as the industry migrates to a fully competitive local  
2           exchange market. As an incumbent LEC, GTE retains the obligation  
3           to furnish telecommunications services to all customers, even where  
4           the economic cost of providing such service is greater than the prices  
5           charged to customers. As GTE witness Trimble explains, the existing  
6           system of implicit supports for universal service does not allow for  
7           rational economic pricing. The Act recognizes this pricing anomaly  
8           and requires the development of specific, predictable, and sufficient  
9           alternative mechanisms to deal with the support of universal service.  
10          The Florida Legislature has, as yet, made no move in this direction.  
11          The failure to address this issue creates uncertainty and risk for GTE  
12          Florida.

13  
14          Rapid technological changes also characterize the  
15          telecommunications industry, with breakthroughs in switch  
16          capabilities, fiber optic and wireless technologies, as well as the  
17          convergence of the video, computer and telecommunications markets  
18          and technologies. These changes may render GTE Florida's plant  
19          obsolete prior to economic recovery of the investment, and may also  
20          reduce the cost of entry for future competitors. GTE witness  
21          Sovereign provides additional insight into how the escalating  
22          competitive environment and rapid technological changes are  
23          increasing the risk to GTE Florida's debt and equity investors.

24  
25          Given all of the factors I discuss above, an investor would consider

1 GTE Florida to face the same level of risk as any company operating  
2 in a competitive marketplace. Therefore, investors require a rate of  
3 return on investment that is commensurate with that for an investment  
4 in the stock of the average competitive firm, as can be represented by  
5 the S&P Industrials.

6  
7  
8 **III. PROXY GROUP**

9  
10 **Q. WHAT ARE THE GENERALLY ACCEPTED MODELS TO**  
11 **DETERMINE THE COST OF EQUITY FOR A COMPANY?**

12 A. The DCF model, Capital Asset Pricing Model ("CAPM"), and risk  
13 premium model are the most prevalent models used to determine a  
14 company's cost of equity. The DCF model is the most widely used of  
15 these models and is the one GTE Florida used to determine its  
16 recommended cost of equity in this proceeding.

17  
18 **Q. CAN COMMONLY ACCEPTED COST OF EQUITY MODELS BE**  
19 **APPLIED DIRECTLY TO DATA FOR GTE FLORIDA?**

20 A. No. The DCF model requires market data, such as the stock price  
21 and forecasted growth rates, specific to the company being  
22 measured. These market variables are not available for GTE Florida,  
23 since its common stock is not publicly traded. Therefore, a group of  
24 companies comparable in terms of business and financial risk to GTE  
25 Florida, as perceived by the capital markets, is required as a proxy to

1 determine the cost of equity using the DCF model. The market-based  
2 cost of capital estimates used as an input to ICM should be based on  
3 the assumption of a competitive telecommunications market. If the  
4 competitive market assumption is used to value GTE Florida's  
5 investment in network facilities on a going-forward basis, then the  
6 same assumption must also be used to measure the market-based  
7 cost of capital associated with these facilities. Thus, the basic  
8 competitive market assumption of the ICM costing principles provides  
9 support for the use of competitive firms such as the S&P Industrials  
10 to measure the cost of capital component of the long-run incremental  
11 cost of providing service.

12

13 **Q. WHAT PROXY GROUP HAS GTE FLORIDA USED IN ITS DCF**  
14 **MODEL TO ESTIMATE ITS COST OF EQUITY?**

15 A. GTE Florida used the S&P Industrials in the DCF model as the proxy  
16 group to determine its cost of equity. The S&P Industrials is a widely  
17 published list of 376 large competitive firms excluding utilities,  
18 transportation firms, and financial firms. The S&P Industrials is a  
19 large enough group of companies so that issues affecting a single  
20 member of the group, or an industry within the group, will not  
21 significantly bias the DCF model results.

22

23 **Q. WOULD A GROUP OF TELECOMMUNICATIONS HOLDING**  
24 **COMPANIES REPRESENT AN APPROPRIATE RISK PROXY FOR**  
25 **GTE FLORIDA?**

1 A. No. At this time, there are two reasons why local exchange carrier  
2 holding companies ("LECHCs") are not an appropriate risk proxy for  
3 estimating the recommended return on equity for GTE Florida. First,  
4 the business risk of the LECHCs is not identical with that of GTE  
5 Florida. Second, and more importantly, market conditions are such  
6 that the DCF model currently does not provide accurate estimates of  
7 the cost of equity for the LECHCs.

8  
9 **Q. HOW IS THE BUSINESS RISK OF THE LECHCs DIFFERENT**  
10 **FROM THAT OF GTE FLORIDA?**

11 A. Although GTE Florida's parent company, GTE Corporation, has  
12 substantial overall market value, its subsidiaries, including GTE  
13 Florida, compete in markets still dominated by the Regional Bell  
14 Holding Companies (RBHCs). The market dominance and  
15 concentration of the RBHCs' local exchange businesses differentiate  
16 them from GTE Florida. GTE Corporation and the RBHCs also may  
17 provide wireless and internet services, while GTE Florida does not.  
18 Each of these businesses is different in risk from the local exchange  
19 business. Many of the LEC holding companies, including GTE  
20 Corporation, also have significant international businesses, which  
21 have much greater business risk than a local exchange company  
22 such as GTE Florida.

23 **Q. WHY DOES THE DCF MODEL FAIL TO PROVIDE ACCURATE**  
24 **ESTIMATES OF THE COST OF EQUITY FOR THE LECHCs?**

25 A. The DCF model relies on stock price and dividend growth forecasts

1 that must be in sync to produce accurate results. However, investor  
2 reactions to the radical restructuring that is occurring among the  
3 LECHCs has caused disproportionate movements in the stock prices  
4 relative to expected earnings.

5  
6 The LECHCs are part of an industry that is experiencing radical  
7 restructuring fomented by profound regulatory and technological  
8 changes. For example, SBC Communications merged with Pacific  
9 Telesis in April 1997 and Ameritech in October 1999. US West spun  
10 off its cable TV business during June 1998 and in July 1999  
11 announced its intention to merge with Qwest Communications.  
12 BellSouth had previously purchased a 10% stake in Quest  
13 Communications International Inc. in April 1999. GTE Corporation  
14 acquired BBN Corporation in August 1997. Bell Atlantic merged with  
15 NYNEX in August 1997, and will merge with GTE Corporation this  
16 year. Bell Atlantic has formed a partnership with Vodafone AirTouch  
17 PLC that combines the U.S. wireless businesses of both companies.  
18 After completion of the GTE Corporation and Bell Atlantic merger,  
19 GTE Corporation's U.S. wireless business will be added to the  
20 partnership.

21  
22 Although the financial community expects these companies to  
23 achieve significant earnings growth as a result of their merger and  
24 restructuring activities, the projected earnings growth associated with  
25 prospective merger and restructuring activities has not yet been

1 reflected in the analysts' earnings growth forecasts. As a practice,  
2 these analysts do not update forecasts for mergers and restructuring  
3 activities until after they have been completed. However, the  
4 expected earnings growth associated with the prospective merger and  
5 restructuring activities is necessarily included in the companies' stock  
6 prices. Therefore, a DCF model that includes only LECHCs within the  
7 telecommunications industry will currently produce a downwardly-  
8 biased estimate of the cost of equity.

9  
10 This is true for rumored, as well as actual, merger and restructuring  
11 activities. In general, if it is believed that two companies are merger  
12 candidates, investors will bid up the stock price for the company being  
13 acquired and bid down the stock price for the surviving company in  
14 anticipation of merger-related revenue and cost saving opportunities.

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16 **IV. COST OF DEBT**

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18 **Q. HOW HAS THE MARKET-BASED COST OF DEBT BEEN DEFINED**  
19 **IN GTE FLORIDA'S STUDY?**

20 **A.** The market-based cost of debt has been defined as the current  
21 market interest rate that a firm would have to pay on newly issued  
22 debt obligations. This is consistent with the economic definition of the  
23 cost of debt, and thus is market-based. The 7.03% average for newly  
24 issued "A" rated Industrial Bond yields as reported in the April 1999  
25 issue of Moody's Bond Record was used as the cost of debt in GTE



1 Florida's cost study. The rating of "A" was chosen because it is the  
2 most prevalent rating of the S&P Industrials. Yields on these bonds  
3 have increased substantially since this study was prepared, averaging  
4 7.87% during February 2000 and 7.84% during March 2000.

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6 **V. COST OF EQUITY**

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8 **Q. HOW WAS THE MARKET-BASED COST OF EQUITY**  
9 **DETERMINED IN GTE FLORIDA'S DCF MODEL?**

10 A. The market-based cost of equity was based on the average quarterly  
11 DCF model results applied to the S&P Industrials.

12  
13 **Q. WHAT WERE THE RESULTS OF GTE FLORIDA'S DCF MODEL?**

14 A. GTE Florida's DCF model resulted in a 14.36% weighted cost of  
15 equity for GTE Florida, as shown on Exhibit GDJ-2.

16  
17 **VI. CAPITAL STRUCTURE**

18  
19 **Q. HOW WERE THE PERCENTAGES OF DEBT AND EQUITY**  
20 **DEFINED IN GTE FLORIDA'S CAPITAL STRUCTURE?**

21 A. The percentages of debt and equity in the capital structure presented  
22 are aligned with those used by economists. (See, for example,  
23 Copeland & Weston, Financial Theory and Corporate Policy, 3d ed.,  
24 chap. 13 (1988); Brealey & Myers, Principles of Corporate Finance,  
25 4<sup>th</sup> ed., chap. 9 at 190 (1991); Higgins, Analysis for Financial

1 Management, 4<sup>th</sup> ed., chap. 8 (1995).) The calculations were based  
2 on the market values of the debt and equity for the S&P Industrials.

3

4 **Q. WHY WAS THE CAPITAL STRUCTURE MEASURED IN TERMS OF**  
5 **THE MARKET VALUES OF ITS DEBT AND EQUITY?**

6 A. Economists measure a firm's capital structure in terms of the market  
7 values of its debt and equity because that is the best measure of the  
8 amounts of debt and equity that have been invested in a company on  
9 a going-forward basis. Measuring a firm's capital structure in terms  
10 of market value allows its managers to choose a financing strategy  
11 that maximizes the value of the firm, where the value of the firm is the  
12 sum of the market value of the firm's debt and equity.

13

14 **Q. HOW DOES THE MARKET-BASED COST OF DEBT DIFFER FROM**  
15 **A COMPANY'S EMBEDDED COST OF DEBT?**

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

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25 **Q. HOW DOES THE MARKET VALUE DIFFER FROM THE BOOK**

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**VALUE OF A COMPANY'S DEBT?**

A. The market value of a company's debt represents the current price in the capital markets of a 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 current interest rates are approximately equal to the average interest rate of a company's previous debt issuances.

**Q. HOW DOES THE MARKET VALUE DIFFER FROM THE BOOK VALUE OF A COMPANY'S EQUITY?**

A. The market value of a company's equity reflects the market price of a company's stock times the number of shares outstanding. Market value measures the current market value of investors' equity position in a company. The book value of equity 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 a 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. WHAT RATIONALE DID REGULATORS USE IN THE PAST TO JUSTIFY THE USE OF THE BOOK VALUE OF A COMPANY'S**

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**EQUITY IN THE DETERMINATION OF THE WEIGHTED AVERAGE  
COST OF CAPITAL?**

A. The utilization of a book-based capital structure by regulators is based on the assumption that the market value and book value of common equity are approximately the same. This assumption was developed on market conditions prevalent in the early to late 1980s that no longer hold true. The use of a book-based capital structure in determining a company's weighted average cost of capital thus has no basis in economic or financial theory.

**Q. WHY IS THIS ASSUMPTION UNDERLYING USE OF A BOOK-  
BASED CAPITAL STRUCTURE NO LONGER VALID?**

A. During 1984, when the RBHCs were spun off from AT&T, the market to book ratio of the LECHCs was 1.0. This means the market and the book value of common equity were virtually the same. At that time, the percentage of common equity in the capital structures of the LECs and the LECHCs was also approximately the same. For example, GTE Corporation's capital structure was comprised of 47.7% and 47.1% common equity on a market value and book value basis, respectively, as of December 31, 1984. (See GTE Corporation's 1984 Annual Report to Shareholders.) In the late 1980s and 1990s, however, this relationship changed dramatically. By the end of 1998 the market to book ratio was 7.0; the market value was seven times the book value of the LECHCs' common equity (based on 1986 to 1998 annual data in the Compustat and Bloomberg databases,

1 compiled from companies' 10K filings with the Securities and  
2 Exchange Commission). GTE Corporation's capital structure was  
3 comprised of 76.3% common equity on a market value basis and  
4 35.5% common equity on a book value basis, respectively, as of  
5 December 31, 1998. Consequently, the weighted average cost of  
6 capital and returns anticipated by investors of the LECHCs is  
7 substantially understated when using a book-based capital structure  
8 in the calculation. Thus, it is now necessary to deviate from the prior  
9 regulatory paradigm by adopting a market-based approach in  
10 measuring the weighted average cost of capital. Only in this manner  
11 will LECs be provided a reasonable rate of return.

12

13 The average telecommunications company had an average market  
14 capital structure comprised of 81.1% equity for the 5-year period from  
15 1994 to 1998 (*Ibid.*) This is slightly higher than the 77.8% average for  
16 the Standard & Poor's Industrials companies, which was utilized to  
17 calculate the market-based weighted average cost of capital shown  
18 on Exhibit GDJ-1.

19

20 **Q. HOW WAS THE COST OF CAPITAL CALCULATED BY THE**  
21 **COMPANY IN THIS PROCEEDING?**

22 A. GTE Florida's weighted average cost of capital was calculated using  
23 the market-based percentages of debt and equity in the capital  
24 structures of competitive firms, the current cost of debt, and the  
25 current required rate of return on competitive investments of

1 comparable risk.

2

3 **Q. WHAT METHODOLOGY WAS USED FOR MEASURING THE**  
4 **MARKET-BASED PERCENTAGES OF DEBT AND EQUITY IN THE**  
5 **CAPITAL STRUCTURE?**

6 A. The average capital structure of the S&P Industrials for the five years  
7 ended December 31, 1998 was used to calculate the average market-  
8 based percentages of debt and equity. The market value of the S&P  
9 Industrials' equity for each year was measured by multiplying the  
10 closing stock price for each company at the close of each year by the  
11 number of shares outstanding at the close of each year. The market  
12 value of the S&P Industrials' debt was measured based upon each  
13 company's book value of debt at the close of each year. Since the  
14 average embedded coupon interest rates for the debt of these  
15 companies are approximately equal to current market interest rates,  
16 the market value of the companies' debt will approximately equal the  
17 book value of the companies' debt.

18

19 **Q. WHAT IS THE RATIONALE FOR USING THE AVERAGE**  
20 **MARKET-BASED PERCENTAGES OF DEBT AND EQUITY IN**  
21 **THE CAPITAL STRUCTURES OF THE S&P INDUSTRIALS AS**  
22 **AN APPROXIMATION OF THE DEBT AND EQUITY**  
23 **PERCENTAGE OF GTE FLORIDA?**

24 A. As the Massachusetts Commission succinctly concluded, "it would be  
25 inconsistent to use forward-looking competitive assumptions in the

1 investment and expense components of a TELRIC study, but  
2 historical accounting-based capital structures in the cost of capital  
3 component” (Order in Docket Nos. DPU 96-73/74, 96-75, 96-80-81,  
4 96-83, 96-94, at 53.) The average market-based capital structures of  
5 the S&P Industrials is a good proxy for the capital structure of  
6 competitive firms on a market-based economic basis.

7

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

10 A. As shown in Exhibit GDJ-3, the weighted average market-based  
11 capital structure of the S&P Industrials from 1994 to 1998 contains  
12 22.17 percent debt and 77.83 percent equity.

13

14 **Q. IS THE MARKET-BASED CAPITAL STRUCTURE OF GTE**  
15 **FLORIDA AND OTHER TELECOMMUNICATIONS COMPANIES**  
16 **COMPARABLE TO THE AVERAGE MARKET-BASED CAPITAL**  
17 **STRUCTURE OF THESE COMPETITIVE FIRMS?**

18 A. Yes. As shown in Exhibit GDJ-4, the average market value capital  
19 structures of the incumbent local exchange companies, the S&P  
20 Industrials, and the inter-exchange carriers for the five-year period  
21 beginning December 31, 1994 through December 31, 1998 are  
22 comparable. These data show that each of these groups has on  
23 average approximately 80 percent equity in their capital structures.

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25 **Q. WHAT IS YOUR RECOMMENDED TARGET MARKET VALUE**

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**CAPITAL STRUCTURE FOR USE IN GTE FLORIDA'S FORWARD-  
LOOKING COST STUDIES?**

A. Based on my examination of these data, I recommend that the capital structure of the S&P Industrials, which contains 22.17 percent debt and 77.83 percent equity, be used in this proceeding.

**VII. CONCLUSION**

**Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE  
APPROPRIATE COST OF CAPITAL TO BE USED FOR GTE  
FLORIDA IN THIS PROCEEDING?**

A. The traditional methods of setting an authorized regulatory rate of return cannot be used to determine a forward-looking cost of capital. The appropriate forward-looking WACC to be used for GTE Florida in this proceeding is 12.74%, reflecting a 7.03% cost of debt and a 14.36% cost of equity, and based on a capital structure containing 22.17% debt and 77.83% equity.

**Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

A. Yes.



# STANDARD & POOR'S INDUSTRIALS WEIGHTED AVERAGE COST OF CAPITAL

	<u>Percent</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>
Debt	22.17%	7.03% (1)	1.56%
Equity	77.83%	14.36%	11.18%
Total	<u>100.00%</u>		<u>12.74%</u>

(1) Average April 1999 "A" Rated Industrial Bond Yield - May 1999 Moody's Bond Record.

**STANDARD & POOR'S INDUSTRIALS  
QUARTERLY DISCOUNTED CASH FLOW MODEL**

Ticker	Comparable Firm	Average Stock Price Apr 1999	Current Quarterly Dividend	Mean IBES Annual Long-Term Growth Forecasts	Cost of Equity	Market Weight	Weighted Cost of Equity
ABT	ABBOTT LABORATORIES	\$49.656	\$0.146	11.845%	13.24%	2.2662%	0.30%
AET	AETNA INC	\$84.500	\$0.200	13.875%	15.01%	0.3389%	0.05%
APD	AIR PRODUCTS & CHEMICALS INC	\$40.688	\$0.160	11.933%	13.80%	0.2580%	0.04%
ABS	ALBERTSON'S INC	\$51.625	\$0.170	13.716%	15.30%	0.4774%	0.07%
AGN	ALLERGAN INC	\$64.125	\$0.130	15.333%	16.32%	0.1311%	0.02%
ALD	ALLIEDSIGNAL INC	\$55.125	\$0.150	13.957%	15.27%	0.7549%	0.12%
AT	ALLTEL CORP	\$67.406	\$0.294	12.880%	14.97%	0.5020%	0.08%
AHC	AMERADA HESS CORP	\$53.969	\$0.150	13.143%	14.47%	0.1371%	0.02%
AM	AMERICAN GREETINGS CORP-CL A	\$24.813	\$0.178	10.400%	13.77%	0.0892%	0.01%
AHP	AMERICAN HOME PRODUCTS CORP	\$64.563	\$0.218	12.244%	13.85%	2.2571%	0.31%
APC	ANADARKO PETROLEUM CORP	\$38.969	\$0.047	14.313%	14.89%	0.1153%	0.02%
ACK	ARMSTRONG WORLD INDS INC	\$50.813	\$0.470	11.125%	15.52%	0.0736%	0.01%
ARC	ATLANTIC RICHFIELD CO	\$79.250	\$0.713	10.088%	14.32%	0.6408%	0.09%
AUD	AUTOMATIC DATA PROCESSING	\$43.063	\$0.064	14.693%	15.41%	0.7390%	0.11%
AVY	AVERY DENNISON CORP	\$62.563	\$0.218	13.333%	15.00%	0.1582%	0.02%
BCR	BARD (C.R.) INC	\$51.375	\$0.185	12.091%	13.80%	0.0778%	0.01%
ABX	BARRICK GOLD CORP	\$18.563	\$0.045	14.575%	15.75%	0.2243%	0.04%
BAX	BAXTER INTERNATIONAL INC	\$64.531	\$0.291	12.286%	14.43%	0.5618%	0.08%
BDX	BECTON DICKINSON & CO	\$39.094	\$0.073	14.000%	14.90%	0.3228%	0.05%
BEL	BELL ATLANTIC CORP	\$55.375	\$0.385	9.413%	12.65%	2.5966%	0.33%
BMS	BEMIS COMPANY	\$34.969	\$0.220	12.000%	15.00%	0.0605%	0.01%
BFO	BESTFOODS	\$49.063	\$0.264	10.846%	13.38%	0.4588%	0.06%
BMET	BIOMET INC	\$42.563	\$0.028	14.825%	15.14%	0.1376%	0.02%
BDK	BLACK & DECKER CORP	\$58.172	\$0.120	13.578%	14.57%	0.1496%	0.02%
BMY	BRISTOL-MYERS SQUIBB CO	\$63.344	\$0.146	12.763%	13.86%	4.0592%	0.56%
BFI	BROWNING-FERRIS INDS	\$39.906	\$0.143	11.111%	12.80%	0.1408%	0.02%
BC	BRUNSWICK CORP	\$21.094	\$0.125	12.300%	15.13%	0.0694%	0.01%
BR	BURLINGTON RESOURCES INC	\$42.656	\$0.138	13.750%	15.31%	0.1938%	0.03%
CPB	CAMPBELL SOUP CO	\$41.781	\$0.206	11.033%	13.36%	0.7517%	0.10%
CTL	CENTURYTEL INC	\$43.594	\$0.043	13.610%	14.08%	0.1896%	0.03%
CLX	CLOROX COMPANY	\$118.625	\$0.320	13.238%	14.53%	0.3664%	0.05%
KO	COCA-COLA COMPANY	\$63.531	\$0.150	14.194%	15.33%	5.0394%	0.77%
CL	COLGATE-PALMOLIVE CO	\$97.313	\$0.275	13.614%	14.97%	0.8293%	0.12%
COL	COLUMBIA HCA HEALTHCARE CORP	\$21.656	\$0.020	13.929%	14.37%	0.4606%	0.07%
CMCSK	COMCAST CORP-SPECIAL CL A	\$32.375	\$0.012	14.317%	14.50%	0.6620%	0.10%
CAG	CONAGRA INC	\$24.531	\$0.151	11.422%	14.34%	0.4616%	0.07%
CBE	COOPER INDUSTRIES INC	\$48.594	\$0.330	10.773%	13.97%	0.1371%	0.02%
CR	CRANE CO	\$27.281	\$0.083	13.000%	14.45%	0.0630%	0.01%
CYM	CYPRUS AMAX MINERALS CO	\$13.719	\$0.200	7.000%	13.72%	0.0275%	0.00%
DCN	DANA CORP	\$44.938	\$0.285	11.950%	14.97%	0.2066%	0.03%
DH	DAYTON HUDSON CORP	\$69.000	\$0.090	15.464%	16.10%	0.7246%	0.12%
DE	DEERE & CO	\$41.844	\$0.220	10.200%	12.66%	0.2330%	0.03%
DNY	DONNELLEY (R.R.) & SONS CO	\$33.469	\$0.205	11.688%	14.60%	0.1795%	0.03%
DOV	DOVER CORP	\$35.656	\$0.100	12.343%	13.68%	0.2463%	0.03%
DJ	DOW JONES & CO INC	\$51.156	\$0.240	12.113%	14.34%	0.1350%	0.02%
EK	EASTMAN KODAK CO	\$69.531	\$0.440	9.927%	12.89%	0.7090%	0.09%
ECL	ECOLAB INC	\$38.844	\$0.098	14.800%	16.02%	0.1429%	0.02%
EGG	EG&G INC	\$29.688	\$0.140	11.750%	13.99%	0.0380%	0.01%
EDS	ELECTRONIC DATA SYSTEMS CORP	\$51.500	\$0.150	14.247%	15.65%	0.7550%	0.12%
EMR	EMERSON ELECTRIC CO	\$57.969	\$0.295	11.200%	13.60%	0.8088%	0.11%
EC	ENGELHARD CORP	\$18.000	\$0.100	11.875%	14.52%	0.0852%	0.01%

**STANDARD & POOR'S INDUSTRIALS  
 QUARTERLY DISCOUNTED CASH FLOW MODEL**

Ticker	Comparable Firm	Average Stock Price Apr 1999	Current Quarterly Dividend	Mean IBES Annual Long-Term Growth Forecasts	Cost of Equity	Market Weight	Weighted Cost of Equity
FDC	FIRST DATA CORP	\$42.563	\$0.020	13.300%	13.52%	0.4235%	0.06%
FLR	FLUOR CORP	\$32.219	\$0.200	12.563%	15.53%	0.0980%	0.02%
F	FORD MOTOR COMPANY	\$61.938	\$0.430	9.900%	13.15%	2.1699%	0.29%
FJ	FORT JAMES CORPORATION	\$35.875	\$0.150	13.167%	15.17%	0.2691%	0.04%
FO	FORTUNE BRANDS INC	\$40.781	\$0.213	12.100%	14.59%	0.1649%	0.02%
GCI	GANNETT CO	\$68.688	\$0.195	11.607%	12.95%	0.5490%	0.07%
GE	GENERAL ELECTRIC CO.	\$108.813	\$0.313	13.406%	14.79%	10.1792%	1.51%
GIS	GENERAL MILLS INC	\$76.500	\$0.530	9.806%	13.04%	0.3672%	0.05%
G	GILLETTE COMPANY	\$54.688	\$0.123	14.586%	15.67%	1.6123%	0.25%
GTE	GTE CORP	\$64.125	\$0.470	9.723%	13.15%	1.9195%	0.25%
H	HARCOURT GENERAL INC	\$64.125	\$0.193	14.000%	15.45%	0.1408%	0.02%
HRS	HARRIS CORP	\$31.781	\$0.220	11.000%	14.27%	0.0894%	0.01%
HAS	HASBRO INC	\$31.219	\$0.053	14.000%	14.82%	0.1441%	0.02%
HNZ	HEINZ (H.J.) CO	\$47.750	\$0.309	10.725%	13.77%	0.6278%	0.09%
HP	HELMERICH & PAYNE	\$23.375	\$0.069	13.000%	14.41%	0.0292%	0.00%
HPC	HERCULES INC	\$31.719	\$0.270	10.911%	14.94%	0.0838%	0.01%
HWP	HEWLETT-PACKARD CO.	\$73.313	\$0.150	14.785%	15.78%	2.1161%	0.33%
HON	HONEYWELL INC	\$85.250	\$0.283	12.300%	13.88%	0.2902%	0.04%
ITW	ILLINOIS TOOL WORKS	\$69.813	\$0.135	14.555%	15.49%	0.4426%	0.07%
IR	INGERSOLL-RAND CO	\$60.438	\$0.150	12.464%	13.64%	0.2370%	0.03%
IPG	INTERPUBLIC GROUP COS INC	\$75.031	\$0.145	14.511%	15.45%	0.3395%	0.05%
IBM	INTL BUSINESS MACHINES CORP	\$94.563	\$0.108	12.658%	13.20%	5.1517%	0.68%
IFF	INTL FLAVORS & FRAGRANCES	\$38.375	\$0.373	9.250%	13.79%	0.1430%	0.02%
IIN	ITT INDUSTRIES INC	\$38.188	\$0.150	11.556%	13.41%	0.1164%	0.02%
JNJ	JOHNSON & JOHNSON	\$95.938	\$0.243	12.750%	13.96%	3.4391%	0.48%
KMB	KIMBERLY-CLARK CORP	\$55.625	\$0.250	12.214%	14.35%	0.8950%	0.13%
KWP	KING WORLD PRODUCTIONS INC	\$33.938	\$0.250	9.367%	12.80%	0.0650%	0.01%
KRI	KNIGHT RIDDER INC	\$52.375	\$0.200	11.483%	13.29%	0.1222%	0.02%
LTD	LIMITED INC	\$41.781	\$0.130	12.929%	14.42%	0.2424%	0.03%
MKG	MALLINCKRODT INC	\$30.656	\$0.165	11.250%	13.79%	0.0688%	0.01%
MAS	MASCO CORP	\$28.813	\$0.108	14.100%	15.91%	0.2976%	0.05%
MAY	MAY DEPARTMENT STORES CO	\$40.219	\$0.212	11.017%	13.50%	0.4255%	0.06%
MYG	MAYTAG CORP	\$64.750	\$0.170	12.857%	14.11%	0.1693%	0.02%
MCD	MCDONALD'S CORPORATION	\$44.281	\$0.044	13.572%	14.05%	1.5890%	0.22%
MHP	MCGRAW-HILL COMPANIES INC	\$56.625	\$0.196	11.555%	13.19%	0.3063%	0.04%
MRK	MERCK & CO., INC.	\$76.500	\$0.248	12.928%	14.48%	5.3107%	0.77%
MDP	MEREDITH CORP	\$34.313	\$0.068	14.000%	14.95%	0.0604%	0.01%
MZ	MILACRON INC	\$19.313	\$0.120	11.877%	14.83%	0.0222%	0.00%
MMM	MINNESOTA MINING & MFG CO	\$80.531	\$0.550	10.623%	13.84%	0.8721%	0.12%
MCL	MOORE CORP LTD	\$10.063	\$0.096	10.000%	14.49%	0.0297%	0.00%
NLC	NALCO CHEMICAL CO	\$31.750	\$0.250	9.688%	13.37%	0.0619%	0.01%
NSI	NATIONAL SERVICE INDS INC	\$37.063	\$0.308	11.500%	15.45%	0.0481%	0.01%
NYT	NEW YORK TIMES CO -CL A	\$31.125	\$0.093	12.615%	14.04%	0.1922%	0.03%
NOBE	NORDSTROM INC	\$39.719	\$0.075	15.313%	16.23%	0.1613%	0.03%
NUE	NUCOR CORP	\$52.844	\$0.120	14.113%	15.21%	0.1151%	0.02%
OMC	OMNICOM GROUP	\$77.969	\$0.131	15.188%	16.01%	0.2983%	0.05%
PCAR	PACCAR INC	\$50.438	\$0.550	8.600%	13.67%	0.0980%	0.01%
PH	PARKER HANNIFIN CORP	\$42.281	\$0.150	11.045%	12.71%	0.1098%	0.01%
PEP	PEPSICO INC	\$38.781	\$0.129	14.022%	15.63%	1.8343%	0.29%
PNU	PHARMACIA & UPJOHN INC	\$60.313	\$0.270	12.988%	15.13%	0.8775%	0.13%
P	PHILLIPS PETROLEUM CO	\$49.656	\$0.340	10.209%	13.42%	0.3277%	0.04%

**STANDARD & POOR'S INDUSTRIALS  
QUARTERLY DISCOUNTED CASH FLOW MODEL**

Ticker	Comparable Firm	Average Stock Price Apr 1999	Current Quarterly Dividend	Mean IBES Annual Long-Term Growth Forecasts	Cost of Equity	Market Weight	Weighted Cost of Equity	
PHB	PIONEER HI-BRED INTL INC	\$37.219	\$0.090	14.110%	15.28%	0.1943%	0.03%	
PBI	PITNEY BOWES INC	\$67.438	\$0.225	13.100%	14.70%	0.5449%	0.08%	
PRD	POLAROID CORP	\$20.500	\$0.150	10.000%	13.43%	0.0251%	0.00%	
PCH	POTLATCH CORP	\$38.625	\$0.435	8.000%	13.21%	0.0325%	0.00%	
PPG	PPG INDUSTRIES INC	\$56.813	\$0.355	10.000%	12.92%	0.3106%	0.04%	
PX	PRAXAIR INC	\$43.375	\$0.125	13.000%	14.38%	0.1694%	0.02%	
PG	PROCTER & GAMBLE CO	\$96.844	\$0.253	13.180%	14.43%	3.7255%	0.54%	
PHM	PULTE CORP	\$22.750	\$0.038	12.583%	13.38%	0.0366%	0.00%	
RAL	RALSTON-RALSTON PURINA GROUP	\$28.500	\$0.100	11.333%	12.99%	0.3062%	0.04%	
RYC	RAYCHEM CORP	\$27.719	\$0.075	14.333%	15.64%	0.0817%	0.01%	
RLM	REYNOLDS METALS CO	\$57.594	\$0.350	9.829%	12.67%	0.1036%	0.01%	
RML	RUSSELL CORP	\$20.625	\$0.140	11.714%	14.94%	0.0220%	0.00%	
SLE	SARA LEE CORP	\$23.719	\$0.113	12.738%	15.02%	0.7923%	0.12%	
SBC	SBC COMMUNICATIONS INC	\$52.500	\$0.231	11.571%	13.65%	3.2053%	0.44%	
VO	SEAGRAM CO LTD	\$57.406	\$0.165	13.600%	14.98%	0.4024%	0.06%	
S	SEARS, ROEBUCK & CO	\$43.844	\$0.230	11.790%	14.28%	0.4972%	0.07%	
SRV	SERVICE CORP INTERNATIONAL	\$17.375	\$0.086	13.222%	15.60%	0.3010%	0.05%	
SHW	SHERWIN-WILLIAMS CO	\$30.125	\$0.113	12.445%	14.23%	0.1529%	0.02%	
SNA	SNAP-ON INC	\$31.406	\$0.215	11.400%	14.65%	0.0697%	0.01%	
SWK	STANLEY WORKS	\$30.188	\$0.208	11.857%	15.14%	0.0752%	0.01%	
SVU	SUPERVALU INC	\$21.125	\$0.132	10.750%	13.69%	0.1028%	0.01%	
SYI	SYSCO CORP	\$27.750	\$0.081	13.040%	14.44%	0.2804%	0.04%	
TEK	TEKTRONIX INC	\$25.813	\$0.115	12.429%	14.55%	0.0462%	0.01%	
TX	TEXACO INC	\$60.125	\$0.450	11.018%	14.56%	0.8644%	0.13%	
TXT	TEXTRON INC	\$86.594	\$0.285	14.333%	15.93%	0.3585%	0.06%	
TWX	TIME WARNER INC	\$69.313	\$0.045	14.720%	15.03%	2.2248%	0.33%	
TMC	TIMES MIRROR CO-CL A	\$58.344	\$0.180	13.214%	14.69%	0.1254%	0.02%	
TKR	TIMKEN CO	\$19.188	\$0.180	10.000%	14.41%	0.0356%	0.01%	
TRB	TRIBUNE CO	\$75.563	\$0.170	12.900%	13.97%	0.2404%	0.03%	
TRW	TRW INC	\$43.875	\$0.315	9.811%	13.17%	0.2051%	0.03%	
UPR	UNION PACIFIC RESOURCES GRP	\$12.938	\$0.050	12.520%	14.36%	0.0693%	0.01%	
UNH	UNITED HEALTHCARE CORP	\$50.750	\$0.008	15.806%	15.88%	0.2416%	0.04%	
UTX	UNITED TECHNOLOGIES CORP	\$70.328	\$0.174	13.536%	14.72%	0.7466%	0.11%	
UST	UST INC	\$26.875	\$0.405	9.000%	16.08%	0.1937%	0.03%	
WMT	WAL-MART STORES INC	\$48.297	\$0.039	14.435%	14.82%	5.5675%	0.83%	
WEN	WENDY'S INTERNATIONAL INC	\$64.125	\$0.060	14.827%	15.28%	0.2153%	0.03%	
WHR	WHIRLPOOL CORP	\$59.938	\$0.340	10.878%	13.55%	0.1292%	0.02%	
WWY	WRIGLEY (WM.) JR CO	\$92.813	\$0.325	11.800%	13.46%	0.3172%	0.05%	
Average					12.35%	14.41%	100.0000%	14.36%

Note: Flotation cost factor is assumed to be 5%. Average stock price is average of high and low closing prices for April 1999.  
Source: Bloomberg database, May 28, 1999.

**STANDARD & POOR'S INDUSTRIALS**  
**CAPITAL STRUCTURE**  
**DECEMBER 31, 1994 - DECEMBER 31, 1998**  
(Millions of Dollars)

Ticker	Comparable Firm	Average Debt	Average Common Equity Market Value	Debt Ratio	Equity Ratio
ABT	ABBOTT LABORATORIES	\$2,135.876	\$44,523.439	4.58%	95.42%
AET	AETNA INC	\$2,263.680	\$9,331.181	19.52%	80.48%
APD	AIR PRODUCTS & CHEMICALS INC	\$2,057.020	\$7,216.831	22.18%	77.82%
ABS	ALBERTSON'S INC	\$916.700	\$10,433.705	8.08%	91.92%
AGN	ALLERGAN INC	\$233.340	\$3,089.393	7.02%	92.98%
ALD	ALLIEDSIGNAL INC	\$2,284.400	\$17,684.867	11.44%	88.56%
AT	ALLTEL CORP	\$2,557.010	\$8,960.661	22.20%	77.80%
AHC	AMERADA HESS CORP	\$2,576.058	\$4,812.654	34.86%	65.14%
AM	AMERICAN GREETINGS CORP-CL A	\$287.126	\$2,401.485	10.68%	89.32%
AHP	AMERICAN HOME PRODUCTS CORP	\$6,624.886	\$42,177.709	13.57%	86.43%
APC	ANADARKO PETROLEUM CORP	\$899.314	\$3,347.098	21.18%	78.82%
ACK	ARMSTRONG WORLD INDS INC	\$567.980	\$2,398.883	19.14%	80.86%
ARC	ATLANTIC RICHFIELD CO	\$7,519.400	\$20,437.546	26.90%	73.10%
AUD	AUTOMATIC DATA PROCESSING	\$447.576	\$14,691.922	2.96%	97.04%
AVY	AVERY DENNISON CORP	\$464.380	\$3,875.020	10.70%	89.30%
BCR	BARD (C.R.) INC	\$331.200	\$1,858.115	15.13%	84.87%
ABX	BARRICK GOLD CORP	\$404.160	\$8,460.890	4.56%	95.44%
BAX	BAXTER INTERNATIONAL INC	\$2,730.000	\$12,343.385	18.11%	81.89%
BDX	BECTON DICKINSON & CO	\$849.930	\$6,059.910	12.30%	87.70%
BEL	BELL ATLANTIC CORP	\$15,128.580	\$51,396.685	22.74%	77.26%
BMS	BEMIS COMPANY	\$257.960	\$1,764.753	12.75%	87.25%
BFO	BESTFOODS	\$2,393.600	\$11,295.480	17.49%	82.51%
BMET	BIOMET INC	\$4.080	\$2,554.476	0.16%	99.84%
BDK	BLACK & DECKER CORP	\$1,934.780	\$3,301.614	36.95%	63.05%
BMY	BRISTOL-MYERS SQUIBB CO	\$1,545.200	\$70,864.934	2.13%	97.87%
BFI	BROWNING-FERRIS INDS	\$2,087.476	\$5,778.865	26.54%	73.46%
BC	BRUNSWICK CORP	\$554.840	\$2,360.764	19.03%	80.97%
BR	BURLINGTON RESOURCES INC	\$1,639.692	\$6,517.876	20.10%	79.90%
CPB	CAMPBELL SOUP CO	\$1,910.400	\$18,766.247	9.24%	90.76%
CTL	CENTURYTEL INC	\$1,452.676	\$2,908.917	33.31%	66.69%
CLX	CLOROX COMPANY	\$640.648	\$6,448.280	9.04%	90.96%
KO	COCA-COLA COMPANY	\$4,163.800	\$123,841.157	3.25%	96.75%
CL	COLGATE-PALMOLIVE CO	\$2,739.360	\$16,373.704	14.33%	85.67%
COL	COLUMBIA HCA HEALTHCARE CORP	\$7,239.000	\$19,181.188	27.40%	72.60%
CMCSK	COMCAST CORP-SPECIAL CL A	\$6,079.784	\$9,379.436	39.33%	60.67%
CAG	CONAGRA INC	\$2,954.280	\$12,177.883	19.52%	80.48%
CBE	COOPER INDUSTRIES INC	\$1,579.820	\$4,574.669	25.67%	74.33%
CR	CRANE CO	\$329.198	\$1,457.124	18.43%	81.57%
CYM	CYPRUS AMAX MINERALS CO	\$2,042.000	\$1,875.899	52.12%	47.88%
DCN	DANA CORP	\$2,435.920	\$4,640.908	34.42%	65.58%
DH	DAYTON HUDSON CORP	\$4,845.800	\$11,471.418	29.70%	70.30%
DE	DEERE & CO	\$6,017.520	\$9,519.208	38.73%	61.27%
DNY	DONNELLEY (R.R.) & SONS CO	\$1,315.374	\$5,356.316	19.72%	80.28%

**STANDARD & POOR'S INDUSTRIALS**  
**CAPITAL STRUCTURE**  
**DECEMBER 31, 1994 - DECEMBER 31, 1998**  
(Millions of Dollars)

Ticker	Comparable Firm	Average Debt	Average Common Equity Market Value	Debt Ratio	Equity Ratio
DOV	DOVER CORP	\$736.204	\$5,783.336	11.29%	88.71%
DJ	DOW JONES & CO INC	\$256.354	\$3,939.481	6.11%	93.89%
EK	EASTMAN KODAK CO	\$1,320.000	\$21,767.137	5.72%	94.28%
ECL	ECOLAB INC	\$217.568	\$2,811.310	7.18%	92.82%
EGG	EG&G INC	\$153.330	\$1,010.636	13.17%	86.83%
EDS	ELECTRONIC DATA SYSTEMS CORP	\$1,783.000	\$22,214.567	7.43%	92.57%
EMR	EMERSON ELECTRIC CO	\$1,827.060	\$21,062.645	7.98%	92.02%
EC	ENGELHARD CORP	\$548.462	\$2,658.319	17.10%	82.90%
FDC	FIRST DATA CORP	\$1,524.980	\$13,592.933	10.09%	89.91%
FLR	FLUOR CORP	\$256.812	\$4,129.374	5.86%	94.14%
F	FORD MOTOR COMPANY	\$147,849.800	\$35,372.670	80.69%	19.31%
FJ	FORT JAMES CORPORATION	\$3,634.712	\$5,333.637	40.53%	59.47%
FO	FORTUNE BRANDS INC	\$1,818.780	\$5,559.314	24.65%	75.35%
GCI	GANNETT CO	\$1,720.820	\$12,438.694	12.15%	87.85%
GE	GENERAL ELECTRIC CO.	\$131,883.000	\$188,561.780	41.16%	58.84%
GIS	GENERAL MILLS INC	\$1,787.700	\$10,034.488	15.12%	84.88%
G	GILLETTE COMPANY	\$2,048.360	\$39,544.774	4.92%	95.08%
GTE	GTE CORP	\$16,454.000	\$45,754.227	26.45%	73.55%
H	HARCOURT GENERAL INC	\$1,152.256	\$3,419.269	25.21%	74.79%
HRS	HARRIS CORP	\$827.960	\$2,608.946	24.09%	75.91%
HAS	HASBRO INC	\$334.672	\$3,504.912	8.72%	91.28%
HNZ	HEINZ (H.J.) CO	\$3,097.388	\$14,734.665	17.37%	82.63%
HP	HELMERICH & PAYNE	\$25.300	\$1,064.654	2.32%	97.68%
HPC	HERCULES INC	\$1,202.846	\$4,511.647	21.05%	78.95%
HWP	HEWLETT-PACKARD CO.	\$3,857.800	\$50,683.794	7.07%	92.93%
HON	HONEYWELL INC	\$1,084.920	\$7,329.631	12.89%	87.11%
ITW	ILLINOIS TOOL WORKS	\$969.490	\$10,274.262	8.62%	91.38%
IR	INGERSOLL-RAND CO	\$1,831.360	\$5,297.396	25.69%	74.31%
IPG	INTERPUBLIC GROUP COS INC	\$542.580	\$5,564.142	8.88%	91.12%
IBM	INTL BUSINESS MACHINES CORP	\$24,583.000	\$87,863.871	21.86%	78.14%
IFF	INTL FLAVORS & FRAGRANCES	\$24.824	\$5,147.179	0.48%	99.52%
IIN	ITT INDUSTRIES INC	\$1,721.140	\$3,000.899	36.45%	63.55%
JNJ	JOHNSON & JOHNSON	\$2,732.800	\$71,643.139	3.67%	96.33%
KMB	KIMBERLY-CLARK CORP	\$2,788.220	\$24,169.461	10.34%	89.66%
KWP	KING WORLD PRODUCTIONS INC	\$0.000	\$1,663.506	0.00%	100.00%
KRI	KNIGHT RIDDER INC	\$1,088.560	\$3,505.235	23.70%	76.30%
LTD	LIMITED INC	\$650.000	\$6,702.403	8.84%	91.16%
MKG	MALLINCKRODT INC	\$751.600	\$2,671.763	21.96%	78.04%
MAS	MASCO CORP	\$1,501.576	\$6,510.851	18.74%	81.26%
MAY	MAY DEPARTMENT STORES CO	\$3,458.800	\$11,022.072	23.89%	76.11%
MYG	MAYTAG CORP	\$652.976	\$2,953.534	18.11%	81.89%
MCD	MCDONALD'S CORPORATION	\$5,643.380	\$33,642.059	14.37%	85.63%
MHP	MCGRAW-HILL COMPANIES INC	\$636.974	\$5,929.829	9.70%	90.30%

**STANDARD & POOR'S INDUSTRIALS**  
**CAPITAL STRUCTURE**  
**DECEMBER 31, 1994 - DECEMBER 31, 1998**  
(Millions of Dollars)

Ticker	Comparable Firm	Average Debt	Average Common Equity Market Value	Debt Ratio	Equity Ratio
MRK	MERCK & CO., INC.	\$2,188.900	\$104,980.452	2.04%	97.96%
MDP	MEREDITH CORP	\$98.600	\$1,418.560	6.50%	93.50%
MZ	MILACRON INC	\$369.620	\$864.388	29.95%	70.05%
MMM	MINNESOTA MINING & MFG CO	\$2,312.200	\$28,940.487	7.40%	92.60%
MCL	MOORE CORP LTD	\$158.250	\$1,622.739	8.89%	91.11%
NLC	NALCO CHEMICAL CO	\$359.340	\$2,272.052	13.66%	86.34%
NSI	NATIONAL SERVICE INDS INC	\$43.142	\$1,665.774	2.52%	97.48%
NYT	NEW YORK TIMES CO -CL A	\$643.126	\$4,291.833	13.03%	86.97%
NOBE	NORDSTROM INC	\$568.336	\$3,950.047	12.58%	87.42%
NUE	NUCOR CORP	\$163.450	\$4,469.716	3.53%	96.47%
OMC	OMNICOM GROUP	\$386.842	\$4,995.697	7.19%	92.81%
PCAR	PACCAR INC	\$2,338.900	\$2,659.947	46.79%	53.21%
PH	PARKER HANNIFIN CORP	\$502.680	\$3,270.950	13.32%	86.68%
PEP	PEPSICO INC	\$7,960.600	\$44,578.962	15.15%	84.85%
PNU	PHARMACIA & UPJOHN INC	\$1,209.352	\$21,320.877	5.37%	94.63%
P	PHILLIPS PETROLEUM CO	\$3,330.200	\$10,534.154	24.02%	75.98%
PHB	PIONEER HI-BRED INTL INC	\$94.152	\$5,714.539	1.62%	98.38%
PBI	PITNEY BOWES INC	\$3,165.492	\$10,078.163	23.90%	76.10%
PRD	POLAROID CORP	\$733.120	\$1,718.438	29.90%	70.10%
PCH	POTLATCH CORP	\$747.152	\$1,160.216	39.17%	60.83%
PPG	PPG INDUSTRIES INC	\$1,453.220	\$9,436.112	13.35%	86.65%
PX	PRAXAIR INC	\$2,485.400	\$5,491.715	31.16%	68.84%
PG	PROCTER & GAMBLE CO	\$6,262.000	\$80,626.996	7.21%	92.79%
PHM	PULTE CORP	\$755.416	\$855.319	46.90%	53.10%
RAL	RALSTON-RALSTON PURINA GROUP	\$2,345.860	\$7,601.601	23.58%	76.42%
RYC	RAYCHEM CORP	\$286.982	\$2,796.359	9.31%	90.69%
RLM	REYNOLDS METALS CO	\$1,842.940	\$3,720.834	33.12%	66.88%
RML	RUSSELL CORP	\$345.752	\$1,028.314	25.16%	74.84%
SLE	SARA LEE CORP	\$2,698.600	\$19,720.839	12.04%	87.96%
SBC	SBC COMMUNICATIONS INC	\$12,575.779	\$60,287.326	17.26%	82.74%
VO	SEAGRAM CO LTD	\$4,126.600	\$12,669.103	24.57%	75.43%
S	SEARS, ROEBUCK & CO	\$18,449.400	\$15,075.653	55.03%	44.97%
SRV	SERVICE CORP INTERNATIONAL	\$2,436.946	\$6,713.281	26.63%	73.37%
SHW	SHERWIN-WILLIAMS CO	\$441.876	\$4,186.963	9.55%	90.45%
SNA	SNAP-ON INC	\$195.476	\$2,070.197	8.63%	91.37%
SWK	STANLEY WORKS	\$461.420	\$2,584.636	15.15%	84.85%
SVU	SUPERVALU INC	\$1,599.392	\$2,410.320	39.89%	60.11%
SYX	SYSCO CORP	\$687.698	\$6,718.335	9.29%	90.71%
TEK	TEKTRONIX INC	\$175.174	\$1,569.765	10.04%	89.96%
TX	TEXACO INC	\$6,398.800	\$23,591.159	21.13%	78.87%
TXT	TEXTRON INC	\$7,790.200	\$7,948.386	49.50%	50.50%
TWX	TIME WARNER INC	\$10,928.800	\$31,523.479	25.74%	74.26%
TMC	TIMES MIRROR CO-CL A	\$783.604	\$4,388.721	15.15%	84.85%

**STANDARD & POOR'S INDUSTRIALS**  
**CAPITAL STRUCTURE**  
**DECEMBER 31, 1994 - DECEMBER 31, 1998**  
(Millions of Dollars)

Ticker	Comparable Firm	Average Debt	Average Common Equity Market Value	Debt Ratio	Equity Ratio
TKR	TIMKEN CO	\$324.452	\$1,411.193	18.69%	81.31%
TRB	TRIBUNE CO	\$1,087.338	\$5,566.612	16.34%	83.66%
TRW	TRW INC	\$1,236.800	\$5,773.936	17.64%	82.36%
UPR	UNION PACIFIC RESOURCES GRP	\$1,450.080	\$5,643.496	20.44%	79.56%
UNH	UNITED HEALTHCARE CORP	\$159.346	\$8,997.784	1.74%	98.26%
UTX	UNITED TECHNOLOGIES CORP	\$2,008.600	\$15,248.629	11.64%	88.36%
UST	UST INC	\$157.000	\$6,182.304	2.48%	97.52%
WMT	WAL-MART STORES INC	\$11,208.862	\$84,947.793	11.66%	88.34%
WEN	WENDY'S INTERNATIONAL INC	\$265.220	\$5,176.129	4.87%	95.13%
WHR	WHIRLPOOL CORP	\$2,524.800	\$3,929.536	39.12%	60.88%
WWY	WRIGLEY (W.M.) JR CO	\$0.000	\$7,595.425	0.00%	100.00%
	Weighted Average	\$617,746.475	\$2,169,197.177	22.17%	77.83%
	Simple Average			17.92%	82.08%

Source: Bloomberg database, May 28, 1999.



**CAPITAL STRUCTURE COMPARISON**  
**INCUMBENT LOCAL EXCHANGE COMPANIES**  
**VERSUS**  
**STANDARD & POOR'S INDUSTRIALS AND INTER-EXCHANGE CARRIERS**  
**DECEMBER 31, 1994 - DECEMBER 31, 1998**  
 (Millions of Dollars)

Ticker	Comparable Firm	Average Debt	Average Common Equity Market Value	Debt Ratio	Equity Ratio
<u>Incumbent Local Exchange Companies:</u>					
AIT	AMERITECH CORPORATION/DEL	\$7,282.260	\$40,411.148	15.27%	84.73%
BEL	BELL ATLANTIC CORP	\$15,128.580	\$51,396.685	22.74%	77.26%
BLS	BELLSOUTH CORP	\$10,758.360	\$52,670.380	16.96%	83.04%
GTE	GTE CORP	\$16,454.000	\$45,754.227	26.45%	73.55%
SBC	SBC COMMUNICATIONS INC	\$12,575.779	\$60,287.326	17.26%	82.74%
USW	US WEST INC	\$7,002.000	\$19,339.464	26.58%	73.42%
	Total Incumbent Local Exchange Carriers	\$69,200.979	\$269,859.230	20.41%	79.59%
	Standard & Poor's Industrials	\$617,746.475	\$2,169,197.177	22.17%	77.83%
<u>Interexchange Carriers:</u>					
AT	ALLTEL CORP	\$2,557.010	\$8,960.661	22.20%	77.80%
T	A T & T CORP	\$14,948.600	\$86,688.003	14.71%	85.29%
FRO	FRONTIER CORP	\$853.410	\$4,288.782	16.60%	83.40%
FON	SPRINT CORP (FON GROUP)	\$4,498.180	\$18,310.877	19.72%	80.28%
WCOM	MCI WORLDCOM INC	\$7,278.148	\$38,505.153	15.90%	84.10%
	Total Interexchange Carriers	\$30,135.348	\$156,753.476	16.12%	83.88%

Source: Bloomberg database, May 28, 1999.

## STANDARD & POOR'S INDUSTRIAL PROXY GROUP DEVELOPMENT

The Standard & Poor's ("S&P") Industrials is a widely published list of 376 large competitive firms excluding utilities, transportation firms, and financial firms. The group does include GTE Corporation and the Regional Bell Holding Companies ("RBHCs") as well as AT&T, MCI, Sprint, and other large telecommunications companies. Although the individual firms within the group may not individually be an exact proxy for a local exchange company, the composite risk of the S&P Industrials group is in line with the perceived future risk of the local exchange companies.

### Screening of S&P Industrial Firms

In the Company's study certain companies were screened from the original 376 companies included in the S&P Industrials group as follows:

1. 23 firms that did not have information necessary to perform Discounted Cash Flow ("DCF") analysis or develop a 5-year average for market capital structure were eliminated from consideration.
2. 68 firms that pay no dividends were eliminated from consideration. Firms which do not pay regular dividends generally are relatively young, high growth firms and are not similar in risk to local exchange companies. The elimination of these firms from the group yields a more conservative DCF estimate for the cost of equity.

3. 3 firms that had less than 3 analyst earnings growth forecasts.
4. 1 firm that had a negative growth rate.

These three screens left 281 firms in the S&P Industrials group. The final step in selecting the group for the Company's study was to perform and rank DCF calculations for each of the 281 remaining firms from highest to lowest cost of equity estimates. The firms with the highest 25% and lowest 25% of cost of equity estimates were then eliminated from consideration. This screen also yields a more conservative DCF estimate for the cost of equity. After completion of this step, 140 firms with the middle of the range cost of equity estimates remained in the group.

THE QUARTERLY DCF MODEL  
By Dr. James H. Vander Weide

The simple DCF Model assumes that a firm pays dividends only at the end of each year. Since firms in fact pay dividends quarterly and investors appreciate the time value of money, the annual version of the DCF Model generally underestimates the value investors are willing to place on the firm's expected future dividend stream. In this appendix, we review two alternative formulations of the DCF Model that allow for the quarterly payment of dividends.

When dividends are assumed to be paid annually, the DCF Model suggests that the current price of the firm's stock is given by the expression:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_n + P_n}{(1+k)^n} \quad (1)$$

where

$P_0$  = current price per share of the firm's stock,  
 $D_1, D_2, \dots, D_n$  = expected annual dividends per share on the firm's stock,  
 $P_n$  = price per share of stock at the time investors expect to sell the stock, and  
 $k$  = return investors expect to earn on alternative investments of the same risk, i.e., the investors' required rate of return.

Unfortunately, expression (1) is rather difficult to analyze, especially for the purpose of estimating  $k$ . Thus, most analysts make a number of simplifying assumptions. First, they assume that dividends are expected to grow at the constant rate  $g$  into the indefinite future. Second, they assume that the stock price at time  $n$  is simply the present value of all dividends expected in periods

subsequent to  $n$ . Third, they assume that the investors' required rate of return,  $k$ , exceeds the expected dividend growth rate  $g$ . Under the above simplifying assumptions, a firm's stock price may be written as the following sum:

$$P_0 = \frac{D_0(1+g)}{(1+k)} + \frac{D_0(1+g)^2}{(1+k)^2} + \frac{D_0(1+g)^3}{(1+k)^3} + \dots, \quad (2)$$

where the three dots indicate that the sum continues indefinitely. As we shall demonstrate shortly, this sum may be simplified to:

$$P_0 = \frac{D_0(1+g)}{(k-g)}$$

First, however, we need to review the very useful concept of a geometric progression.

### Geometric Progression

Consider the sequence of numbers 3, 6, 12, 24, ..., where each number after the first is obtained by multiplying the preceding number by the factor 2. Obviously, this sequence of numbers may also be expressed as the sequence  $3, 3 \times 2, 3 \times 2^2, 3 \times 2^3, \dots$ . This sequence is an example of a geometric progression.

Definition: A geometric progression is a sequence in which each term after the first is obtained by multiplying some fixed number, called the common ratio, by the preceding term.

A general notation for geometric progressions is:  $a$ , the first term,  $r$ , the common ratio, and  $n$ , the number of terms. Using this notation, any geometric progression may be represented by the sequence:

$$a, ar, ar^2, ar^3, \dots, ar^{n-1}.$$

In studying the DCF Model, we will find it useful to have an expression for the sum of n terms of a geometric progression. Call this sum  $S_n$ . Then

$$S_n = a + ar + \dots + ar^{n-1} . \quad (3)$$

However, this expression can be simplified by multiplying both sides of equation (3) by r and then subtracting the new equation from the old. Thus,

$$rS_n = ar + ar^2 + ar^3 + \dots + ar^n$$

and

$$S_n - rS_n = a - ar^n ,$$

or

$$(1 - r) S_n = a (1 - r^n) .$$

Solving for  $S_n$ , we obtain

$$S_n = \frac{a(1 - r^n)}{(1 - r)} \quad (4)$$

as a simple expression for the sum of n terms of a geometric progression. Furthermore, if  $r < 1$ , then  $S_n$  is finite, and as n approaches infinity,  $S_n$  approaches  $a / (1 - r)$ . Thus, for a geometric progression with an infinite number of terms and  $r < 1$ , equation (4) becomes

$$S = \frac{a}{1 - r} \quad (5)$$

#### Application to DCF Model

Comparing equation (2) with equation (3), we see that the firm's stock price (under the DCF assumption) is the sum of an infinite geometric progression with the first term

$$a = \frac{D_0(1+g)}{(1+k)}$$

and common factor

$$r = \frac{(1+g)}{(1+k)}$$

Applying equation (5) for the sum of such a geometric progression, we obtain

$$S = a \cdot \frac{1}{(1-r)} = \frac{D_0(1+g)}{(1+k)} \cdot \frac{1}{1-\frac{1+g}{1+k}} = \frac{D_0(1+g)}{(1+k)} \cdot \frac{1+k}{k-g} = \frac{D_0(1+g)}{k-g}$$

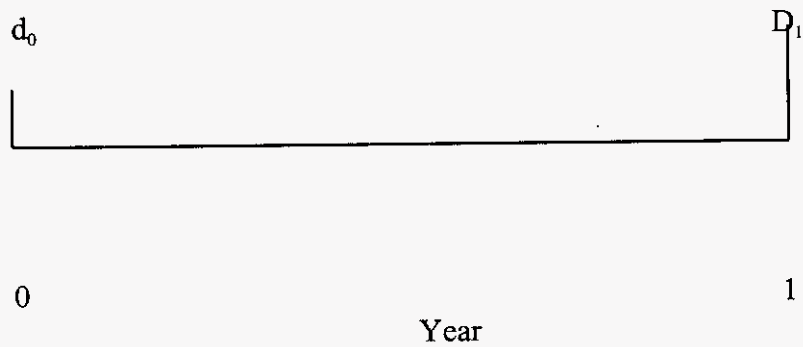
as we suggested earlier.

Quarterly DCF Model

The Annual DCF Model assumes that dividends grow at an annual rate of  $g\%$  per year (see Figure 1).

Figure 1

Annual DCF Model

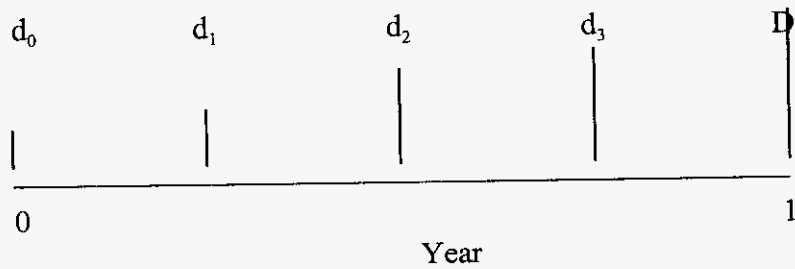


$D_0 = 4d_0$

$D_1 = D_0(1 + g)$

Figure 2

Quarterly DCF Model (Constant Growth Version)



$d_1 = d_0(1+g)^{25}$

$d_2 = d_0(1+g)^{50}$

$d_3 = d_0(1+g)^{75}$

$d_4 = d_0(1+g)$



In the Quarterly DCF Model, it is natural to assume that quarterly dividend payments differ from the preceding quarterly dividend by the factor  $(1 + g)^{.25}$ , where  $g$  is expressed in terms of percent per year and the decimal .25 indicates that the growth has only occurred for one quarter of the year. (See Figure 2.) Using this assumption, along with the assumption of constant growth and  $k > g$ , we obtain a new expression for the firm's stock price, which takes account of the quarterly payment of dividends. This expression is

$$P_0 = \frac{d_0(1+g)^{\frac{1}{4}}}{(1+k)^{\frac{1}{4}}} + \frac{d_0(1+g)^{\frac{2}{4}}}{(1+k)^{\frac{2}{4}}} + \frac{d_0(1+g)^{\frac{3}{4}}}{(1+k)^{\frac{3}{4}}} + \dots \quad (6)$$

where  $d_0$  is the last quarterly dividend payment, rather than the last annual dividend payment. (We use a lower case  $d$  to remind the reader that this is not the annual dividend.)

Although equation (6) looks formidable at first glance, it too can be greatly simplified using the formula [equation (4)] for the sum of an infinite geometric progression. As the reader can easily verify, equation (6) can be simplified to:

$$P_0 = \frac{d_0(1+g)^{\frac{1}{4}}}{(1+k)^{\frac{1}{4}} - (1+g)^{\frac{1}{4}}} \quad (7)$$

Solving equation (7) for  $k$ , we obtain a DCF formula for estimating the cost of equity under the quarterly dividend assumption:

$$k = \left[ \frac{d_0(1+g)^{\frac{1}{4}}}{P_0} + (1+g)^{\frac{1}{4}} \right]^4 - 1 \quad (8)$$

#### An Alternative Quarterly DCF Model

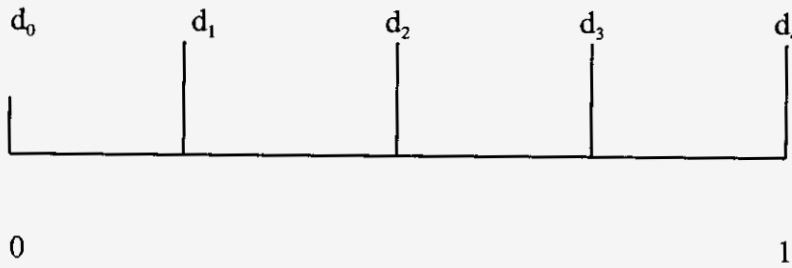
Although the constant growth Quarterly DCF Model [equation (8)] allows for the quarterly timing of dividend payments, it does require the assumption that the firm increases its dividend payments each quarter. Since this assumption is difficult for some analysts to accept, we now discuss a second Quarterly DCF Model that allows for constant quarterly dividend payments within each dividend year.

Assume then that the firm pays dividends quarterly and that each dividend payment is constant for four consecutive quarters. There are four cases to consider, with each case distinguished by varying assumptions about where we are evaluating the firm in relation to the time of its next dividend increase. (See Figure 3.)

Figure 3

Quarterly DCF Model (Constant Dividend Version)

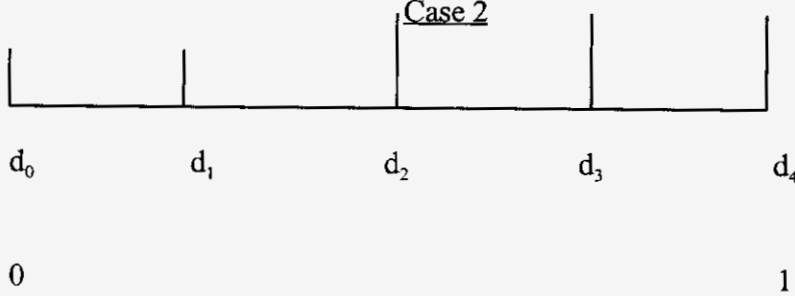
Case 1



Year

$$d_1 = d_2 = d_3 = d_4 = d_0(1+g)$$

Case 2



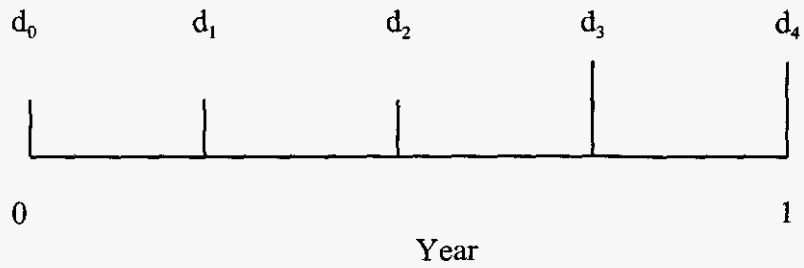
Year

$$d_1 = d_0$$

$$d_2 = d_3 = d_4 = d_0(1+g)$$

Figure 3 (continued)

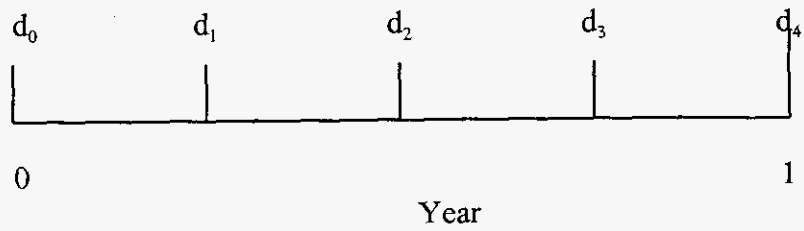
Case 3



$$d_1 = d_2 = d_0$$

$$d_3 = d_4 = d_0(1+g)$$

Case 4



$$d_1 = d_2 = d_3 = d_0$$

$$d_4 = d_0(1+g)$$

If we assume that the investor invests the quarterly dividend in an alternative investment of the same risk, then the amount accumulated by the end of the year will in all cases be given by

$$D_1^* = d_1 (1+k)^{3/4} + d_2 (1+k)^{1/2} + d_3 (1+k)^{1/4} + d_4$$

where  $d_1$ ,  $d_2$ ,  $d_3$  and  $d_4$  are the four quarterly dividends. Under these new assumptions, the firm's stock price may be expressed by an Annual DCF Model of the form (2), with the exception that

$$D_1^* = d_1 (1+k)^{3/4} + d_2 (1+k)^{1/2} + d_3 (1+k)^{1/4} + d_4 \quad (9)$$

is used in place of  $D_0(1+g)$ . But, we already know that the Annual DCF Model may be reduced to

$$P_0 = \frac{D_0(1+g)}{k-g}$$

Thus, under the assumptions of the second Quarterly DCF Model, the firm's cost of equity is given by

$$k = \frac{D_1^*}{P_0} + g \quad (10)$$

with  $D_1^*$  given by (9).

Although equation (10) looks like the Annual DCF Model, there are at least two very important practical differences. First, since  $D_1^*$  is always greater than  $D_0(1+g)$ , the estimates of the

cost of equity are always larger (and more accurate) in the Quarterly Model (10) than in the Annual Model. Second, since  $D_1^*$  depends on  $k$  through equation (9), the unknown "k" appears on both sides of (10), and an iterative procedure is required to solve for  $k$ .