

1 SOUTHERN BELL TELEPHONE AND TELEGRAPH COMPANY
2 TESTIMONY OF DR. RANDALL S. BILLINGSLEY
3 BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION
4 DOCKET NO. 920260-TL

5 JULY 15, 1992

6 ORIGINAL
7 FILE COPY

8 I. INTRODUCTION
9

10 Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS
11 ADDRESS.

12
13 A. MY NAME IS RANDALL S. BILLINGSLEY. I HOLD THE
14 POSITION OF ASSOCIATE PROFESSOR OF FINANCE AT
15 VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
16 AND ACT AS A FINANCIAL CONSULTANT IN THE AREAS OF
17 COST OF CAPITAL ANALYSIS, FINANCIAL SECURITY
18 ANALYSIS AND VALUATION, AND INVESTMENT ANALYSIS.
19 MY BUSINESS ADDRESS IS DEPARTMENT OF FINANCE, THE
20 R.B. PAMPLIN COLLEGE OF BUSINESS, VIRGINIA
21 POLYTECHNIC INSTITUTE AND STATE UNIVERSITY,
22 BLACKSBURG, VIRGINIA 24061-0221.

23
24 Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND AND
25 PROFESSIONAL QUALIFICATIONS.

1
2 A. I RECEIVED A B.A. DEGREE IN ECONOMICS FROM TEXAS
3 TECH UNIVERSITY IN 1976. I RECEIVED AN M.S. DEGREE
4 IN ECONOMICS IN 1978 AND A PH.D. DEGREE IN 1982,
5 BOTH FROM TEXAS A&M UNIVERSITY. WHILE COMPLETING
6 MY PH.D., I WORKED AS A RESEARCH ASSOCIATE AT THE
7 TEXAS TRANSPORTATION INSTITUTE DOING ECONOMIC
8 POLICY RESEARCH. IN 1986, I RECEIVED THE CHARTERED
9 FINANCIAL ANALYST (CFA) DESIGNATION. IN 1987, I
10 WAS PROMOTED TO ASSOCIATE PROFESSOR OF FINANCE WITH
11 TENURE AT VIRGINIA POLYTECHNIC INSTITUTE AND STATE
12 UNIVERSITY. IN MID-1992, I EARNED THE CERTIFIED
13 RATE OF RETURN ANALYST (CRRA) DESIGNATION. I HAVE
14 BEEN ACTIVE IN TEACHING AT THE UNDERGRADUATE, MBA,
15 AND PH.D. LEVELS. I HAVE TAUGHT COURSES ON
16 INVESTMENTS, FINANCIAL MARKETS, BANK MANAGEMENT,
17 AND FINANCIAL MANAGEMENT.

18

19 Q. HAVE YOU PUBLISHED ANY RESEARCH IN THE AREA OF
20 FINANCE?

21

22 A. YES, I HAVE PUBLISHED OVER TWENTY ARTICLES IN
23 VARIOUS PROFESSIONAL JOURNALS. MY ARTICLES HAVE
24 BEEN PUBLISHED IN THE JOURNAL OF BANKING AND
25 FINANCE, JOURNAL OF BANK RESEARCH, JOURNAL OF

1 FINANCIAL RESEARCH, JOURNAL OF FUTURES MARKETS,
2 JOURNAL OF THE INSTITUTE OF CERTIFIED FINANCIAL
3 PLANNERS, JOURNAL OF PORTFOLIO MANAGEMENT,
4 FINANCIAL MANAGEMENT, FINANCIAL REVIEW, FUTURES,
5 MANAGERIAL FINANCE, QUARTERLY JOURNAL OF BUSINESS
6 AND ECONOMICS, AND STRATEGY AND EXECUTIVE ACTION.
7 MY RESEARCH HAS BEEN CITED IN THE WALL STREET
8 JOURNAL, ABSTRACTED IN THE JOURNAL OF ECONOMIC
9 LITERATURE AND THE CFA DIGEST, AND REPRINTED IN CFA
10 READINGS IN DERIVATIVE SECURITIES.

11

12 Q. DESCRIBE THE NATURE AND SCOPE OF YOUR ACTIVITIES IN
13 THE FINANCE PROFESSION.

14

15 A. IN ADDITION TO CONDUCTING FINANCIAL RESEARCH FOR
16 PUBLICATION, I HAVE ACTED AS AN ARTICLE REVIEWER
17 FOR NUMEROUS PROFESSIONAL JOURNALS AND HAVE HAD A
18 NUMBER OF MY STUDIES PRESENTED AT FINANCE
19 CONFERENCES. FURTHER, I HAVE RECEIVED TEACHING
20 AWARDS AT BOTH THE UNDERGRADUATE AND GRADUATE
21 LEVELS. I SERVED AS A MEMBER OF THE CANDIDATE
22 CURRICULUM COMMITTEE OF THE ASSOCIATION FOR
23 INVESTMENT MANAGEMENT AND RESEARCH, THE GOVERNING
24 BODY OF THE CFA PROGRAM, FOR TWO YEARS. MY
25 FINANCIAL CONSULTING CLIENTS IN ADDITION TO

1 SOUTHERN BELL TELEPHONE AND TELEGRAPH COMPANY
2 (SOUTHERN BELL) HAVE INCLUDED BELL ATLANTIC, THE
3 FINANCIAL ANALYSTS' REVIEW OF THE UNITED STATES
4 (FAR), THE INSTITUTE OF CHARTERED FINANCIAL
5 ANALYSTS, MACMILLAN, MCGRAW-HILL, CHARLES G.
6 MERRILL, PRENTICE-HALL, UNION BANK OF SWITZERLAND,
7 WEST PUBLISHING COMPANY, AND JOHN WILEY & SONS. IN
8 MY CAPACITY AS A CONSULTANT TO FINANCIAL ANALYSTS'
9 REVIEW, I HAVE CONDUCTED SEMINARS ON EQUITY
10 VALUATION AND ANALYSIS IN THE UNITED STATES, ASIA
11 AND IN EUROPE.

12

13 MORE DETAILS ON MY QUALIFICATIONS MAY BE FOUND IN
14 APPENDIX A.

15

16 Q. HAVE YOU PREPARED AN EXHIBIT TO ACCOMPANY THIS
17 TESTIMONY?

18

19 A. YES, MY EXHIBIT CONSISTS OF TWO SCHEDULES AND THREE
20 APPENDICES, WHICH WERE PREPARED BY ME OR UNDER MY
21 DIRECTION AND SUPERVISION.

22

23 II. PURPOSE AND SUMMARY OF CONCLUSIONS

24

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

1

2 A. MY PURPOSE IS TO PROVIDE THE FLORIDA PUBLIC SERVICE
3 COMMISSION (COMMISSION) WITH A DETERMINATION OF THE
4 COST OF EQUITY CAPITAL FOR SOUTHERN BELL.

5

6 Q. PLEASE DESCRIBE THE APPROACHES THAT YOU USED TO
7 DETERMINE SOUTHERN BELL'S COST OF EQUITY CAPITAL
8 AND SUMMARIZE YOUR CONCLUSIONS.

9

10 A. MY ANALYSIS USES OBJECTIVE MARKET DATA TO DETERMINE
11 SOUTHERN BELL'S COST OF EQUITY CAPITAL FROM TWO
12 DISTINCT BUT COMPLEMENTARY APPROACHES. SINCE
13 SOUTHERN BELL IS A SUBSIDIARY OF BELLSOUTH, IT DOES
14 NOT HAVE EQUITY TRADING INDEPENDENTLY IN THE
15 MARKET. THUS, THERE IS NO DIRECT MARKET EVIDENCE
16 ON SOUTHERN BELL'S COST OF EQUITY CAPITAL. IN THE
17 FIRST APPROACH I APPLIED THE DISCOUNTED CASH FLOW
18 (DCF) MODEL TO A GROUP OF FIRMS DEMONSTRATED TO BE
19 OF COMPARABLE RISK TO SOUTHERN BELL. THE AVERAGE
20 COST OF EQUITY CAPITAL IS CALCULATED BY APPLYING
21 THE DCF MODEL TO THIS GROUP OF COMPARABLE FIRMS TO
22 PROVIDE AN OBJECTIVE, MARKET-DETERMINED COST OF
23 EQUITY CAPITAL FOR SOUTHERN BELL. THE SECOND
24 APPROACH I UTILIZED IS A RISK PREMIUM APPROACH.
25 ADDITIONALLY, I EXAMINED EVIDENCE AS TO THE CHANGE

1 IN THE RISK PREMIUM AS A CHECK OF MY DCF AND RISK
2 PREMIUM RESULTS.
3
4 MY ANALYSIS DETERMINES THE COST OF EQUITY FOR
5 SOUTHERN BELL TO BE 14.36% USING THE COMPARABLE
6 FIRM GROUP DCF MODEL APPROACH. THE RISK PREMIUM
7 APPROACH INDICATES A COST OF EQUITY CAPITAL FOR
8 SOUTHERN BELL OF 14.52%. FURTHERMORE, AN EXPLICIT
9 ADJUSTMENT TO THE RISK PREMIUM FOR THE RECENT
10 DECLINE IN INTEREST RATES PRODUCES A COST OF EQUITY
11 ESTIMATE FOR SOUTHERN BELL OF 14.80%. THUS, THE
12 REASONABLENESS OF THE DCF-BASED EQUITY COST OF
13 14.36% FOR SOUTHERN BELL IS CONFIRMED BY A DISTINCT
14 ALTERNATIVE METHODOLOGICAL APPROACH. FROM THESE
15 ANALYSES, I CONCLUDE THAT THE CURRENT COST OF
16 EQUITY CAPITAL FOR SOUTHERN BELL IS WITHIN THE
17 RANGE OF 14.36% TO 14.80%, WITH A MIDPOINT OF
18 14.58%. BASED ON MY UNDERSTANDING THAT THIS
19 COMMISSION SET SOUTHERN BELL'S RATES AT AN EQUITY
20 RETURN OF 13.2% IN 1988 AND 1990, IT IS MY OPINION
21 THAT THE COST OF EQUITY IS ACTUALLY MUCH HIGHER
22 THAN THAT, ALTHOUGH IT STILL REMAINS IN THE RANGE
23 OF 11.5% TO 16.0% ESTABLISHED BY THIS COMMISSION IN
24 1988.
25

1 III. REGULATORY AND ECONOMIC STANDARDS USED
2 IN COST OF EQUITY ANALYSIS

3
4 Q. WHAT REGULATORY STANDARDS GUIDE THE DETERMINATION
5 OF THE COST OF EQUITY CAPITAL FOR A PUBLIC UTILITY?

6
7 A. TWO IMPORTANT SUPREME COURT DECISIONS, BLUEFIELD
8 AND HOPE, PROVIDE THE ESSENTIAL STANDARDS THAT ARE
9 APPLIED IN THE REGULATION OF A PUBLIC UTILITY'S
10 ALLOWED RATE OF RETURN. THE FIRST STANDARD IS THAT
11 A PUBLIC UTILITY SHOULD BE ALLOWED EARNINGS
12 OPPORTUNITIES SUFFICIENT TO ENABLE IT TO ATTRACT
13 CAPITAL ON REASONABLE TERMS. THE SECOND STANDARD
14 IS THAT A PUBLIC UTILITY SHOULD BE ALLOWED THE
15 OPPORTUNITY OF EARNING AT A LEVEL COMPARABLE TO
16 OTHER FIRMS OF CORRESPONDING RISKS.

17
18 Q. PLEASE ELABORATE ON THE FIRST STANDARD.

19
20 A. THE FIRST REGULATORY STANDARD IS BASED ON THE
21 BLUEFIELD CASE, WHICH STATED THAT A PUBLIC
22 UTILITY'S:

23
24 "... RETURN SHOULD BE REASONABLY
25 SUFFICIENT TO ASSURE CONFIDENCE IN THE

1 FINANCIAL SOUNDNESS OF THE UTILITY AND
2 SHOULD BE ADEQUATE, UNDER EFFICIENT
3 AND ECONOMICAL MANAGEMENT, TO MAINTAIN
4 AND SUPPORT ITS CREDIT AND ENABLE IT
5 TO RAISE THE MONEY NECESSARY FOR THE
6 PROPER DISCHARGE OF ITS PUBLIC
7 DUTIES."

8
9 THIS CASE ESTABLISHES THE REGULATORY STANDARD THAT
10 A PUBLIC UTILITY'S ALLOWED RATE OF RETURN SHOULD BE
11 SUFFICIENT TO PERMIT IT TO ATTRACT THE CAPITAL THAT
12 IT NEEDS TO MEET ITS RESPONSIBILITIES. IN ORDER TO
13 MAINTAIN THE ABILITY TO ATTRACT CAPITAL, A PUBLIC
14 UTILITY MUST ASSURE THAT ITS FINANCIAL INTEGRITY IS
15 NOT COMPROMISED.

16

17 Q. PLEASE DISCUSS THE SECOND STANDARD.

18

19 A. THE SECOND STANDARD IS BASED ON THE HOPE CASE,
20 WHICH STATED THAT:

21

22 "... THE RETURN TO THE EQUITY OWNER
23 SHOULD BE COMMENSURATE WITH RETURNS ON
24 INVESTMENTS IN OTHER ENTERPRISES
25 HAVING CORRESPONDING RISKS. THAT

1 RETURN, MOREOVER, SHOULD BE SUFFICIENT
2 TO ASSURE CONFIDENCE IN THE FINANCIAL
3 INTEGRITY OF THE ENTERPRISE, SO AS TO
4 MAINTAIN ITS CREDIT AND TO ATTRACT
5 CAPITAL."

6
7 THE HOPE CASE CONSEQUENTLY ESTABLISHES THE STANDARD
8 THAT A PUBLIC UTILITY'S ALLOWED RATE OF RETURN WILL
9 NOT BE APPROPRIATE UNLESS IT IS COMPARABLE TO THE
10 RETURNS OF INVESTMENTS OF COMPARABLE RISK. THUS,
11 THE STANDARD IS REFERRED TO OFTEN AS THE PRINCIPLE
12 OF COMPARABLE EARNINGS. IN TERMS OF THE CURRENT
13 PROCEEDINGS, THIS STANDARD IMPLIES THAT SOUTHERN
14 BELL'S ALLOWED RATE OF RETURN SHOULD BE
15 COMMENSURATE WITH THE RISK FACED BY EQUITY HOLDERS
16 IN FIRMS OF COMPARABLE RISK.

17

18 Q. WHAT ECONOMIC STANDARDS ARE RELEVANT IN DETERMINING
19 THE COST OF EQUITY CAPITAL?

20

21 A. SEVERAL FUNDAMENTAL ECONOMIC STANDARDS ARE USED TO
22 DETERMINE THE COST OF EQUITY CAPITAL. THESE
23 STANDARDS ARE IMPLIED BY THE CONCEPTS OF
24 OPPORTUNITY COST, THE RISK/RETURN TRADE-OFF, AND
25 MARKET EFFICIENCY. IF THE PROCESS USED TO

1 ESTABLISH THE COST OF EQUITY IS NOT CONSISTENT WITH
2 THOSE STANDARDS, THEN THE RESULTING ESTIMATE WILL
3 BE BIASED. SUCH A COST OF EQUITY WOULD NOT TREAT
4 RATEPAYERS FAIRLY AND COULD DAMAGE THE ABILITY OF
5 SOUTHERN BELL TO RAISE FUNDS, THEREBY COMPROMISING
6 THE FIRM'S CAPACITY TO CONTINUE PROVIDING
7 APPROPRIATE TELECOMMUNICATIONS SERVICES IN THE
8 STATE OF FLORIDA.

9
10 Q. WHAT IS THE CONCEPT OF OPPORTUNITY COST AND HOW
11 DOES THE COST OF EQUITY CAPITAL DEPEND ON ITS
12 RECOGNITION?

13
14 A. INVESTORS HAVE THE OPPORTUNITY TO PUT THEIR MONEY
15 TO WORK IN A VARIETY OF DIFFERENT INVESTMENTS. THE
16 DECISION TO PUT A GIVEN AMOUNT OF MONEY IN ONE
17 INVESTMENT IMPLIES THAT ANOTHER INVESTMENT
18 OPPORTUNITY MUST BE GIVEN UP. THUS, THE
19 OPPORTUNITY COST OF MAKING AN INVESTMENT IS THE
20 OPPORTUNITY (EXPECTED RETURN) FOREGONE ON THE NEXT
21 BEST ALTERNATIVE. THE OPPORTUNITY AFFORDED BY AN
22 INVESTMENT MUST BE MEASURED IN LIGHT OF THE TIME
23 VALUE OF MONEY. THIS ACKNOWLEDGES THAT THE VALUE
24 OF A DOLLAR TO BE RECEIVED IN A YEAR IS NOT WORTH A
25 DOLLAR TODAY BECAUSE INVESTORS HAVE THE OPPORTUNITY

1 TO INVEST LESS THAN A DOLLAR TODAY AT SOME POSITIVE
2 EXPECTED RETURN IN ORDER TO GENERATE A DOLLAR A
3 YEAR FROM TODAY. MONEY HAS A TIME VALUE THAT
4 REFLECTS THE BENEFITS OF AN INVESTOR'S OTHER
5 COMPETING INVESTMENT ALTERNATIVES.

6
7 THE COST OF EQUITY CAPITAL IS AN OPPORTUNITY COST
8 FROM THE EQUITY INVESTOR'S VIEWPOINT. WHEN AN
9 INVESTOR CONSIDERS INVESTING MONEY IN A STOCK, CARE
10 IS TAKEN TO EVALUATE THE EXPECTED RETURN ON THE
11 NEXT BEST ALTERNATIVE INVESTMENT THAT MUST BE
12 FOREGONE IF THE STOCK IS BOUGHT. AN INVESTOR HAS A
13 TARGET REQUIRED RATE OF RETURN THAT IS INFLUENCED
14 BY THAT OPPORTUNITY COST. IF AN INVESTOR DOES NOT
15 EXPECT A STOCK TO MEET THE TARGET OR A MINIMALLY
16 ACCEPTABLE RETURN, THE STOCK WILL NOT BE PURCHASED
17 BY THAT INVESTOR. IN ORDER TO MEET INVESTORS'
18 RETURN EXPECTATIONS, THE FIRM MUST REINVEST THE
19 FUNDS SUPPLIED BY THOSE INVESTORS AT AN EXPECTED
20 RATE OF RETURN NO LESS THAN THAT WHICH IS EXPECTED
21 BY INVESTORS.

22
23 THE STANDARD THAT EMERGES FOR COST OF EQUITY
24 CAPITAL ANALYSIS IS THAT ANY ESTIMATE MUST CONSIDER
25 THE OPPORTUNITY COSTS FACED BY EQUITY INVESTORS.

1 THE COST OF EQUITY CAPITAL CANNOT BE DETERMINED IN
2 ISOLATION. IT MUST RESPECT EQUITY INVESTORS' OTHER
3 INVESTMENT ALTERNATIVES. IN THE CASE OF SOUTHERN
4 BELL, THE COMPANY'S ALLOWED RATE OF RETURN MUST
5 MEET INVESTORS' RETURN REQUIREMENTS, AS REFLECTED
6 IN THE COST OF EQUITY CAPITAL, OR THEY WILL NOT
7 SUPPLY THE FIRM WITH THEIR CAPITAL. THIS WOULD
8 EFFECTIVELY DENY SOUTHERN BELL ACCESS TO THE
9 CAPITAL MARKET ON REASONABLE TERMS. THUS, THE
10 REGULATORY STANDARD OF CAPITAL ATTRACTION DISCUSSED
11 PREVIOUSLY IN MY TESTIMONY WOULD BE VIOLATED.

12

13 Q. HOW DOES THE RISK/RETURN TRADE-OFF APPLY TO COST OF
14 EQUITY CAPITAL ANALYSIS?

15

16 A. THE RISK/RETURN TRADE-OFF IS A DESCRIPTION OF HOW
17 INVESTORS BEHAVE GIVEN WHAT THEY LIKE AND WHAT
18 THEY DISLIKE ABOUT INVESTMENTS. INVESTORS
19 GENERALLY PREFER HIGHER TO LOWER RETURNS AND PREFER
20 LESS TO MORE RISK. THIS IMPLIES THAT INVESTORS
21 WILL NOT TAKE ON ADDITIONAL RISK UNLESS THEY EXPECT
22 TO EARN HIGHER RETURNS. THUS, INVESTORS TRADE-OFF
23 WHAT THEY LIKE (HIGHER EXPECTED RETURNS) AGAINST
24 WHAT THEY DISLIKE (HIGHER RISKS) IN MAKING
25 INVESTMENT DECISIONS. IN EVERYDAY TERMS, INVESTORS

1 CANNOT GET MORE OF WHAT THEY LIKE UNLESS THEY ARE
2 WILLING TO TAKE ON MORE OF WHAT THEY DISLIKE.
3
4 INVESTORS ARE AWARE OF THE POTENTIAL DANGERS OF
5 VIOLATING THE RISK/RETURN TRADE-OFF. IF AN
6 INVESTMENT'S EXPECTED RETURN IS NOT COMMENSURATE
7 WITH ITS RISK, INVESTORS WILL LOOK ELSEWHERE FOR
8 INVESTMENT OPPORTUNITIES. INVESTORS SEEKING TO
9 MEASURE OPPORTUNITY COSTS MUST DEVELOP SOME
10 CRITERION FOR JUDGING WHAT MAKES INVESTMENTS
11 COMPARABLE SO THAT THEY CAN IDENTIFY THE "NEXT BEST
12 ALTERNATIVE FOREGONE," AS DISCUSSED ABOVE. THE
13 PRIMARY CRITERION IS RISK. INVESTORS WILL EVALUATE
14 INVESTMENTS OF COMPARABLE RISK AND SEEK THE
15 INVESTMENT YIELDING THE HIGHEST EXPECTED RETURN FOR
16 A GIVEN LEVEL OF RISK. THUS, OPPORTUNITY COSTS CAN
17 ONLY BE MEASURED ACCURATELY WHEN THE RISKINESS OF
18 COMPETING INVESTMENTS IS TAKEN INTO CONSIDERATION.
19
20 THE STANDARD FOR COST OF CAPITAL ANALYSIS IMPLIED
21 BY THE RISK/RETURN TRADE-OFF IS THAT A FIRM MUST
22 MEET THE RETURN REQUIREMENTS THAT EQUITY HOLDERS
23 IMPOSE AFTER HAVING EVALUATED OTHER INVESTMENTS OF
24 COMPARABLE RISK. IF A FIRM DOES NOT MEET
25 INVESTORS' RISK-ADJUSTED EXPECTED RETURNS, THOSE

1 INVESTORS WILL MOVE THEIR MONEY TO ALTERNATIVE
2 INVESTMENTS OF SIMILAR RISK THAT ARE GENERATING
3 HIGHER RETURNS. THIS STANDARD ASSERTS THAT
4 SOUTHERN BELL SHOULD HAVE THE OPPORTUNITY TO EARN A
5 RETURN THAT IS COMMENSURATE WITH ITS RISK AND, BY
6 IMPLICATION, COMPARABLE TO THE RETURNS OF OTHER
7 FIRMS OF COMPARABLE RISK. THUS, THIS ECONOMIC
8 STANDARD IS RELATED CLOSELY TO THE COMPARABLE
9 EARNINGS REGULATORY STANDARD.

10

11 Q. WHAT IMPLICATIONS DO OPPORTUNITY COSTS AND THE
12 RISK/RETURN TRADE-OFF JOINTLY HAVE FOR DETERMINING
13 THE COST OF EQUITY?

14

15 A. THE PRACTICAL RESULT OF THE PRESENCE OF OPPORTUNITY
16 COSTS AND THE RISK/RETURN TRADE-OFF IS THE STANDARD
17 THAT INVESTMENTS OF COMPARABLE RISK ARE EXPECTED TO
18 GENERATE COMPARABLE RETURNS. IF THEY DO NOT,
19 INVESTORS WILL PURCHASE THE STOCK OF FIRMS YIELDING
20 HIGHER RETURNS AND WILL SELL THE STOCKS OF FIRMS
21 YIELDING LOWER RETURNS UNTIL THE RETURNS REFLECTED
22 BY THE PRICE ARE THE SAME. THIS STANDARD IS THE
23 NATURAL RESULT OF A LARGE NUMBER OF INVESTORS
24 MEASURING THEIR OPPORTUNITY COSTS BY COMPARING
25 INVESTMENTS WITH FULL KNOWLEDGE THAT RELEVANT

1 ALTERNATIVES ARE DEFINED ON THE BASIS OF COMPARABLE
2 RISKINESS.

3
4 THIS STANDARD IMPLIES THAT GROUPS OF FIRMS
5 COMPARABLE IN RISK TO SOUTHERN BELL SHOULD HAVE
6 EXPECTED AVERAGE COSTS OF EQUITY CAPITAL THAT ARE
7 COMPARABLE. THIS STANDARD IS THE BASIS FOR THE
8 COMMON PRACTICE OF APPLYING THE DCF MODEL TO A
9 GROUP OF COMPARABLE FIRMS.

10

11 Q. WHAT IS MEANT BY THE TERM "MARKET EFFICIENCY" AND
12 WHAT STANDARD DOES IT IMPLY FOR COST OF EQUITY
13 CAPITAL ANALYSIS?

14

15 A. IN ITS MOST GENERAL FORM, AN EFFICIENT MARKET IS
16 ONE IN WHICH ALL INFORMATION THAT IS RELEVANT TO
17 SECURITY PRICE (EXPECTED RETURN) FORMATION IS
18 REFLECTED QUICKLY IN PRICES (RETURNS). MARKET
19 EFFICIENCY IS NOT AN ALL OR NOTHING PROPOSITION,
20 BUT IS RATHER A MATTER OF DEGREE. RESEARCH
21 FINDINGS SUPPORT A HIGH DEGREE OF EFFICIENCY IN
22 CONTEMPORARY U.S. FINANCIAL MARKETS. THUS,
23 SECURITY PRICES ARE ON AVERAGE UNBIASED, OBJECTIVE
24 ESTIMATES OF WHAT THE INVESTMENT COMMUNITY EXPECTS
25 TO HAPPEN TO A SECURITY. INDEED, PRICES REFLECT

1 THE MARKET'S ASSESSMENT OF WHAT A SECURITY SHOULD
2 YIELD GIVEN ITS RISKINESS RELATIVE TO COMPARABLE
3 INVESTMENTS.

4

5 THE IMPLICATION OF A HIGH DEGREE OF MARKET
6 EFFICIENCY FOR COST OF EQUITY CAPITAL ANALYSIS IS
7 THAT EQUITY PRICES FOR FIRMS OF COMPARABLE RISK ARE
8 RELIABLE SOURCES OF OBJECTIVE INFORMATION ABOUT
9 CAPITAL COSTS.

10

11 IV. NATURE AND APPLICABILITY OF THE DCF MODEL

12

13 Q. WHAT IS THE DCF MODEL AND HOW IS IT APPLICABLE TO
14 THE CURRENT PROCEEDINGS?

15

16 A. THE DCF MODEL IS NOTHING MORE THAN A FORMAL
17 STATEMENT OF COMMON SENSE AND BASIC FINANCIAL
18 THEORY. THE MODEL SIMPLY ASKS AN INVESTOR'S MOST
19 BASIC QUESTION: HOW MUCH IS THIS STOCK WORTH?
20 COMMON SENSE DICTATES THAT THE ANSWER DEPENDS ON
21 WHAT INVESTORS EXPECT TO GET OUT OF THE STOCK AND
22 WHEN THEY EXPECT TO GET IT. THE WHAT IS THE
23 EXPECTED CASH FLOW STREAM GENERATED BY THE STOCK
24 AND THE WHEN IS THE PROJECTED TIMING OF THOSE
25 EXPECTED CASH FLOWS. DETERMINING HOW MUCH A STOCK

1 IS WORTH DEPENDS ON ONE MORE CRITICAL
2 CONSIDERATION: THE RISKINESS OR PROBABILITY THAT
3 INVESTORS ASSOCIATE WITH THEIR FORECAST OF WHAT
4 THEY WILL RECEIVE FROM THE STOCK. IN THIS CONTEXT,
5 RISK IS THE POSSIBILITY THAT INVESTORS'
6 EXPECTATIONS WILL BE FRUSTRATED. IT IS REFLECTED
7 IN THE PROBABILITY THAT INVESTORS' ACTUAL RETURNS
8 WILL DIFFER FROM THEIR EXPECTED RETURNS. THE DCF
9 MODEL ASSUMES THAT THE AVERAGE INVESTOR DISLIKES
10 RISK AND CONSEQUENTLY WILL ACCEPT HIGHER RISK ONLY
11 IF THERE IS A HIGHER EXPECTED RETURN TO JUSTIFY IT.

12
13 THE DCF MODEL RECOGNIZES TWO TYPES OF CASH FLOWS:
14 THE PERIODIC PAYMENT OF CASH DIVIDENDS AND THE
15 (POSSIBLE) SALE OF THE STOCK. IF AN INVESTOR
16 FACING AN OPPORTUNITY COST OF K PERCENT EXPECTS TO
17 GET DIVIDENDS D_t ANNUALLY FOR THE NEXT N YEARS AND
18 THEN SELLS THE STOCK AT END OF YEAR N FOR A PRICE
19 OF P_N , THEN THE APPROPRIATE CURRENT PRICE P_0 IS:

20

$$21 \quad P_0 = \frac{D_1}{(1+K)^1} + \frac{D_2}{(1+K)^2} + \dots + \frac{D_N + P_N}{(1+K)^N}$$

22

23

24 IN SUMMARY, THE APPROPRIATE PRICE OF A STOCK IS
25 SIMPLY THE PRESENT VALUE OF ALL OF THE CASH

1 BENEFITS THAT AN INVESTOR EXPECTS TO GET FROM
2 OWNING IT.

3

4 Q. IS THIS THE FORM OF THE DCF MODEL THAT IS COMMONLY
5 USED TO DETERMINE THE COST OF EQUITY CAPITAL FOR A
6 FIRM LIKE SOUTHERN BELL?

7

8 A. NO, IT IS NOT. THE ABOVE FORM IS TYPICALLY
9 MODIFIED IN AT LEAST TWO WAYS. FIRST, THIS
10 COMMISSION IS PRESUMABLY NOT CONCERNED WITH
11 DETERMINING HOW MUCH A STOCK SHOULD SELL FOR. ITS
12 GOAL IS TO DETERMINE WHAT RATE OF RETURN SOUTHERN
13 BELL'S EQUITY INVESTORS SHOULD FAIRLY EXPECT TO BE
14 COMPENSATED FOR TAKING ON THE FIRM'S RISK. THUS,
15 THE COMMISSION IS CONCERNED WITH WHAT THE PRICE IS
16 RATHER THAN WITH WHAT IT SHOULD BE. THE ACTUAL
17 PRICE P_{mkt} SHOULD CONSEQUENTLY BE USED TO INFER
18 INVESTORS' REQUIRED RATE OF RETURN. SECOND, THE
19 FORM OF THE DCF PRESENTED ABOVE MAKES NO EXPLICIT
20 ASSUMPTIONS CONCERNING THE EXPECTED RATE OF GROWTH
21 IN DIVIDENDS AND THE STOCK'S PRICE OVER TIME NOR
22 CONCERNING THE LENGTH OF AN INVESTOR'S EXPECTED
23 HOLDING PERIOD. THE SO-CALLED CONSTANT GROWTH FORM
24 OF THE DCF ASSUMES THAT DIVIDENDS AND PRICE GROW AT
25 A CONSTANT RATE G OVER TIME, THAT THE GROWTH RATE

1 IS LESS THAN THE REQUIRED RATE OF RETURN, AND THAT
2 INVESTORS HAVE AN INFINITE HOLDING PERIOD. WHILE
3 THE ASSUMPTION OF AN INFINITE HOLDING PERIOD SEEMS
4 QUESTIONABLE INITIALLY, IT IS IMPORTANT TO REMEMBER
5 THAT THE FUNDAMENTAL SOURCE OF A STOCK'S VALUE TO
6 INVESTORS IS ITS EXPECTED DIVIDEND STREAM. WHY
7 WOULD INVESTORS BE WILLING TO TRADE A STOCK AMONG
8 THEMSELVES IF THE STOCK WAS NOTHING MORE THAN A
9 PIECE OF PAPER THAT WOULD NEVER PAY ANY MONEY? IF
10 THE CURRENT PRICE OF A STOCK IS THE PRESENT VALUE
11 OF ALL EXPECTED FUTURE CASH FLOWS, THEN WHY
12 WOULDN'T THE PRICE AT ANY POINT IN TIME BE THE
13 PRESENT VALUE OF THE EXPECTED CASH FLOWS BEYOND
14 THAT POINT IN TIME? WHILE AN INFINITE HOLDING
15 PERIOD MAY NOT SEEM TO APPLY TO ANY ONE INVESTOR,
16 THIS ASSUMPTION IS AN ACCURATE WAY OF PORTRAYING
17 THE BEHAVIOR OF INVESTORS SINCE THEY MUST DETERMINE
18 ALL PRICES, PRESENT AND FUTURE, BY PROJECTING A
19 SEEMINGLY ENDLESS SERIES OF FUTURE DIVIDENDS. THEY
20 MUST MAKE SUCH DIVIDEND PROJECTIONS SINCE ANY
21 EXPECTED FUTURE PRICE IS DEPENDENT ON THE DIVIDENDS
22 THAT ARE EXPECTED TO BE PAID ON THAT STOCK AFTER IT
23 IS PURCHASED. THE CONSTANT GROWTH FORM OF THE DCF
24 MODEL MAKES THE TWO ABOVE ADJUSTMENTS AND CAN BE
25 EXPRESSED AS:

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$$K = \frac{D_0(1 + G)}{P_{mkt}} + G = \frac{D_1}{P_{mkt}} + G,$$

WHERE D_0 IS THE MOST RECENT DIVIDEND PAID AND D_1 IS THE NEXT ANTICIPATED DIVIDEND.

Q. IS IT NECESSARY TO MAKE ANY OTHER MODIFICATIONS BEFORE THE DCF MODEL CAN BE ACCURATELY APPLIED TO DETERMINE SOUTHERN BELL'S COST OF EQUITY CAPITAL?

A. YES, TWO ADDITIONAL MODIFICATIONS ARE NECESSARY. FIRST, IT IS APPROPRIATE TO RECOGNIZE THAT DIVIDENDS ARE PAID BY MOST COMPANIES ON A QUARTERLY, NOT AN ANNUAL, BASIS. THE SECOND ADJUSTMENT TO THE GENERAL DCF MODEL PRESENTED ABOVE CONSIDERS THE FLOTATION COSTS BORNE BY THE FIRM IN RAISING EQUITY FUNDS.

Q. WHY IS IT IMPORTANT TO ADJUST THE DCF MODEL TO REFLECT THE QUARTERLY PAYMENT OF DIVIDENDS?

A. THE ANNUAL FORM OF THE DCF MODEL ASSUMES THAT INVESTORS RECEIVE DIVIDENDS ONLY ONCE A YEAR AND THAT THEY HAVE THE OPPORTUNITY TO REINVEST THOSE

1 CASH FLOWS IN ALTERNATIVE INVESTMENTS OF THE SAME
2 RISK. THE REQUIRED RATE OF RETURN IMPLIED BY THIS
3 FORM OF THE DCF MODEL WILL BE BIASED DOWNWARD IF
4 INVESTORS ACTUALLY RECEIVE THEIR DIVIDEND PAYMENTS
5 IN QUARTERLY RATHER THAN IN ANNUAL INSTALLMENTS.
6 THIS BIAS RESULTS BECAUSE EQUITY INVESTORS HAVE THE
7 OPPORTUNITY TO START EARNING A RETURN ON THEIR
8 REINVESTED DIVIDENDS SOONER WHEN THOSE DIVIDENDS
9 ARE RECEIVED QUARTERLY THAN WHEN THE DIVIDENDS ARE
10 RECEIVED ONLY ANNUALLY. IT IS EASY TO RELATE THIS
11 IDEA TO A BANK ACCOUNT. WHAT IS THE DIFFERENCE
12 BETWEEN THE RETURN THAT YOU WOULD EARN OVER A YEAR
13 ON A SIMPLE PASSBOOK SAVINGS ACCOUNT RECEIVING 8
14 PERCENT COMPOUNDED ANNUALLY VS. AN ACCOUNT
15 RECEIVING 8 PERCENT COMPOUNDED QUARTERLY? UNDER
16 ANNUAL COMPOUNDING, YOU WOULD EARN THE STATED RATE
17 OF 8 PERCENT. UNDER QUARTERLY COMPOUNDING, YOU
18 WOULD EARN ABOUT 8.24 PERCENT ON THE ACCOUNT IN A
19 YEAR. THIS IS BECAUSE EVERY QUARTER THE BANK WOULD
20 ADD 2 PERCENT TO THE BALANCE IN YOUR ACCOUNT.
21 THUS, THE PRINCIPAL TO WHICH THE INTEREST RATE IS
22 APPLIED WOULD BE ADJUSTED EVERY QUARTER RATHER THAN
23 JUST ONCE IN A YEAR. THE SAME BASIC IDEA APPLIES
24 TO THE DCF MODEL. THE QUARTERLY RECEIPT OF
25 DIVIDENDS IMPLIES A HIGHER REINVESTMENT RATE THAN

1 THE ANNUAL RECEIPT OF DIVIDENDS.
2
3 USING THE ANNUAL FORM OF THE DCF MODEL TO DETERMINE
4 THE RETURN REQUIREMENTS OF EQUITY INVESTORS IN
5 SOUTHERN BELL WOULD DEPRIVE THOSE INVESTORS OF THE
6 RETURNS THAT THEY COULD REASONABLY EXPECT TO EARN.
7 THIS IS BECAUSE THEY GET THEIR DIVIDENDS QUARTERLY
8 RATHER THAN ANNUALLY. FAILURE TO MAKE THIS
9 ADJUSTMENT CAN UNDERSTATE THE COST OF EQUITY
10 CAPITAL. THUS, THIS ADJUSTMENT IS SIGNIFICANT TO
11 THE DETERMINATION OF AN ECONOMICALLY CORRECT COST
12 OF EQUITY FOR SOUTHERN BELL.
13
14 Q. WHAT SPECIFIC ADJUSTMENT FOR QUARTERLY DIVIDENDS DO
15 YOU MAKE TO THE DCF MODEL?
16
17 A. THERE ARE TWO BASIC WAYS IN WHICH QUARTERLY
18 DIVIDENDS CAN BE HANDLED. THE FIRST APPROACH MAKES
19 THE SIMPLIFYING ASSUMPTION THAT DIVIDENDS ARE PAID
20 QUARTERLY AND GROW QUARTERLY AS WELL. WHILE THIS
21 APPROACH HAS THE VIRTUE OF SIMPLICITY, IT IS NOT
22 REALISTIC BECAUSE MOST FIRMS ADJUST THEIR DIVIDEND
23 PAYMENTS ONCE A YEAR, NOT QUARTERLY. THE SECOND
24 APPROACH ASSUMES THAT FIRMS PAY DIVIDENDS QUARTERLY
25 BUT THAT THOSE DIVIDENDS ARE ONLY CHANGED BY A FIRM

1 ANNUALLY. THUS, QUARTERLY REINVESTMENT
2 OPPORTUNITIES ARE RECOGNIZED AND THE MORE REALISTIC
3 PATTERN OF ANNUAL DIVIDEND GROWTH IS ACCOUNTED FOR.
4 THIS IS THE APPROACH THAT I USE IN MY ANALYSIS OF
5 SOUTHERN BELL'S COST OF EQUITY. FURTHER, I ASSUME
6 THAT FIRMS ON AVERAGE ADJUST THE LEVEL OF THEIR
7 DIVIDENDS IN THE MIDDLE OF THE YEAR.

8
9 THE ADJUSTED DCF MODEL CALCULATES A REVISED
10 DIVIDEND, D_1^q :

11
12
$$D_1^q = d_1(1 + K)^{.75} + d_2(1 + K)^{.50} + d_3(1 + K)^{.25} + d_4,$$

13
14

15 WHERE d_1 AND d_2 ARE THE TWO QUARTERLY DIVIDENDS
16 PAID PRIOR TO THE ASSUMED YEARLY CHANGE IN
17 DIVIDENDS AND d_3 AND d_4 ARE THE TWO QUARTERLY
18 DIVIDENDS PAID AFTER THE GIVEN CHANGE IN THE AMOUNT
19 PAID BY A FIRM. THIS DIVIDEND D_1^q , REVISED TO
20 RECOGNIZE THE QUARTERLY PAYMENT OF DIVIDENDS THAT
21 GROW AT RATE G ONCE A YEAR (ON AVERAGE FOR ALL
22 FIRMS IN THE MIDDLE OF THE NEXT 12 MONTHS), IS
23 SUBSTITUTED IN THE PLACE OF D_1 , IN THE BASIC FORM
24 OF THE DCF:

25

$$K = \frac{(D^q)_1}{P_{mkt}} + G$$

1
2
3
4 Q. WHY MUST FLOTATION COSTS BE ACCOUNTED FOR IN
5 DETERMINING THE COST OF EQUITY CAPITAL?
6
7 A. THE COST OF EQUITY CAPITAL MUST REFLECT WHAT A FIRM
8 NEEDS TO EARN ON ITS FUNDS IN ORDER TO MEET THE
9 RETURN REQUIREMENTS OF ITS INVESTORS. FLOTATION
10 COSTS REDUCE THE AMOUNT OF FUNDS THAT A FIRM HAS TO
11 INVEST AND THEREBY INCREASES THE RETURN THAT A FIRM
12 MUST EARN ON THOSE REMAINING FUNDS IF IT IS TO
13 REMAIN ABLE TO ATTRACT INVESTORS. IF A UTILITY WAS
14 ALLOWED TO RECOVER ALL OF ITS FLOTATION COSTS AT
15 THE TIME OF ISSUANCE, THERE WOULD BE NO NEED FOR
16 THIS ADJUSTMENT. OTHERWISE, IT IS IMPORTANT TO
17 SUBTRACT THE FLOTATION COSTS OUT OF THE PRICE USED
18 IN THE DCF MODEL IN ORDER TO CAPTURE THE FACT THAT
19 A UTILITY WOULD NOT RECEIVE THE FULL PROCEEDS OF AN
20 EQUITY ISSUE. ACADEMIC STUDIES CONCLUDE THAT A
21 FLOTATION COST OF FIVE PERCENT IS REASONABLE.
22 THEREFORE, MY ANALYSIS INCLUDES A FIVE PERCENT
23 FLOTATION COST ADJUSTMENT WHICH IS IMPLEMENTED AS A
24 FIVE PERCENT REDUCTION TO THE STOCK PRICES USED IN
25 MY DCF ANALYSIS.

1

2 Q. HOW CAN FLOTATION COSTS BE RELEVANT IN DETERMINING
3 SOUTHERN BELL'S COST OF EQUITY CAPITAL WHEN IT DOES
4 NOT SELL SHARES OF STOCK IN THE OPEN MARKET?

5

6 THE FACT THAT SOUTHERN BELL DOES NOT ACTUALLY SELL
7 EQUITY BY VIRTUE OF ITS AFFILIATION WITH BELLSOUTH
8 DOES NOT INVALIDATE THE NEED TO ADJUST FOR
9 FLOTATION COSTS. TAKEN TO ITS LOGICAL EXTREME, IT
10 COULD BE ARGUED THAT SOUTHERN BELL HAS NO COST OF
11 EQUITY CAPITAL AT ALL SINCE IT DOES NOT SELL SHARES
12 OF STOCK ON THE OPEN MARKET. YET SOUTHERN BELL
13 BEARS SUCH COSTS AND SHOULD BE COMPENSATED
14 ACCORDINGLY.

15

16 CONSIDER A SIMPLE EXAMPLE. WHEN A FAMILY SHOPS FOR
17 A MORTGAGE, IT WILL FIND THAT, IN ADDITION TO THE
18 STATED INTEREST RATE, IT IS COMMON TO PAY "POINTS"
19 AT THE TIME THE MORTGAGE IS TAKEN OUT. EACH POINT
20 IS EQUAL TO ONE PERCENT OF THE FACE VALUE OF THE
21 MORTGAGE. THUS, A MORTGAGE WITH A QUOTED INTEREST
22 RATE OF TEN PERCENT WILL EFFECTIVELY COST THE
23 FAMILY MORE THAN TEN PERCENT IF POINTS ARE
24 REQUIRED TO BE PAID. THIS IS BECAUSE THE FAMILY
25 MUST BORROW MORE THAN IS ACTUALLY NEEDED TO FINANCE

1 THEIR HOUSE SINCE THEY MUST ESSENTIALLY ALSO BORROW
2 TO COVER THE POINTS. ASSUME THAT THE FAMILY TAKES
3 OUT A THIRTY-YEAR MORTGAGE REQUIRING POINTS AND
4 THAT THEY ARE ASKED WHAT THEIR RATE IS TWO YEARS
5 LATER. WOULD IT BE APPROPRIATE TO RESPOND THAT THE
6 COST IS ONLY TEN PERCENT SINCE THE FAMILY HAS NOT
7 TAKEN OUT A NEW MORTGAGE OVER THE TWO-YEAR PERIOD?
8 NO, THE COST OF THE MORTGAGE WAS AND REMAINS IN
9 EXCESS OF THE QUOTED RATE DUE TO THE FLOTATION
10 COSTS PAID PREVIOUSLY. INDEED, THE RELEVANT COST
11 OF A MORTGAGE IS ALWAYS THE POINT-ADJUSTED RATE,
12 REGARDLESS OF WHETHER ONE CHOOSES TO TAKE ON THE
13 MORTGAGE OR NOT.

14
15 THE OMISSION OF A FLOTATION COST ADJUSTMENT IS
16 INCORRECT AND IS EQUIVALENT TO COMPARING MORTGAGE
17 RATES WITHOUT ADJUSTING FOR POINTS. SOUTHERN BELL
18 WILL NOT GET FAIR TREATMENT IF IT IS ONLY PERMITTED
19 TO EARN A RETURN THAT DOES NOT COVER ALL OF ITS
20 REASONABLE COSTS, INCLUDING FLOTATION COSTS.

21
22 Q. HOW IS THE GROWTH RATE ESTIMATED FOR USE IN THE DCF
23 MODEL?

24
25 A. INVESTORS ARE FORWARD-LOOKING. INVESTMENT

1 DECISIONS ARE MADE ON THE BASIS OF HOW INVESTORS
2 EXPECT A STOCK TO PERFORM IN THE FUTURE. WHILE HOW
3 A STOCK HAS PERFORMED IN THE PAST MAY WELL
4 INFLUENCE AN INVESTOR'S EXPECTATIONS CONCERNING
5 FUTURE PERFORMANCE, THERE IS NO GUARANTEE THAT THE
6 FUTURE WILL BE A SIMPLE EXTENSION OF THE PAST.
7 THUS, IT IS IMPORTANT THAT THE ESTIMATED GROWTH
8 RATE USED IN THE DCF MODEL BE A PROSPECTIVE OR
9 EXPECTED, NOT A HISTORICAL, RATE. RESEARCH
10 INDICATES THAT THE CONSENSUS GROWTH RATE FORECASTS
11 OF FINANCIAL ANALYSTS ARE THE MOST UNBIASED,
12 OBJECTIVE, AND ACCURATE MEASURE OF INVESTORS'
13 GROWTH EXPECTATIONS FOR A STOCK. CONSISTENT WITH
14 THIS OBSERVATION, I USE THE GROWTH ESTIMATES
15 PUBLISHED BY THE INSTITUTIONAL BROKERS ESTIMATE
16 SYSTEM (IBES). IBES IS USED WIDELY WITHIN THE
17 INVESTMENT PROFESSION AND IS REVISED FREQUENTLY
18 ENOUGH TO REMAIN RELEVANT TO INVESTORS SEEKING TO
19 EVALUATE THE GROWTH PROSPECTS OF STOCKS. FURTHER,
20 IBES ESTIMATES ALLOW THE DETERMINATION OF LONG-TERM
21 GROWTH RATE EXPECTATIONS.

22

23 Q. HOW CAN THE DCF MODEL BE APPLIED TO SOUTHERN BELL
24 IN THE ABSENCE OF AN OBSERVABLE MARKET PRICE FOR
25 ITS EQUITY?

1
2 A. CONSISTENT WITH THE REGULATORY AND ECONOMIC
3 STANDARDS DISCUSSED EARLIER, IT IS IMPERATIVE THAT
4 SOUTHERN BELL BE ALLOWED THE OPPORTUNITY TO EARN A
5 RETURN COMMENSURATE WITH COMPETING ALTERNATIVE
6 INVESTMENTS OF COMPARABLE RISK. SINCE SOUTHERN
7 BELL'S EQUITY DOES NOT HAVE AN OBSERVABLE MARKET
8 PRICE, IT IS NECESSARY TO IDENTIFY A GROUP OF FIRMS
9 OF COMPARABLE RISK THAT DO HAVE MARKET-TRADED
10 EQUITY. THE APPLICATION OF THE DCF MODEL TO SUCH A
11 GROUP OF FIRMS OF COMPARABLE RISK WITH OBSERVABLE
12 EQUITY PRICES ALLOWS THE INFERENCE OF AN OBJECTIVE,
13 MARKET-DETERMINED COST OF EQUITY CAPITAL FOR
14 SOUTHERN BELL. THE AVERAGE COST OF EQUITY FOR THIS
15 GROUP OF FIRMS IS USED AS A RELIABLE MEASURE OF THE
16 COST OF EQUITY CAPITAL FOR SOUTHERN BELL.

17
18 Q. WHAT METHOD IS USED TO IDENTIFY FIRMS OF COMPARABLE
19 RISK TO SOUTHERN BELL?

20
21 A. I USE A CLUSTER ANALYSIS MODEL TO IDENTIFY FIRMS
22 THAT ARE OF COMPARABLE RISK TO SOUTHERN BELL.
23 THREE OVERALL DIMENSIONS OF RISK ARE USED TO
24 COMPARE FIRMS. FIRST, AN OVERALL SUMMARY MEASURE
25 OF THE VARIABILITY OF A FIRM'S RETURN ON EQUITY IS

1 USED TO GROUP FIRMS. SECOND, THE FINANCIAL RISK OF
2 FIRMS IS MEASURED AND USED AS A BASIS OF
3 COMPARISON. THIRD, THE BUSINESS OR OPERATING RISK
4 OF FIRMS IS EVALUATED FROM SEVERAL PERSPECTIVES AND
5 COMPARED AMONG FIRMS. THESE DIMENSIONS ARE, IN
6 EFFECT, AVERAGED IN A MANNER THAT GENERATES A
7 COMPREHENSIVE RISK PROFILE. THUS, FIRMS ARE NOT
8 JUST COMPARED ON A CHARACTERISTIC-BY-CHARACTERISTIC
9 BASIS, THEY ARE COMPARED IN LIGHT OF THOSE CHOSEN
10 CHARACTERISTICS AND THE RELATIONSHIP AMONG THOSE
11 CHARACTERISTICS.

12
13 A SUMMARY MEASURE EXPRESSES THE DISTANCE BETWEEN
14 EACH FIRM AND SOUTHERN BELL. A GROUP OF THE 20
15 FIRMS THAT ARE CLOSEST TO SOUTHERN BELL IN TERMS OF
16 THIS SUMMARY DISTANCE MEASURE IS CHOSEN FOR
17 ANALYSIS. THE DCF MODEL IS APPLIED TO THIS GROUP
18 OF COMPARABLE FIRMS IN ORDER TO INFER SOUTHERN
19 BELL'S COST OF EQUITY CAPITAL. THIS ANALYSIS
20 RESULTS IN A COST OF EQUITY ESTIMATE OF 14.36%.
21 SCHEDULE 1 OF MY EXHIBIT LISTS THE GROUP OF
22 COMPARABLE FIRMS AND PRESENTS THE DCF RESULTS. THE
23 DETAILS CONCERNING THE COMPARABLE FIRM
24 IDENTIFICATION CRITERIA AND METHODOLOGY ARE
25 PROVIDED IN APPENDIX B.

1
2 WHILE MY CLUSTER ANALYSIS IS EXPLAINED IN DETAIL IN
3 APPENDIX C, THERE IS ONE POINT I WISH TO EMPHASIZE
4 CONCERNING THIS GROUP OF FIRMS BECAUSE IT IS
5 COMMONLY MISUNDERSTOOD BY PEOPLE WHO ARE UNFAMILIAR
6 WITH THE USE OF THE CLUSTER ANALYSIS TECHNIQUE.
7 SOME PARTY TO THIS PROCEEDING WHO DOES NOT
8 UNDERSTAND WHAT I HAVE SAID MAY ATTEMPT TO IDENTIFY
9 A SINGLE COMPANY AND COMPARE ITS VARIOUS RISK
10 MEASURES INDIVIDUALLY TO THOSE OF SOUTHERN BELL.
11 PLEASE NOTE THAT NONE OF THE INDIVIDUAL COMPANIES
12 THAT ARE IDENTIFIED ARE PRECISELY LIKE SOUTHERN
13 BELL IN EVERY RESPECT. HOWEVER, THEY ARE
14 ALTERNATIVE INVESTMENT OPPORTUNITIES THAT, IN THE
15 AGGREGATE, HAVE OVERALL RISK CHARACTERISTICS
16 SIMILAR TO SOUTHERN BELL. THAT IS WHAT IS
17 IMPORTANT.

18

19 Q. WHY DOES YOUR GROUP OF FIRMS COMPARABLE IN RISK TO
20 SOUTHERN BELL NOT INCLUDE ANY OF THE REGIONAL BELL
21 HOLDING (RBHCS)?

22

23 A. IN ORDER TO DETERMINE THE COST OF EQUITY FOR
24 SOUTHERN BELL, FIRMS MUST BE IDENTIFIED THAT ARE
25 COMPARABLE IN RISK TO SOUTHERN BELL. THE RBHCS ARE

1 NOT COMPARABLE IN RISK TO SOUTHERN BELL AND
2 ADDITIONALLY POSSESS CHARACTERISTICS THAT ARE
3 INCONSISTENT WITH THE ASSUMPTIONS UNDERLYING THE
4 VERSION OF THE DCF MODEL USED IN MY ANALYSIS. THE
5 SHARE PRICES OF THE RBHCS REFLECT THE EXPECTED
6 FAVORABLE CURRENT AND FUTURE VALUES OF INVESTMENTS
7 IN UNREGULATED OPERATIONS. THEREFORE, THE RBHCS
8 ARE NOT GOOD PROXIES OF RISK FOR SOUTHERN BELL.
9
10 FURTHERMORE, IF ONE WERE TO APPLY THE CONSTANT
11 GROWTH DCF MODEL TO THE RBHCS IN THE SAME WAY THAT
12 I HAVE APPLIED IT TO MY GROUP OF COMPARABLE FIRMS,
13 THERE WOULD BE SEVERAL PROBLEMS WITH THE RESULTING
14 DCF ESTIMATE. THE GROWTH RATE DOES NOT FULLY
15 EXPRESS THE EXPECTED VALUE OF THESE OPPORTUNITIES
16 SINCE ANALYSTS' ESTIMATES OF FUTURE GROWTH ONLY ARE
17 FIVE YEARS IN LENGTH. ADDITIONALLY, UNREGULATED
18 LINES OF BUSINESS LIKE CELLULAR SERVICES DO NOT
19 CURRENTLY CONFORM TO THE ASSUMPTION OF CONSTANT
20 GROWTH IN THE DCF APPROACH. SINCE THE OVERALL
21 GROWTH RATE OF A RBHC IS DEPENDENT ON THE EXPECTED
22 GROWTH OF ITS SEGMENTS AND ITS UNREGULATED
23 SUBSIDIARIES GROWTH IS NOT EXPECTED TO BE CONSTANT,
24 THE RBHCS EXPECTED GROWTH IS NECESSARILY
25 INCONSISTENT WITH THE CONSTANT GROWTH RATE

1 ASSUMPTION DCF MODEL. THE APPLICATION OF THE
2 CONSTANT GROWTH VERSION OF THE DCF MODEL TO A RBHC
3 PRODUCES A COST OF EQUITY ESTIMATE FOR THE RBHCS
4 THAT IS BIASED DOWNWARDS.

5
6 IN MY DETERMINATION OF SOUTHERN BELL'S COST OF
7 EQUITY I DO NOT USE THE RBHCS AS RISK PROXIES FOR
8 SOUTHERN BELL BECAUSE THEY DO NOT CONSTITUTE A
9 COMPARABLE RISK BENCHMARK. THE USE OF THE RBHCS AS
10 SUCH A BENCHMARK WOULD HOLD SOUTHERN BELL TO A
11 STANDARD THAT GREATLY UNDERESTIMATES THE COST OF
12 EQUITY CAPITAL.

13

14 **V. EVALUATING THE MARKET RISK PREMIUM**

15

16 Q. HAVE YOU CONDUCTED ANY ADDITIONAL ANALYSIS THAT
17 SUPPORTS THE REASONABLENESS OF THE RESULTS OF
18 APPLYING THE DCF MODEL TO A GROUP OF FIRMS
19 COMPARABLE IN RISK TO SOUTHERN BELL?

20

21 A. YES, I HAVE USED THE MARKET RISK PREMIUM APPROACH
22 TO CORROBORATE THE REASONABLENESS OF THE COST OF
23 EQUITY CAPITAL DETERMINED FOR SOUTHERN BELL UNDER
24 THE DCF COMPARABLE SAMPLE APPROACH.

25

1 Q. WHAT IS THE MARKET RISK PREMIUM APPROACH AND WHAT
2 IS ITS ECONOMIC JUSTIFICATION?

3

4 A. THE MARKET RISK PREMIUM APPROACH IS A SYSTEMATIC
5 WAY OF QUANTIFYING THE RISK/RETURN TRADE-OFF THAT
6 WAS DISCUSSED EARLIER IN THE SECTION CONCERNING THE
7 ECONOMIC STANDARDS USED IN THE COST OF EQUITY
8 ANALYSIS. THE MARKET RISK PREMIUM IS DEFINED AS
9 THE DIFFERENCE BETWEEN THE RETURN ON A BROAD BASKET
10 OF EQUITY SECURITIES (THE "MARKET") AND THE RETURN
11 ON A FAR LESS RISKY BENCHMARK SECURITY. THE RETURN
12 ON LONG-TERM U.S. TREASURY BONDS AND THE RETURN ON
13 UTILITY BONDS OF VARIOUS RATINGS ARE COMMON
14 BENCHMARKS. THE ECONOMIC JUSTIFICATION FOR
15 EXAMINING THE DIFFERENCE BETWEEN THE RETURN ON THE
16 MARKET AND A BENCHMARK SECURITY'S RETURN IS TO
17 MEASURE THE PREMIUM THAT IS NECESSARY TO COAX
18 INVESTORS TO MOVE FROM INVESTING IN A "RISK-FREE"
19 OR LOWER RISK SECURITY INTO A HIGHER RISK EQUITY
20 INVESTMENT. THIS PREMIUM IS OFTEN REFERRED TO AS
21 THE EQUITY RISK PREMIUM. THE RETURN ON UTILITY
22 BONDS IS USED FREQUENTLY AS THE BENCHMARK SECURITY
23 BECAUSE IT IS A RELEVANT REFERENCE POINT IN
24 EVALUATING A UTILITY'S COST OF EQUITY. THE GOAL OF
25 THE ANALYSIS IS TO IDENTIFY A REASONABLE OR

1 "NORMAL" MARKET RISK PREMIUM ON PUBLIC UTILITY
2 BONDS AND THEN TO ADD THAT PREMIUM TO THE CURRENT
3 RETURN ON SUCH BONDS IN ORDER TO DETERMINE A
4 REASONABLE AVERAGE COST OF EQUITY CAPITAL FOR
5 PUBLIC UTILITIES OF COMPARABLE BOND RATINGS.

6

7 Q. HOW IS THE NORMAL OR REASONABLE EQUITY RISK PREMIUM
8 ESTIMATED?

9

10 A. THERE ARE TWO FUNDAMENTAL APPROACHES TO ESTIMATING
11 THE EQUITY RISK PREMIUM. THE FIRST APPROACH IS
12 PROSPECTIVE AND THE SECOND APPROACH IS HISTORICAL.
13 THE EQUITY RISK PREMIUM MAY BE ESTIMATED BY
14 SURVEYING INVESTORS' EXPECTATIONS CONCERNING THE
15 APPROPRIATE EQUITY RISK PREMIUM. SIMILARLY, A
16 PROSPECTIVE APPROACH LIKE THE DCF MODEL CAN BE USED
17 TO ESTIMATE THE EQUITY RISK PREMIUM THAT IS IMPLIED
18 BY THE RELATIONSHIP AMONG ANALYSTS' CONSENSUS
19 GROWTH FORECASTS FOR THE MARKET, THE GENERAL LEVEL
20 OF THE MARKET, AND THE EXPECTED RETURN ON A
21 BENCHMARK SECURITY. ALTERNATIVELY, THE HISTORICAL
22 RELATIONSHIP BETWEEN EARNED RETURNS ON THE EQUITY
23 MARKET AND EARNED RETURNS ON A BENCHMARK SECURITY
24 CAN BE MEASURED, THEREBY REVEALING AN AVERAGE
25 HISTORICAL EQUITY RISK PREMIUM EARNED. WHILE IT IS

1 CLEAR THAT INVESTORS TRADE ON THE BASIS OF
2 EXPECTATIONS (I.E., PROSPECTIVE FACTORS) THESE
3 EXPECTATIONS ARE NOT DIRECTLY OBSERVABLE.
4 CONVERSELY, WHILE IT IS CLEAR THAT THERE CANNOT BE
5 COMPLETE CONFIDENCE THAT HISTORICAL RETURN PATTERNS
6 WILL BE REPEATED IN THE FUTURE, AN AVERAGE
7 HISTORICAL OR EARNED EQUITY RISK PREMIUM HAS THE
8 VIRTUE OF BEING OBSERVABLE AND OBJECTIVELY
9 VERIFIABLE.

10

11 Q. WHICH APPROACH TO ESTIMATING THE EQUITY RISK
12 PREMIUM DO YOU USE IN YOUR ANALYSIS?

13

14 A. MY CHOICE IS DICTATED BY THE DESIRE TO CORROBORATE
15 THE RESULTS OF MY APPLICATION OF THE DCF MODEL TO A
16 GROUP OF FIRMS OF COMPARABLE RISK TO SOUTHERN BELL.
17 SINCE THE DCF MODEL IS PROSPECTIVE IN NATURE, I
18 HAVE ALSO USED A PROSPECTIVE APPROACH TO ESTIMATING
19 THE EQUITY RISK PREMIUM. I EXAMINE THE
20 RELATIONSHIP BETWEEN EXPECTED RETURNS ON THE
21 STANDARD & POOR'S 500 INDEX (S&P 500), AS ESTIMATED
22 BY THE DCF MODEL, AND EXPECTED RETURNS ON AN INDEX
23 OF Aaa-RATED BONDS OVER A RECENT PERIOD. THE
24 RESULTING AVERAGE EXPECTED EQUITY RISK PREMIUM OF
25 6.16% (AS SHOWN ON SCHEDULE 2) FOR THIS PERIOD IS

1 ADDED TO THE AVERAGE YIELD THAT HAS PREVAILED ON
2 Aaa-RATED BONDS OVER THE LAST THREE MONTHS
3 (MARCH-MAY, 1992) OF 8.36%. THIS PRODUCES A COST
4 OF EQUITY ESTIMATE OF 14.52%. A MORE DETAILED
5 DISCUSSION OF THIS METHODOLOGY IS PRESENTED IN
6 APPENDIX C.

7
8 Q. CAN ANY INSTABILITY IN THE RISK PREMIUM BE ADJUSTED
9 FOR SO AS TO INCREASE OUR CONFIDENCE IN ITS
10 REPRESENTATIVENESS?

11
12 A. YES. IT IS TRUE THAT STUDIES OF THE HISTORICAL
13 BEHAVIOR OF THE EQUITY RISK PREMIUM FIND THAT IT
14 VARIES CONSIDERABLY OVER TIME. OF PARTICULAR
15 INTEREST IS THE FINDING THAT THE EQUITY RISK
16 PREMIUM IS RELATED INVERSELY TO RETURNS ON THE
17 TRADITIONALLY USED BENCHMARK SECURITIES, NAMELY,
18 GOVERNMENT OR CORPORATE DEBT SECURITIES. THUS,
19 WHEN INTEREST RATES DECLINE, THE EQUITY RISK
20 PREMIUM WIDENS AND WHEN THE INTEREST RATES RISE,
21 THE EQUITY RISK PREMIUM NARROWS. THE MOST
22 PLAUSIBLE EXPLANATION FOR THIS INVERSE RELATIONSHIP
23 IS THAT INVESTORS' ATTITUDES TOWARDS RISK CHANGE
24 OVER TIME. AS HYPOTHESIZED BY THE NOBEL
25 PRIZE-WINNING FINANCIAL ECONOMIST, WILLIAM F.

1 SHARPE, WHEN INVESTORS ARE DOING WELL FINANCIALLY,
2 THEY ARE OPTIMISTIC AND REQUIRE RELATIVELY LOW RISK
3 PREMIUMS AND WHEN INVESTORS ARE DOING POORLY, THEY
4 ARE PESSIMISTIC AND REQUIRE RELATIVELY HIGH RISK
5 PREMIUMS. SINCE THE GENERAL LEVEL OF INTEREST
6 RATES IS AN INDICATOR OF WHERE THE ECONOMY IS IN A
7 CYCLE, IT IS REASONABLE TO EXPECT AN INVERSE
8 RELATIONSHIP BETWEEN INTEREST RATES AND EQUITY RISK
9 PREMIUMS.

10

11 THE ABOVE OBSERVATION SUGGESTS ANOTHER WAY OF USING
12 THE RISK PREMIUM APPROACH TO TEST THE
13 REASONABLENESS OF THE DCF MODEL'S COST OF EQUITY
14 CAPITAL FOR SOUTHERN BELL. RESEARCH BY DR. R.S.
15 HARRIS, PUBLISHED IN FINANCIAL MANAGEMENT IN 1986,
16 FINDS EVIDENCE THAT THE EQUITY RISK PREMIUM TENDS
17 TO MOVE AN AVERAGE OF $-.51$ OF CONTEMPORANEOUS
18 CHANGES IN THE RETURN ON THE BENCHMARK SECURITY.
19 THAT IS, IF INTEREST RATES DECLINE BY 100 BASIS
20 POINTS, THE EQUITY RISK PREMIUM REQUIRED INCREASES
21 BY 51 BASIS POINTS. IN HIS WORK THE BENCHMARK
22 SECURITY IS 20-YEAR TREASURY BONDS AND THE UTILITY
23 PROXY IS THE STANDARD & POOR'S UTILITY INDEX OF 40
24 STOCKS. HIS DATA FOUND AN AVERAGE EXPECTED EQUITY
25 RISK PREMIUM OF 4.81 PERCENT. THEREFORE, ADJUSTING

1 FOR THE DIFFERENCE BETWEEN THE LEVEL OF THE RATES
2 ON THE BENCHMARK SECURITY DURING HIS SAMPLED TIME
3 PERIOD AND THE CURRENT LEVEL OF SUCH RATES
4 GENERATES AN EQUITY RISK PREMIUM ESTIMATE THAT IS
5 MODIFIED EXPLICITLY FOR A PROMINENT SOURCE OF ITS
6 INSTABILITY OVER TIME. THIS ESTIMATED RISK PREMIUM
7 IS ADDED TO THE CURRENT LEVEL OF THE BENCHMARK
8 SECURITY'S RATE IN ORDER TO PROVIDE ANOTHER TEST OF
9 THE REASONABLENESS OF THE COST OF CAPITAL FOR
10 SOUTHERN BELL UNDER THE DCF MODEL.

11

12 VI. ESTIMATES OF COST OF EQUITY CAPITAL

13

14 Q. WHAT IS THE RESULT OF YOUR APPLICATION OF THE DCF
15 MODEL TO THE GROUP OF FIRMS IDENTIFIED AS
16 COMPARABLE IN RISKINESS TO SOUTHERN BELL?

17

18 A. THE APPLICATION OF THE DCF MODEL TO THE GROUP OF 20
19 FIRMS COMPARABLE IN RISK TO SOUTHERN BELL PRODUCED
20 AN AVERAGE COST OF EQUITY CAPITAL OF 14.36%.

21

22 Q. WHAT COST OF EQUITY CAPITAL FOR SOUTHERN BELL IS
23 INDICATED BY YOUR APPLICATION OF THE RISK PREMIUM
24 APPROACH?

25

1 A. THE RISK PREMIUM APPROACH DETERMINED A COST OF
2 CAPITAL FOR SOUTHERN BELL OF 14.52%. THIS RETURN
3 WAS CALCULATED BY ADDING THE RECENT AVERAGE
4 EXPECTED RISK PREMIUM OF THE S&P 500 INDEX'S
5 RETURNS OVER THE RETURNS ON Aaa-RATED BONDS TO THE
6 RECENT AVERAGE LEVEL OF Aaa-RATED BOND YIELDS.
7 THUS, THE AVERAGE FOUR-YEAR EXPECTED EQUITY RISK
8 PREMIUM OF 6.16 WAS ADDED TO THE AVERAGE
9 THREE-MONTH LEVEL OF Aaa-RATED BOND YIELDS OF 8.36%
10 TO YIELD A COST OF EQUITY CAPITAL OF 14.52%.

11
12 THE COST OF EQUITY FOR SOUTHERN BELL USING DR.
13 HARRIS' ADJUSTMENT TO THE RISK PREMIUM FOR CHANGES
14 IN THE LEVEL OF INTEREST RATES WAS 14.80%. DURING
15 THE PERIOD OF DR. HARRIS' STUDY, THE AVERAGE RISK
16 PREMIUM WAS 4.81% AND THE AVERAGE YIELD OF 20-YEAR
17 TREASURY BONDS WAS 12.25%. SINCE DR. HARRIS FOUND
18 THAT EXPECTED EQUITY RISK PREMIUMS ON THE STANDARD
19 & POOR'S UTILITY INDEX CHANGE BY AN AVERAGE OF -.51
20 OF CHANGES IN THE LEVEL OF LONG-TERM TREASURY BOND
21 YIELDS. THE CURRENT AVERAGE LEVEL ON 20-YEAR
22 TREASURY BONDS IS 7.64% (MAY 1992), AND THE
23 APPROPRIATE CURRENT RISK PREMIUM IS 7.16%. THIS IS
24 DETERMINED BY MULTIPLYING THE 4.61% DECLINE IN
25 RATES SINCE THE TIME PERIOD OF HIS STUDY BY -.51

1 AND THEN ADDING BACK THE AVERAGE RISK PREMIUM OF
2 4.81% TO THE INDICATED CHANGE OF 2.35%. THIS
3 ALTERNATIVE APPROACH CONSEQUENTLY PROVIDES A COST
4 OF EQUITY FOR SOUTHERN BELL OF 14.80%, WHICH IS THE
5 CURRENT AVERAGE LEVEL OF 20-YEAR TREASURY YIELDS OF
6 7.64% ADDED TO THE ADJUSTED RISK PREMIUM OF 7.16%.

7
8 MY FINDING THAT THE COST OF EQUITY USING THE DCF
9 MODEL OF 14.36% IS CONSEQUENTLY SHOWN TO BE
10 REASONABLE BY THE RESULTS OF THE RISK PREMIUM
11 ANALYSES OF 14.52% AND 14.80%, RESPECTIVELY. THUS,
12 THE APPLICATION OF THESE VARIOUS APPROACHES TO
13 DETERMINING THE COST OF EQUITY CAPITAL PROVIDE
14 CONSISTENT ESTIMATES THAT ARE MUTUALLY REINFORCING
15 AND CORROBORATING.

16

17 **VII. RECOMMENDATIONS**

18

19 Q. WHAT COST OF EQUITY CAPITAL DO YOU RECOMMEND THAT
20 THIS COMMISSION USE FOR SOUTHERN BELL?

21

22 MY ANALYSIS DETERMINES THE COST OF EQUITY CAPITAL
23 FROM TWO DISTINCT PERSPECTIVES: 1) THE DCF MODEL,
24 AS APPLIED TO A GROUP OF FIRMS OF RISK COMPARABLE
25 TO SOUTHERN BELL, AND 2) THE RISK PREMIUM APPROACH.

1 I BELIEVE THAT THE COST OF EQUITY CAPITAL FOR
2 SOUTHERN BELL IS IN THE RANGE OF 14.36% TO 14.80%
3 WITH A MIDPOINT OF 14.58%, WHICH I UNDERSTAND IS
4 ABOVE THE RATE ESTABLISHED BY THIS COMMISSION IN
5 1988 AND 1990, AND IS WITHIN THE RANGE SET BY THE
6 COMMISSION FOR THE COMPANY'S COST OF EQUITY. IT IS
7 MY EXPERT OPINION THAT THIS RATE IS AN OBJECTIVE,
8 MARKET-DETERMINED COST OF EQUITY CAPITAL THAT IS
9 FAIR TO BOTH SOUTHERN BELL AND TO ITS RATEPAYERS IN
10 THE STATE OF FLORIDA.

11

12 Q. DO YOU BELIEVE THAT YOUR RECOMMENDED COST OF EQUITY
13 CAPITAL IS ACCURATE EVEN IN LIGHT OF THE RECENT
14 DECLINES IN INTEREST RATES?

15

16 A. YES, MY RECOMMENDED RATE IS ACCURATE. IT WAS
17 DETERMINED BY USING METHODOLOGICAL APPROACHES THAT
18 TAKE INTO ACCOUNT THE RECENT DECLINE IN INTEREST
19 RATES. THE DCF MODEL USES MARKET-DETERMINED STOCK
20 PRICES THAT ARE DETERMINED BY INVESTORS IN LIGHT
21 OF, AMONG OTHER THINGS, CURRENT AND EXPECTED
22 INTEREST RATES. THE IBES CONSENSUS GROWTH RATE
23 FORECASTS USED IN THE DCF MODEL REFLECT FINANCIAL
24 ANALYSTS' INTEREST RATE EXPECTATIONS. THE MARKET
25 RISK PREMIUM APPROACH ADJUSTS EXPLICITLY FOR THE

1 CURRENT LEVEL OF INTEREST RATES BY ADDING THE
2 RECENT AVERAGE LEVEL OF SUCH RATES TO THE EQUITY
3 RISK PREMIUM. MY OPINION IS THAT THE
4 REASONABLENESS OF MY RECOMMENDED RANGE OF 14.36% TO
5 14.80% IS SUPPORTED BY MORE THAN ONE METHODOLOGICAL
6 APPROACH, BY THE CLOSENESS OF THE ESTIMATES
7 PROVIDED BY THESE DISTINCT APPROACHES, AND BY THE
8 OBJECTIVITY OF THE MARKET-BASED DATA USED IN MY
9 ANALYSIS.

10

11 Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY IN THIS
12 PROCEEDING?

13

14 A. YES, IT DOES.

15

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25

LIST OF SCHEDULES AND APPENDICES

Schedule 1	Discounted Cash Flow Analysis for Comparable Firm Group
Schedule 2	Expected Market Risk Premium
Appendix A	Witness Vita
Appendix B	Comparable Firm Screening Criteria and Methodology
Appendix C	Estimation of the Cost of Equity Capital the Expected Market Risk Premium Approach

DISCOUNTED CASH FLOW ANALYSIS FOR COMPARABLE FIRM GROUP

Mobil Corp.	15.48%
Amoco Corp.	15.35
McDonalds Corp.	13.90
Exxon Corp.	13.70
Kimberly-Clark Corp.	15.02
Du Pont (E.I.) de nemours	14.68
Super Valu Stores, Inc.	14.84
Anheuser-Busch Cos., Inc.	14.79
Chevron Corp.	15.88
Emerson Electric Corp.	13.36
Sara Lee Corp.	15.88
Air Products Chemicals, Inc.	13.56
Hershey Foods Corp.	14.72
Lincoln Telecommunications	8.95
Raytheon Co.	10.90
Pfizer, Inc.	19.31
Yellow Freight Systems	14.28
Armstrong World Inds., Inc.	14.02
Pitney Bowes, Inc.	14.83
K Mart Corp.	13.75
AVERAGE	14.36%

EXPECTED MARKET RISK PREMIUM

<u>Time Period</u>	<u>Standard & Poor's 500 DCF Cost of Equity</u>	<u>Moody's Aaa Public Utility Bonds</u>	<u>Market Risk Premium</u>
10/87	14.82%	10.92%	3.90%
11/87	15.06	10.43	4.63
12/87	15.46	10.64	4.82
1/88	15.65	10.39	5.26
2/88	15.52	9.77	5.75
3/88	15.42	9.72	5.70
4/88	15.45	10.07	5.38
5/88	15.42	10.29	5.13
6/88	15.65	10.27	5.38
7/88	15.63	10.50	5.13
8/88	15.72	10.66	5.06
9/88	15.66	10.15	5.51
10/88	15.63	9.62	6.01
11/88	15.64	9.52	6.12
12/88	15.58	9.67	5.91
1/89	15.39	9.71	5.68
2/89	15.39	9.71	5.68
3/89	15.34	9.87	5.47
4/89	15.35	9.88	5.47
5/89	15.40	9.60	5.80
6/89	15.22	9.13	6.09
7/89	15.36	8.98	6.38
8/89	15.14	9.02	6.12
9/89	14.94	9.10	5.84
10/89	15.02	9.01	6.01
11/89	15.17	8.92	6.25
12/89	15.12	8.92	6.20
1/90	15.18	9.08	6.10
2/90	15.29	9.35	5.94
3/90	15.47	9.48	5.99
4/90	15.62	9.60	6.02

EXPECTED MARKET RISK PREMIUM

<u>Time Period</u>	<u>Standard & Poor's 500 DCF Cost of Equity</u>	<u>Moody's Aaa Public Utility Bonds</u>	<u>Market Risk Premium</u>
5/90	15.70	9.58	6.12
6/90	15.71	9.38	6.33
7/90	15.81	9.36	6.45
8/90	15.69	9.54	6.15
9/90	15.91	9.73	6.18
10/90	16.04	9.66	6.38
11/90	16.23	9.43	6.80
12/90	16.16	9.18	6.98
1/91	16.17	9.17	7.00
2/91	16.01	8.92	7.09
3/91	15.85	9.04	6.81
4/91	15.61	8.95	6.66
5/91	15.55	8.93	6.62
6/91	15.59	9.10	6.49
7/91	15.59	9.10	6.49
8/91	15.62	8.81	6.81
9/91	15.59	8.65	6.94
10/91	15.52	8.57	6.95
11/91	15.58	8.52	7.06
12/91	15.65	8.38	7.27
1/92	15.60	8.22	7.38
2/92	15.71	8.30	7.41
3/92	15.57	8.39	7.18
4/92	15.53	8.36	7.17
5/92	15.54	8.32	7.22
Average	15.54%	9.39%	6.16%

Notes: Standard and Poor's 500 DCF Cost of Equity calculates as described in Appendix C.

Average risk premium is average of risk premiums for each month.

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EDUCATION

- 1982: Doctor of Philosophy in Finance, supporting field in Economics
Dissertation Title: "A Multivariate Analysis of Bank Holding Company Capital
Note and Debenture Ratings"
Chairman: Dr. Donald R. Fraser
Texas A&M University
- 1978: Master of Science in Economics, supporting field in Statistics
Texas A&M University
- 1976: Bachelor of Arts in Economics
Texas Tech University

PROFESSIONAL DESIGNATION

- 1986: Chartered Financial Analyst (CFA)
The Institute of Chartered Financial Analysts
(Association for Investment Management and Research)
- 1992: Certified Rate of Return Analyst (CRRA)
National Society of Rate of Return Analysts

APPOINTMENTS

1987-Current: Associate Professor of Finance
Virginia Polytechnic Institute and State University

1981-1987: Assistant Professor of Finance
Virginia Polytechnic Institute and State University

1978-1981: Lecturer of Finance
Texas A&M University

1977-1978: Lecturer of Economics
Research Assistant in Economics
Texas A&M University

Summers 1978, 1980: Research Associate
Texas Transportation Institute,
Texas A&M University

Duties: (1978) Principal researcher and author of a study concerning design of optimal subsidy techniques for public transit projects. (1980) Co-author of research proposal for study of the projected economic impact of user charges on the Texas Gulf Intra-Coastal Waterway (proposal accepted and fully funded). Performed research concerning various policy issues in transportation economics.

PRIMARY TEACHING AND RESEARCH INTERESTS

Teaching: Investments, Corporate Finance, Financial Institution Management.

Research: General interests include investments, valuation methods, cost of capital analysis, primary market pricing of debt instruments, and banking and public utility regulatory issues.

COURSES TAUGHT

Graduate: Financial Institutions and Markets (Ph.D.)
Investment Problems (MBA)
Financial Cases (MBA)
Fundamentals of Finance (MBA)
Financial Institution Management (MBA)

Management of Financial Resources (MBA)
Taught as a Visiting Professor at Northeastern
University, Boston, MA Summer 1984

Undergraduate: Investments I (survey course)
Investments II (options and financial futures)
Advanced Financial Management: Cases
Corporate Finance
Bank Management
Financial Markets and Institutions
Real Estate Finance and Investment

TEACHING HONORS

Teaching Excellence Award, The R. B. Pamplin College of Business, Virginia Polytechnic Institute and State University, 1986-1987.

Excellence In Teaching Award, MBA Association, Virginia Polytechnic Institute and State University, 1985-1986.

PUBLICATIONS

Journal Articles - Refereed

"Regional Reciprocal Interstate Banking: The Supreme Court and the Resolution of Uncertainty," *Journal of Banking and Finance*, forthcoming, (Author listing: R. S. Billingsley and R. E. Lamy).

"Integration of the Mortgage Market," *Journal of Financial Services Research*, forthcoming, (Author listing: R. S. Billingsley, V. A. Bonomo, and S. P. Ferris).

"Units of Debt with Warrants: Evidence of the 'Penalty-Free' Issuance of an Equity-Like Security," *The Journal of Financial Research*, Vol. 13, No. 3, Fall 1990, pp. 187-199, (Author listing: R. S. Billingsley, R. E. Lamy, and D. M. Smith).

"Shareholder Wealth and Stock Repurchases By Bank Holding Companies," *Quarterly Journal of Business and Economics*, Vol. 28, No. 1, Winter 1989, pp. 3-25, (Author listing: R. S. Billingsley, D. R. Fraser and G. R. Thompson).

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"The Regulation of International Lending: IMF Support, the Debt Crisis, and Bank Shareholders," *Journal of Banking and Finance*, Vol. 12, No. 2, 1988, pp. 255-274, (Author listing: R. S. Billingsley and R. E. Lamy).

"Put-Call Ratios and Market Timing Effectiveness," *Journal of Portfolio Management*, Vol. 15, No. 1, Fall 1988, pp. 25-28, (Author listing: R. S. Billingsley and D. M. Chance).

Citation: "Using 'Dumb' Money as a Market Guide," Earl C. Gottschalk, Jr., the *Wall Street Journal*, January 17, 1989, p. C1.

"Bankruptcy Avoidance As A Merger Incentive," *Managerial Finance*, Vol. 14, No. 1, November 1988, pp. 25-33, (Author listing: R. S. Billingsley, D. J. Johnson, and R. P. Marquette).

"The Pricing and Performance of Stock Index Futures Spreads," *Journal of Futures Markets*, Vol. 8, No. 3, June 1988, pp. 303-318, (Author listing: R. S. Billingsley and D. M. Chance).

"The Choice Among Debt, Equity, and Convertible Bonds," *The Journal of Financial Research*, Vol. 11, No. 1, Spring 1988, pp. 43-55, (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson).

"Valuation of Primary Issue Convertible Bonds," *The Journal of Financial Research*, Vol. 9, No. 3, Fall 1986, pp. 251-259, (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson).

Abridged Reprint: *The CFA Digest*, Vol. 17, No. 2, Spring 1987, pp. 18-19.

"The Reaction of Defense Industry Stocks to World Events," *Akron Business and Economic Review*, Vol. 18, No. 2, Summer 1987, pp. 40-47, (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson).

"Listed Stock Options and Managerial Strategy," *Strategy and Executive Action*, No. 4, Fall 1986, pp. 17-20, 28, (Author listing: R. S. Billingsley and D. M. Chance).

"Reevaluating Mortgage Refinancing "Rules of Thumb," *Journal of the Institute of Certified Financial Planners*, Vol. 7, No. 1, Spring 1986, pp. 37-45, (Author listing: R. S. Billingsley and D. M. Chance).

"Explaining Yield Savings on New Convertible Bond Issues," *Quarterly Journal of Business and Economics*, Vol. 24, No. 3, Summer 1985, pp. 92-104, (Author listing: R. S. Billingsley, R. E. Lamy, M. W. Marr, and G. R. Thompson).

Abstract: *Journal of Economic Literature*, Vol. 24, No. 2, June 1986, p. 1083.

"Options Market Efficiency and the Box Spread Strategy," *The Financial Review*, Vol. 20, No. 4, November 1985, pp. 287-301, (Author listing: R. S. Billingsley and D. M. Chance).

Reprint: *CFA Readings in Derivative Securities*, pp. 217-231, Charlottesville, VA: The Institute of Chartered Financial Analysts, 1988.

"Determinants of Stock Repurchases by Bank Holding Companies," *Journal of Bank Research*, Vol. 16, No. 3, Autumn 1985, pp. 128-35, (Author listing: R. S. Billingsley and G. R. Thompson).

"The Informational Content of Unrated Industrial Bonds," *Akron Business and Economic Review*, Vol. 16, No. 2, Summer 1985, pp. 53-58, (Author listing: R. S. Billingsley and R. E. Lamy).

"Split Ratings and Bond Reoffering Yields," *Financial Management*, Vol. 14, No. 2, Summer 1985, pp. 59-65, (Author listing: R. S. Billingsley, R. E. Lamy, M. W. Marr, and G. R. Thompson).

"Determinants of Bank Holding Company Bond Ratings," *The Financial Review*, Vol. 19, No. 1, March 1984, pp. 55-66, (Author listing: R. S. Billingsley and D. R. Fraser).

Abstract: *Journal of Economic Literature*, Vol. 22, No. 4, December 1984, p. 2010.

"Market Reaction to the Formation of One-Bank Holding Companies and the 1970 Bank Holding Company Act Amendment," *Journal of Banking and Finance*, Vol. 8, No. 2, 1984, pp. 21-33, (Author listing: R.S. Billingsley and R. E. Lamy).

Journal Articles - Other

"Managing Portfolios Using Index Options," *Futures*, Vol. 14, No. 9, September 1985, pp. 70-74, (Author listing: D. M. Chance and R. S. Billingsley).

Monographs & Sponsored Research

"The Evolution of Depository Institution Regulation In The United States," in *Banking and Monetary Reform: A Conservative Agenda*, Catherine England, pp. 47-56, Washington, D. C.: The Heritage Foundation, 1985, (Author listing: R. S. Billingsley).

Fare Box and Public Revenue: How to Finance Public Transportation. State Department of Highways and Public Transportation, Texas Transportation Institute, February 1980, (Author listing: R. S. Billingsley, P. K. Guseman and W. F. McFarland).

Proceedings

"Bankruptcy Avoidance as a Merger Incentive: An Empirical Study of Failing Firms," *The Financial Review*, Vol. 18, No. 3, 1983, p. 94, (Author listing: R. S. Billingsley, D. J. Johnson, and R. P. Marquette).

"A Multivariate Analysis of the Ratings of Bank Holding Company Debt Issues," *The Financial Review*, Vol. 17, No. 2, July 1982, p. 57, (Author listing: R. S. Billingsley and D. R. Fraser).

PAPERS PRESENTED AT PROFESSIONAL MEETINGS

"Estimation Bias in the Application of the Quarterly Discounted Cash Flow Model to Public Utility Cost of Capital Analysis," (Author listing: R. S. Billingsley and V. A. Bonomo). To be presented at the Financial Management Association Meetings, San Francisco, California, October 1992.

"Firm Value and Convertible Debt Issues: Signalling vs. Agency Effects," (Author listing: R. S. Billingsley, R. E. Lamy, and D. M. Smith). Presented at the Eastern Finance Association Meetings, Hot Springs, Virginia, April 1991.

"The Valuation of Simultaneous Debt and Equity Offerings," (Author listing: R. S. Billingsley, R. E. Lamy, and D. M. Smith). Presented at the Financial Management Association Meetings, Orlando, Florida, October 1990.

"The Choice Between Issuing Convertible Bonds and Units of Debt with Warrants," (Author listing: R. S. Billingsley, R. E. Lamy and D. M. Smith). Presented at the Financial Management Association Meetings, New Orleans, Louisiana, October 1988. (Subsequently published in *The Journal of Financial Research*, see article citation.)

"The Choice Among Debt, Equity, and Convertible Bonds," (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson). Presented at the Financial Management Association Meetings, Las Vegas, Nevada, October 1987. (Subsequently published in *The Journal of Financial Research*, see article citation.)

"The Regulation of International Lending: IMF Support, the Debt Crisis, and Bank Shareholders," (Author listing: R. S. Billingsley and R. E. Lamy). Presented at the Conference on Bank Structure and Competition, Federal Reserve Bank of Chicago, Chicago, Illinois, May 1986. (Subsequently published in the *Journal of Banking and Finance*, see article citation.)

"Valuation of Primary Issue Convertible Bonds," (Author listing: R. S. Billingsley, R. E. Lamy and G. R. Thompson). Presented at the Financial Management Association Meetings, Denver, Colorado, October 1985. (Subsequently published in *The Journal of Financial Research*, see article citation.)

"The Economic Impact of Split Ratings on Bond Reoffering Yields," (Author listing: R. S. Billingsley, R. E. Lamy, M. W. Marr, and G. R. Thompson). Presented at the Financial Management Association Meetings, Toronto, Canada, October 1984. (Subsequently published in *Financial Management*, see article citation.)

"The Informational Content of Unrated Industrial Bonds," (Author listing: R. S. Billingsley and R. E. Lamy). Presented at the Financial Management Association Meetings, Atlanta, Georgia, October 1983. (Subsequently published in *Akron Business and Economic Review*, see article citation.)

"Bankruptcy Avoidance As A Merger Incentive: An Empirical Study of Failing Firms," (Author listing: R. S. Billingsley, R. P. Marquette, and D. J. Johnson). Presented at the Eastern Finance Association Meetings, New York, New York, April 1983. (Subsequently published in *Managerial Finance*, see article citation.)

"A Multivariate Analysis of the Ratings of Bank Holding Company Debt Issues," (Author listing: R. S. Billingsley and D. R. Fraser). Presented at the Eastern Finance Association Meetings, Jacksonville, Florida, April 1982. (Subsequently published in *The Financial Review*, see article citation.)

SESSIONS CHAIRED AT PROFESSIONAL MEETINGS

"The Effects of New Debt Decisions," Financial Management Association Meeting, New York, New York, October 1986.

PAPERS DISCUSSED AT PROFESSIONAL MEETINGS

"Behavioral Aspects of the Intra-Industry Capital Structure Decision," M. G. Filbeck, R.F. Gorman, and D. Preece. To be presented at the Financial Management Association Meetings, San Francisco, California, October 1992.

"The Relationship Between the Argentinean Debt Rescheduling Announcement and Bank Equity Returns," Igbal Mansur, Steven J. Cochran, and David K. Seagers. Presented at the Financial Management Association Meetings, Boston, Massachusetts, October 1989.

"Model Specification In the Statistical Analysis of Bond Ratings," John J. Jackson and James W. Boyd. Presented at the Southern Finance Association Meeting, Washington, D.C., November 1983.

"The Effects of Inflation on Leverage, Risk, and Return," I. Keong Chew. Presented at the Financial Management Association Meeting, San Francisco, California, October 1982.

PROFESSIONAL SERVICE

Association for Investment Management and Research Activities (Formally the Institute for Chartered Financial Analysts).

Grading Staff, Institute of Chartered Financial Analysts, June 1987.

Candidate Curriculum Committee, Institute of Chartered Financial Analysts, Quantitative Analysis Sub-Committee, 1987-1989.

CFA Examination Analysis Team, Levels I-III, March 1988.

CFA Examination Grading Review Team, July 1988.

Instructor, CFA Refresher Course, Topic: Equity Valuation, Charlottesville, VA, June 1992.

Consulting Clients

Bell Atlantic

The Financial Analysts' Review of the United States

Institut Penembangan Analisis Finansial, Jakarta, Indonesia

Macmillan

McGraw-Hill

Charles G. Merrill

Prentice-Hall

Securities Analysts Association, Bangkok, Thailand

Southern Bell Telephone and Telegraph Company
Union Bank of Switzerland, Zürich
West Publishing Company
John Wiley & Sons

Manuscript Referee

Journal of Banking and Finance

Journal of Financial Research

Journal of Futures Markets

Financial Review

Quarterly Journal of Business and Economics

Quarterly Review of Business and Economics

International Review of Economics and Finance

Japan and the World Economy

Journal of Business Research

Journal of Economics and Business

Engineering Economist

Program Committee, 1991 Financial Management Association Meeting.

Reviewer for 1992 Eastern Finance Association meeting papers.

Reviewer for 1985 Eastern Finance Association paper competition.

INVITED SPEECHES

Securities Analysts' Association, "Common Problems in Valuing Equity Securities," Bangkok, Thailand, April 1992.

Virginia Bankers Association, Group Five (Credit Policy Committee), "Want to Sell Your Bank?" Interstate Banking in 1987 and Beyond," Credit Policy Conference, Radford, VA, April 1987.

EXECUTIVE DEVELOPMENT ACTIVITIES

Developed continuing education program with Don M. Chance entitled, "Managing Interest Rate Risk with Financial Futures." Presented in Roanoke, VA (May 1984) and Williamsburg, VA (June 1984).

UNIVERSITY SERVICE

Department Personnel Committee (1987-current)
Department Head Search Committee (current)
Department Head Evaluation Committee, Chairman (1988)
University Scheduling and Registration Committee (1986-1989)
College of Business Graduate Curriculum Committee, Chairman (1986-1987)
College of Business Undergraduate Curriculum Committee (1984-1986, 1990-current)
Department Undergraduate Curriculum Committee, Chairman (1990-current)
Honors Program in Finance Advisor (1983-current)
State Commission on Higher Education in Virginia Visitation Team Interview (1985)
Member of Departmental Executive Committee (1983-1985, 1986)
Department Head Search Committee (1982-83)
Undergraduate Finance Major Advisor (1981-1983, 1985-current)
Member of Ph.D. Student Committees (numerous, 1982-current)
Ph.D. Student Committee Chairman, 1988/89: David M. Smith

SERVICE TO STUDENT ORGANIZATIONS

Financial Advisor to Student Media Board (1983-84)
Founding Faculty Sponsor: Finance Club, Student Chapter of Financial Management Association (1982-84)
Faculty Brother of Alpha Kappa Psi, national business fraternity (1982-current)

MEMBERSHIP IN HONORARY AND PROFESSIONAL ORGANIZATIONS

American Finance Association - national professional society.
Association for Investment Management and Research - international professional society, merger of the Institute of Chartered Financial Analysts and the Financial Analysts Federation.
Financial Management Association - national professional society.
National Society of Rate of Return Analysts.
Southern Finance Association - regional professional society.
Western Finance Association - regional professional society.
Omicron Delta Epsilon - international economics honorary society.
Alpha Kappa Psi - national business fraternity.

PROFESSIONAL SEMINARS ATTENDED

"Options and Futures: New Routes to Risk/Return Management." Sponsored by the Institute of Chartered Financial Analysts, Dallas, TX, February 1984.

Financial Futures Seminar. Sponsored by the Chicago Board of Trade, March 1982.

COMMUNITY SERVICE

Department Representative, Combined Charitable Campaign, 1991.

Board of Directors, Laurel Ridge Homeowners Association, 1987-1989.

PERSONAL

Date of Birth: 4 August 1954

Place of Birth: Dallas, Texas

Marital Status: Married, one child

COMPARABLE FIRM IDENTIFICATION CRITERIA AND METHODOLOGY

I. INTRODUCTION

Since Southern Bell (SBT) does not have equity trading independently of BellSouth, no direct market price of equity can be used to infer SBT's cost of equity. Thus, the purpose is to identify a portfolio of firms that are comparable in equity investment risk to SBT. The DCF model will be applied to each of the portfolio's members and an average cost of equity capital will be determined. Given that the portfolio of firms are of comparable risk to SBT, this average cost of equity is an objective, reasonable estimate of SBT's cost of equity. The subsequent section identifies the sources of investment risk and the specific proxies used to identify comparable firms.

II. RISK CRITERIA

The following sources of investment risk are measured and used to identify firms into a group of risk comparable to SBT:

A. Variability of Total Return

The variability of returns reflects the total risk perceived by the investor. This is measured by the standard deviation of the return on common equity (ROE) over the most recent five years (1987-1991). Higher variability implies higher risk to the equity investor.

B. Financial Risk

1. Relative Amount of Debt

Financial risk is dependent, in part, on the amount of total debt employed by a firm relative to its equity base. Other things being equal, higher debt per dollar of equity implies higher risk. This source of risk is measured by a firm's total assets-to-equity ratio, the so-called "equity multiplier" in fundamental equity analysis. The most recent annual value (1991) is used in the analysis.

2. Ability to Service Debt

Apart from the above descriptive measure of a firm's relative indebtedness, it is important to evaluate the ability of a firm to service its total debt. This is assessed by examining the amount of interest (I) that a firm owes relative to the resources (operating earnings, or earnings before interest and taxes (EBIT)) it has available to meet that commitment. This is measured by the interest coverage ratio, EBIT/I. Other things being equal, an increase in this ratio reflects greater ability to service debt and consequently implies lower riskiness. The most recent annual value (1991) of this variable is employed.

3. Bond Rating

Bond ratings reflect a rating agency's evaluation of the relative probability of default on a firm's given debt security. Ratings are readily accessible to investors and are used commonly to appraise the risk of a firm. Bond ratings are assigned numerical (i.e., dummy variable) values for the purposes of the present analysis. The most recent Standard & Poor's bond rating is used in the identification process.

4. Liquidity Risk

An important aspect of a firm's riskiness is its comprehensive ability to service all of its debt, both long- and short-term. The ability of a firm to meet its total debt commitments is captured by the various financial risk variables discussed above. A firm's capacity to cover its short-term indebtedness is measured by the well-known quick or "acid test" ratio: $(\text{Current Assets} - \text{Inventories}) / \text{Current Liabilities}$. This variable measures the extent of a firm's short-term, presumably readily convertible into cash, assets available to meet its short-term liabilities. Other thing being equal, the higher is the quick ratio, the lower is the perceived risk of investing in a company. The most recent annual value (1991) of this variable is used in the identification process.

C. Business Risk

1. Variability of Cash Flows

The variability of a firm's cash flows characterize the riskiness of a firm's chosen line of business. Cash flows represent a firm's command over goods and services. The risk implications of a given level of cash flows are easiest to interpret when related to an economically meaningful base such as total assets. This source of risk is measured by the standard deviation of the ratio of a firm's cash flows-to-total assets. Higher values of the measure are associated with greater risk. The variable is calculated using the most recent five years of annual data (1987-1991).

2. Growth Opportunities

Other things being equal, companies experiencing higher growth are associated with early stages in the life cycle of a firm. The early stages are characterized by rapidly increasing revenues, profit margins, and earnings. Yet such rapid growth is not sustainable over the long-run and movement into a more mature stage of the life cycle usually brings the erosion of a firm's competitive position. Thus, high sales growth is usually an indication that a firm is in a start-up business or moving toward a potential shake-out, either of which proxy for higher operating or business risk. The growth in sales variable is measured using the most recent five years of annual data (1987-1991).

III. METHODOLOGY USED IN THE COMPARABLE FIRMS IDENTIFICATION PROCESS

Comparable firms are identified using a modified cluster analysis model. Classical cluster analysis techniques develop natural groupings of objects based on the relationships of a given set of descriptive variables. The goal is to determine how the objects should be assigned to groups so that there will be as much similarity within groups and as much difference among groups as possible. No predetermined reference object is offered to organize the grouping effort. The modified cluster analysis used in this screening differs from the classical techniques by identifying a target object (firm) characterized by several descriptive (financial) measures. The goal of this application is to find a group of firms that are as similar as possible to the target firm in terms of the identified measures of

investment risk. Unlike classical cluster analysis, the goal of maximizing the differences among groups is irrelevant since all dissimilar groups are discarded. Specifically, in this context, only those industrial firms that are identified as comparable to SBT are retained for use in inferring the cost of equity capital for the firm.

As in classical cluster models, similarity is determined by measuring the Euclidian distance between the descriptive variables in a manner that considers the multivariate nature of the problem. The distance D_i of each firm i in the sample from the target firm T , assuming the seven descriptive variables V_{ij} discussed above, is calculated as:

$$D_i = \sqrt{\sum_{j=1}^7 (V_{ij} - V_{Tj})^2}$$

The distance measure uses the squared differences of a given firm's descriptive variable from that of the target firm T in order to measure distance irrespective of whether it is above (positive) or below (negative) the respective value of the target firm. The group of firms considered to be similar to the target firm, SBT (BellSouth Telecommunications is the actual target since it has published financial data), is identified by balancing the goals of minimizing the distance D_i of a firm from the target with the desire to have a sample of sufficient size to assure confidence in its representativeness.

IV. ISSUES IN APPLYING CLUSTER ANALYSIS

Only firms available on the COMPUSTAT data source also having an IBES consensus growth rate forecast based on at least two analysts' estimates are retained for analysis. Outliers are identified on a variable-by-variable basis. Those firms with variable values greater than or less than two standard deviations from the mean value of the population for each variable are deleted. All outliers must be eliminated before standardizing the variables or the means and standard deviations will be biased. The final population consists of 209 firms.

Since the proxies of investment risk discussed above are denominated in different units of measurement, they consequently need to be standardized. A z-statistic is calculated using the mean \bar{V}_j and the standard deviation σ_j of each variable across all of the firms as:

$$Z_{ij} = \frac{V_{ij} - \bar{V}_j}{\sigma_j}$$

The squared difference between the Z-value for each firm's given variable and the value of the Z-statistic for the target firm for the same given variable across all descriptive variables is then calculated. After generating the Z-values for every variable for each firm, squared differences for each firm are summed. The distance measure D_i is determined by taking the square root of the sum of the squared differences.

The final step in the analysis is the identification of the group of the 20 firms that are the least distance from SBT. Schedule 1 of my Exhibit lists the final group of comparable firms. A correlation coefficient matrix for the variables used to identify firms is provided on the following page. It shows that the degree of correlation among the variables is acceptably low and thus that there is no reason to be concerned that any of the variables capture essentially the same source(s) of investment risk and thus double-count effects.

**ESTIMATION OF THE COST OF EQUITY CAPITAL
USING THE EXPECTED MARKET RISK
PREMIUM APPROACH**

I. INTRODUCTION

This schedule elaborates on the steps taken in estimating Southern Bell's (SBT's) cost of equity capital using the expected market risk premium approach. The following specific issues and steps are discussed: 1) the rationale for the conceptual approach; 2) the appropriate method for estimating the expected market return; 3) the source of the expected growth rate; 4) the appropriate interest rate reference point; 5) the specific computational procedure used to estimate the cost of equity capital, and 6) the time period covered by the statistical analysis.

II. RATIONALE FOR THE CONCEPTUAL APPROACH

The expected market risk premium approach estimates prospective equity capital costs. This is appropriate since investors' allocate funds among competing investments based on their expectations, not based solely on historical or earned returns. The expected risk premium approach estimates and evaluates the returns that were expected over a given period of time on a broad equity market index relative to a chosen benchmark security return that is relevant to SBT. The average expected risk premium of expected market returns over this interest rate benchmark is used in conjunction with current interest rates to estimate SBT's cost of equity capital.

III. ESTIMATION OF THE EXPECTED MARKET RETURN

In recognition of the fact that most firms pay dividends on a quarterly basis, the quarterly form of the DCF model is used to estimate the expected market return. As in the discussion of the DCF analysis in the above testimony, it is assumed that dividends grow at a given rate over a year with the yearly change in the amount paid by a firm occurring after the second quarter each year.

IV. SOURCE OF THE EXPECTED GROWTH RATE

The expected growth rate used in the quarterly version of DCF model is the consensus mean market value-weighted five-year earnings per share estimate published by the Institutional Brokers Estimate Service (IBES) for the Standard & Poor's 500 index (S&P 500). Dividend yield data is obtained

from Standard & Poor's Outlook, restated on a quarterly basis. The use of a market regulated index is consistent with the S&P 500 index, which uses market value weights.

V. INTEREST RATE REFERENCE POINT

Since SBT's debt is Aaa-rated, an index of Aaa-rated bond returns is used as the relevant security return benchmark in the analysis. A three month average (March-May, 1992) of the interest rate benchmark is used in the calculation of the expected market risk premium.

VI. COMPUTATIONAL PROCEDURE

Expected risk premiums $E(RP_t)$ as of point t in time are calculated as the simple arithmetic difference between the expected return on the S&P 500 at time t [$E(S\&P500)_t$], produced by applying the DCF model to the S&P 500, and the average monthly Aaa-rated bond yield at time t [$R(Aaa)_t$]. Thus, risk premiums are calculated as:

$$E(RP_t) = E(S\&P500)_t - R(Aaa)_t.$$

The average expected risk premium $\overline{E(RP)}$ for the time period spanning N months is calculated as:

$$\overline{E(RP)} = \sum_{t=1}^N \frac{E(RP_t)}{N}.$$

The cost of equity capital for SBT is estimated by adding the average expected risk premium $\overline{E(RP)}$ to the average yield prevailing on Aaa-rated bond over the most recent three months.

It is important to note that the resulting estimated cost of equity for SBT is not adjusted for flotation costs. Therefore, it is consequently a conservative estimate of SBT's cost of equity.

VII. TIME PERIOD OF THE ANALYSIS

The statistical analysis uses data on the expected market risk premium and Aaa-rated bond returns over the period from October of 1987 through May of 1992. This time period is dictated by the availability of consistent IBES expected growth rate estimate data. The data is current up to May of 1992.