1

2

3

4

5

6

7

8

9

10

11   **REBUTTAL TESTIMONY OF ROGER A. MORIN**

12   **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

13   **ON BEHALF OF**

14   **SOUTHERN STATES UTILITIES, INC.**

15   *DOCKET NO. 950495-WS*

16

17

18

19

20

21

22

23

24

25

1	Q.	**PLEASE STATE YOUR NAME, ADDRESS, AND OCCUPATION.**
2	A.	My name is Dr. Roger A. Morin. My business address
3		is 1515 Old Riverside Rd., Roswell, Georgia, 30076.
4		I am Professor of Finance at the College of
5		Business Administration, Georgia State University
6		and Professor of Finance for Regulated Industry at
7		the Center for the Study of Regulated Industry at
8		Georgia State University.
9	Q.	**ARE YOU THE SAME DR. R. A. MORIN WHO HAS FILED RATE**
10		**OF RETURN TESTIMONY IN THIS SAME PROCEEDING?**
11	A.	Yes, I am.
12	Q.	**WHAT IS THE PURPOSE OF THIS REBUTTAL TESTIMONY?**
13	A.	This testimony is in rebuttal to Mr. Rothschild's
14		(Office of the Public Counsel), and Mr. Maurey's
15		(Florida Public Service Commission Staff) cost of
16		capital testimonies.
17	Q.	**HOW IS YOUR TESTIMONY ORGANIZED?**
18	A.	My testimony is organized in two parts, dealing
19		with Mrs. Rothschild's and Maurey's cost of capital
20		testimonies, respectively. The vast majority of my
21		comments are directed at Mr. Rothschild, as I am in
22		large agreement with the Commission's Leverage
23		Formula espoused by Mr. Maurey in determining
24		Southern States Utilities' (SSU) cost of equity. I
25		have attached an executive summary of my testimony

1		as Exhibit _____ (RAM-12).
2		**I. COMMENTS ON MR. ROTHSCHILD'S TESTIMONY.**
3	**Q.**	**PLEASE SUMMARIZE MR. ROTHSCHILD'S RATE OF RETURN**
4		**RECOMMENDATION.**
5	**A.**	In determining SSU's cost of equity applicable, Mr.
6		Rothschild applies DCF analysis to water and gas
7		distribution utilities and weighs the results
8		equally. As checks on the DCF results, he performs
9		a risk premium analysis and a CAPM analysis. No
10		weight is attached to the results of those two
11		checks. Based on the results of his DCF analysis
12		alone, he recommends a return of 10.10% on SSU's
13		common equity capital.
14	**Q.**	**DO YOU HAVE ANY GENERAL COMMENTS ON MR.**
15		**ROTHSCHILD'S TESTIMONY?**
16	**A.**	Yes. Before I engage in specific criticisms of Mr.
17		Rothschild's testimony, my general reaction to his
18		testimony is that it is extremely narrow in scope,
19		relying solely on the fragile retention growth DCF
20		model results applied to water and gas distribution
21		utilities. His recommendation of 10.10% rests
22		entirely on one particular variant of the DCF
23		approach, namely, the retention growth approach.
24		Using this one variant of the DCF method, Mr.
25		Rothschild was forced to assume the ROE answer

2

1 before he even began his determination of SSU's

2 equity costs using that method, as I demonstrate

3 later.

4   Mr. Rothschild has put all his eggs in the DCF

5 basket, and thereby has set a dangerous precedent

6 for the Commission.   It is dangerous and

7 inappropriate to rely on only one method, namely

8 the DCF model, and to rely heavily on a particular

9 variant of that method, as Mr. Rothschild has done.

10 As I discuss later, this variant, namely the

11 retention growth method, is the most fragile

12 conceptually and the least valid empirically. By

13 relying heavily on a single variant of the DCF

14 model at a time when the fundamental assumptions

15 underlying the DCF model are tenuous, the

16 Commission would greatly limit its flexibility and

17 increase the risk of authorizing unreasonable rates

18 of return. The results from one method are likely

19 to contain a high degree of measurement error. The

20 Commission's hands should not be bound to one

21 methodology of estimating equity costs, nor should

22 the Commission ignore relevant evidence and back

23 itself into a corner. Moreover, Mr. Rothschild's

24 cost of equity recommendation of 10.10%, if ever

25 adopted, would result in one of the lowest rate of

3

1   return awards for water utilities in the country.

2   Moreover, I found Mr. Rothschild's testimony

3   very difficult to follow and his exhibits to be

4   very laborious to decipher. His testimony was very

5   ambiguous in places while he seemed to repeat the

6   same points on DCF analysis again at the end of his

7   testimony. As for his exhibits, I found some of

8   his analyses almost incomprehensible as the reader

9   is continuously being buffeted from schedule to

10   schedule in order to follow his figures, some of

11   which I could not replicate. In short, I found Mr.

12   Rothschild's computations and exhibits convoluted,

13   sloppy, and difficult to follow.

14   Q.   **WHAT ARE THE BASIC CONCLUSIONS OF YOUR REBUTTAL TO**

15   **MR. ROTHSCHILD'S COST OF EQUITY TESTIMONY?**

16   A.   Mr. Rothschild understates SSU's cost of equity

17   capital. A proper application of cost of capital

18   methodologies would give results substantially

19   higher, and much closer to my own original

20   recommendation and that of the Leverage Formula.

21   Q.   **PLEASE SUMMARIZE YOUR SPECIFIC CRITICISMS OF MR.**

22   **ROTHSCHILD'S TESTIMONY.**

23   A.   The specific criticisms which I discuss include:

24   1.   **Mr. Rothschild's complete disregard for the**

25   **Commission's Leverage Formula.** Following lengthy

4

1   deliberations and proceedings over the years, the
2   Commission has constructed a valid methodology to
3   aid in the computation of the cost of equity for
4   the over 400 water utilities in its jurisdiction.
5   Mr. Rothschild is completely silent on the Leverage
6   Formula as if it did not exist.

7   2.   **Unreliable estimate.** Mr. Rothschild's cost of
8   equity recommendation is unreasonably low, and is
9   not a reliable estimate of SSU's cost of equity
10   capital given his sole reliance on one particular
11   and fragile cost of equity methodology. Reliance
12   on one particular methodology violates the spirit
13   of the Commission's Leverage Formula.

14   3.   **The expected growth rate for utilities in the**
15   **DCF   model.**   There   are   serious   logical
16   inconsistencies in the retention growth method
17   employed by Mr. Rothschild. Moreover, this method
18   is the least empirically and theoretically valid.

19   4.   **Flotation cost allowance.**   Mr. Rothschild is
20   completely   silent   on   the   subject   of   flotation
21   costs, and his DCF estimates of equity costs are
22   therefore understated.   Yet, his retention growth
23   term includes growth through external stock issues.

24   5.   **Mr.   Rothschild's   disregard   for   the**
25   **business risks of SSU and the greater risks of the**

5

1   **water industry in general.**   Mr. Rothschild

2   erroneously contends that the business risks faced

3   by SSU and the water utility industry have not

4   increased in recent years and that Florida water

5   utilities are not riskier than the national

6   average.   This violates the precepts of the

7   Leverage Formula.

8   6.   **Mr. Rothschild's view that company size is**

9   **unrelated to return** because it is an element of

10   diversifiable risk is wrong.

11   7.   **Mr. Rothschild's contention that a liquidity**

12   **premium is unwarranted** because SSU's equity capital

13   is raised by its parent is wrong.

14   8.   **Mr. Rothschild's view that gas distribution**

15   **stocks and water utility companies are equally**

16   **risky is inconsistent with the facts.**   This view

17   violates the Commission's Leverage Formula.

18   9.   **Mr. Rothschild's viewpoint that the used and**

19   **useful adjustment does not increase SSU's risk is**

20   **erroneous.**

21   10. **Mr. Rothschild's view that a weather**

22   **normalization clause does not reduce risk is**

23   **counterintuitive and inconsistent with financial**

24   **theory.**

25   11. **Mr. Rothschild's risk premium analysis is**

1 **stale and inapplicable to water utilities. Mr.**
2 **Rothschild's contention that the risk premium is**
3 **driven by taxation ignores the presence of tax-**
4 **exempt institutional investors.**

5 12. **Mr. Rothschild's views on the proper inputs to**
6 **the CAPM are unfounded.** Mr. Rothschild wrongly
7 argues that the yield on short-term Treasury
8 securities is the proper proxy for the risk-free
9 rate. Only long-term yields provide an appropriate
10 proxy for the risk-free rate when applying the CAPM
11 to common stocks. Mr. Rothschild also argues that
12 arithmetic means rather than geometric means should
13 be used when measuring the market risk premium. He
14 is also wrong on that score. Mr. Rothschild's
15 disregard for the CAPM and its results is totally
16 out of the mainstream of corporate finance and
17 corporate practice. Mr. Rothschild's views on the
18 CAPM violate the spirit of the Commission's
19 Leverage Formula.

20 13. **Market to Book ratios and regulation.** Mr.
21 Rothschild erroneously believes that market to book
22 ratios above 1.0 are a sign that the utility is
23 over-earning.

24 My comments will show that proper use of the
25 Capital Asset Pricing Model, risk premium analysis,

7

1   and recognition of realistic growth rates in his

2   DCF methodology will produce a cost of equity

3   recommendation which is substantially higher than

4   his recommended 10.10%. I also respond to several

5   of Mr. Rothschild's comments on my own testimony,

6   and show that they are unfounded. Several of Mr.

7   Rothschild's views and procedures are in

8   contradiction with the Commission's Leverage

9   Formula.

10   **1.   THE LEVERAGE FORMULA**

11 Q. **WHAT IS THE COMMISSION'S LEVERAGE FORMULA?**

12 A. The leverage formula is a linear equation that

13   estimates the cost of equity capital for a given

14   degree of financial leverage. This formula is

15   recalibrated once a year to the change in financial

16   conditions in the marketplace. In sharp contrast

17   to Mr. Rothschild's approach, the leverage formula

18   takes into account results from three cost of

19   equity methodologies and allows for the differing

20   risk profile of Florida water companies as compared

21   to the national average.

22 Q. **WHY IS THE LEVERAGE FORMULA USED?**

23 A. There are nearly 400 water and/or wastewater

24   utilities in jurisdiction of the Commission. The

25   Leverage formula helps to ease the administrative

8

1		burden of the commission and the water utilities
2		alike.
3	Q.	**DOES MR. ROTHSCHILD MAKE USE OF THIS FORMULA IN HIS**
4		**ANALYSIS?**
5	A.	No, not at all. Mr. Rothschild has completely
6		ignored the Leverage Formula in his cost of equity
7		analysis. He refutes many of the methodologies and
8		principles included in the leverage formula
9		computation, choosing instead to rely solely on one
10		variant of one methodology, the retention growth
11		DCF model.
12	Q.	**DO YOU, DR. MORIN, USE THE LEVERAGE FORMULA IN YOUR**
13		**COST OF EQUITY ANALYSIS?**
14	A.	Yes, I do. From a methodological standpoint, my
15		recommendation is derived from the Commission's
16		Leverage Formula and from suggested modifications
17		and refinements which would improve the formula's
18		conceptual foundations and applicability to the
19		current circumstances of the water utility industry
20		in Florida. Many of my recommendations were
21		subsequently adopted in the most recent update of
22		the Leverage formula in August of 1995 in Order No.
23		PSC-95-0982-FOF-WS.
24		2. **UNRELIABLE RECOMMENDATION**
25	Q.	**MR. ROTHSCHILD HAS LIMITED THE COST OF EQUITY**

9

1 **ESTIMATION PROCESS TO ONE METHODOLOGY, NAMELY THE**

2 **DCF METHOD AND TO ONE PARTICULAR VARIANT OF THAT**

3 **METHODOLOGY, NAMELY, THE RETENTION GROWTH METHOD.**

4 **DOES THIS AFFECT THE RELIABILITY OF HIS RESULTS?**

5 A. Yes, it does. The major problem in his testimony

6 is the lack of corroborating evidence. There is

7 simply no objective cross check on the result. The

8 10.10% cost of equity recommended by Mr. Rothschild

9 is unreasonably low, and is not a reliable estimate

10 of SSU's cost of equity capital. This is readily

11 apparent in a CAPM-based reasonableness check, as I

12 shall demonstrate later. Had Mr. Rothschild used

13 all the market data and financial theory available

14 to him, his estimate would be higher.

15 There are four broad generic methodologies

16 available to measure the cost of equity: DCF, Risk

17 Premium, Capital Asset Pricing Model (CAPM), which

18 are market-oriented, and Comparable Earnings, which

19 is accounting-oriented. Each generic market-based

20 methodology in turn contains several variants. Mr.

21 Rothschild has chosen to rely on one method, namely

22 the standard DCF method, and on one specific

23 variant of that methodology, the retention growth

24 method.

25 When measuring equity costs, which essentially

10

1   deals with the measurement of investor

2   expectations, no one single methodology provides a

3   foolproof panacea.   Each methodology requires the

4   exercise of considerable judgment on the

5   reasonableness of the assumptions underlying the

6   methodology and on the reasonableness of the

7   proxies used to validate the theory. The failure

8   of the traditional infinite growth DCF model to

9   account for changes in relative market valuation,

10 and the practical difficulties of specifying the

11 expected growth component, discussed in my original

12 testimony are vivid examples of the potential

13 shortcomings of the DCF model.   It follows that

14 more than one methodology should be employed in

15 arriving at a judgment on the cost of equity and

16 that these methodologies should be applied across a

17 series of comparable risk companies.

18   There is no single model that conclusively

19 determines or estimates the expected return for an

20 individual firm.   Each methodology possesses its

21 own way of examining investor behavior, its own

22 premises, and its own set of simplifications of

23 reality.   Each method proceeds from different

24 fundamental premises which cannot be validated

25 empirically.   Investors do not necessarily

11

1   subscribe to any one method, nor does the stock
2   price reflect the application of any one single
3   method by the price-setting investor. There is no
4   monopoly as to which method is used by investors.
5   Absent any hard evidence as to which method outdoes
6   the other, all relevant evidence should be used and
7   weighted equally, in order to minimize judgmental
8   error, measurement error, and conceptual
9   infirmities. I submit that the Commission should
10   rely on the results of a variety of methods applied
11   to a variety of comparable groups, and not, as Mr.
12   Rothschild has done, on one particular generic
13   method. There is no guarantee that a single DCF
14   result is necessarily the ideal predictor of the
15   stock price and of the cost of equity reflected in
16   that price, just as there is no guarantee that a
17   single CAPM or Risk Premium result constitutes the
18   perfect explanation of that stock price.

19   Q.   **DOES THE FINANCIAL LITERATURE SUPPORT THE USE OF**
20   **MORE THAN A SINGLE METHOD?**

21   A.   Yes. The financial literature strongly supports
22   the use of multiple methods. Professor Brigham, a
23   widely respected finance scholar and author,
24   asserts:

25   *"In practical work, it is often best*

1   *to use all three methods - CAPM,*

2   *bond yield plus risk premium, and*

3   *DCF - and then apply judgment when*

4   *the methods produce different*

5   *results. People experienced in*

6   *estimating capital costs recognize*

7   *that both careful analysis and some*

8   *very fine judgments are required.*

9   *It would be nice to pretend that*

10   *these judgments are unnecessary and*

11   *to specify an easy, precise way of*

12   *determining the exact cost of equity*

13   *capital. Unfortunately, this is not*

14   *possible." Eugene F. Brigham and*

15   *Louis C. Gapenski, Financial*

16   *Management Theory and Practice, 4th,*

17   *ed, Dryden Press, Chicago, 1985, p.*

18   *256.*

19   Mr. Rothschild should have heeded to Professor

20   Brigham's admonitions in this regard. Another

21   prominent finance scholar, Professor Stewart Myers,

22   in his best selling corporate finance textbook,

23   cites:

24   *"The constant growth formula and the capital*

25   *asset pricing model are two different ways of*

13

1   *getting a handle on the same problem." R. A.*

2   *Brealey and S. C. Myers, Principles of*

3   *Corporate Finance, 3rd ed, McGraw Hill, New*

4   *York, 1988, p. 182.*

5   *"Use more than one model when you can.*

6   *Because estimating the opportunity cost of*

7   *capital is difficult, only a fool throws away*

8   *useful information. That means you should not*

9   *use any one model or measure mechanically and*

10   *exclusively. Beta is helpful as one tool in a*

11   *kit, to be used in parallel with DCF models or*

12   *other techniques for interpreting capital*

13   *market data." S. C. Myers, "On the Use of*

14   *Modern Portfolio Theory in Public Utility Rate*

15   *Cases: Comment," Financial Management, Autumn*

16   *1978, p. 67.*

17 **Q. DOES THE USAGE OF THE DCF METHODOLOGY IN PAST**

18   **REGULATORY PROCEEDINGS MAKE IT SUPERIOR TO OTHER**

19   **METHODS?**

20 A. No, it does not. While the DCF model was once upon

21   a time fashionable in financial theory and in

22   regulatory proceedings, its uncritical acceptance

23   vests the model with a degree of accuracy that

24   simply is not there. One of the leading experts on

25   regulation, Dr. C. Phillips discusses the dangers

14

1   of relying solely on the DCF model:

2   *"[U]se of the DCF model for*

3   *regulatory purposes involves both*

4   *theoretical and practical*

5   *difficulties. The theoretical*

6   *issues include the assumption of a*

7   *constant retention ratio (i.e. a*

8   *fixed payout ratio) and the*

9   *assumption that dividends will*

10   *continue to grow at a rate 'g' in*

11   *perpetuity. Neither of these*

12   *assumptions has any validity,*

13   *particularly in recent years.*

14   *Further, the investors'*

15   *capitalization rate and the cost of*

16   *equity capital to a utility for*

17   *application to book value (i.e. an*

18   *original cost rate base) are*

19   *identical only when market price is*

20   *equal to book value. Indeed, DCF*

21   *advocates assume that if the market*

22   *price of a utility's common stock*

23   *exceeds its book value, the*

24   *allowable rate of return on common*

25   *equity is too high and should be*

15

1 *lowered; and vice versa. Many*

2 *question the assumption that market*

3 *price should equal book value,*

4 *believing that the earnings of*

5 *utilities should be sufficiently*

6 *high to achieve market-to-book*

7 *ratios which are consistent with*

8 *those prevailing for stocks of*

9 *unregulated companies.*

10 *...[T]here remains the*

11 *circularity problem: Since*

12 *regulation establishes a level of*

13 *authorized earnings which, in turn,*

14 *implicitly influences dividends per*

15 *share, estimation of the growth rate*

16 *from such data is an inherently*

17 *circular process. For all of these*

18 *reasons, the DCF model suggests a*

19 *degree of precision which is in fact*

20 *not present and leaves wide room for*

21 *controversy about the level of k*

22 *[cost of equity]" C. F. Phillips,*

23 *The Regulation of Public Utilities*

24 *Theory and Practice. Public*

25 *Utilities Reports, Inc. Arlington,*

16

1 *Va, 1988, pp. 376-77.   [Footnotes*

2 *omitted]*

3 Sole reliance on the DCF model ignores the

4 capital market evidence and financial theory

5 formalized in the CAPM. The DCF model is one of

6 many tools to be employed in conjunction with other

7 methods to estimate the cost of equity. It is not

8 a superior methodology which supplants other

9 financial theory and market evidence.

10 Q. **DO YOU SHARE THESE RESERVATIONS CONCERNING THE**

11 **APPLICABILITY OF THE STANDARD DCF MODEL TO UTILITY**

12 **STOCKS AT THIS TIME?**

13 A. Yes. Notwithstanding the fundamental thesis that

14 several methods and/or variants of such methods

15 should be used in measuring equity costs, Mr.

16 Rothschild has selected a methodology which is

17 particularly fragile at this time. Moreover, one

18 particular variant of that methodology used by Mr.

19 Rothschild, namely the retention growth method, is

20 even more fragile, as I shall discuss later.

21 Caution must be exercised when implementing

22 the standard DCF model in a mechanistic fashion,

23 for it may fail to recognize changes in relative

24 market valuations. The traditional DCF model is

25 not equipped to deal with surges in market-to-book

17

1   and price-earnings ratios. I question Mr.

2   Rothschild's decision to adhere solely to the

3   standard DCF model when one of its fundamental

4   assumptions is violated. The standard infinite

5   growth DCF model assumes constancy in such ratios.

6   Several fundamental changes have recently

7   transformed the water utility industry from the

8   times when the standard DCF model and its

9   assumptions were developed. Environmental

10 concerns, conservation ethics, changes in customer

11 attitudes regarding water utility services, reduced

12 reliability of water supplies and corporate

13 restructurings have all influenced stock prices in

14 ways vastly different from the early assumptions of

15 the DCF model. These changes suggest that some of

16 the raw assumptions underlying the standard DCF

17 model, particularly that of constant growth, are of

18 questionable pertinence at this point in time for

19 water utility stocks, and that the DCF model should

20 be at least complemented by alternate methodologies

21 to estimate the cost of common equity. Clearly,

22 historical dividend and earnings per share growth

23 rates are not indicative of future trends in the

24 water utility industry. Near-term projections of

25 growth are downward-biased by the increased costs

1   of regulatory compliance.

2   An additional concern deals with the realism

3   of the constant growth rate assumption and with the

4   difficulty of finding an adequate proxy for that

5   growth rate. The standard DCF model assumes that a

6   single growth rate of dividends is applicable in

7   perpetuity. Not only is the constant growth rate

8   assumption somewhat unrealistic, but it is

9   difficult to proxy. Analysts' growth forecasts are

10   usually made for not more than two to five years in

11   time, or if they are made for more than a few

12   years, they are dominated by the near-term earnings

13   and dividends picture.

14   My sentiments on the DCF model were echoed in

15   a recent decision by the Indiana Utility Regulatory

16   Commission (IURC).   The IURC recognized its

17   concerns with the DCF model and that the model

18   understates the cost of equity. In Cause No. 39871

19   Final Order, the IURC states on page 24:

20   "....the DCF model, heavily relied

21   upon by the Public, understates the

22   cost of common equity.   The

23   Commission has recognized this fact

24   before. In Indiana Mich. Power Co.

25   (IURC 8/24/90), Cause No. 38728, 116

19

1   *PUR4th 1, 17-18, we found:*

2   *[T]he unadjusted DCF result is*

3   *almost always well below what any*

4   *informed financial analyst would*

5   *regard as defensible, and therefore*

6   *requires an upward adjustment based*

7   *largely on the expert witness's*

8   *judgment."*

9 The Commission also expressed its concern with a

10 witness relying solely on one methodology:

11   *"......the Commission has had*

12   *concerns in our past orders with a*

13   *witness relying solely on one*

14   *methodology in reaching an opinion*

15   *on a proper return on equity*

16   *figure." (page 25)*

17 Mr. Rothschild should have heeded to this advice

18 from a regulator, given that his testimony is

19 entirely DCF-driven.

20 Q. **WHY SHOULD YOU USE MORE THAN ONE APPROACH FOR**

21 **ESTIMATING THE COST OF EQUITY?**

22 A. Mr. Rothschild relies heavily and almost

23 exclusively on the fragile "retention growth" DCF

24 model applied to water and gas distribution

25 utilities. This is a very dangerous procedure. As

1   I stated in my original testimony, no one

2   individual method provides an exclusive foolproof

3   formula for determining a fair return, but each

4   method provides useful evidence so as to facilitate

5   the exercise of an informed judgment. Reliance on

6   any single method or preset formula is

7   inappropriate when dealing with investor

8   expectations. Moreover, the advantage of using

9   several different approaches is that the results of

10   each one can be used to check the others.

11   **3.   DCF GROWTH RATES**

12 Q. **CAN YOU COMMENT ON MR. ROTHSCHILD'S GROWTH**

13   **ESTIMATES IN THE DCF MODEL?**

14 A. There are three techniques to estimate expected

15   growth in the DCF model: (1) historical growth

16   rates in earnings per share, dividends per share,

17   and book value per share, (2) analysts' growth

18   forecasts, and (3) retention growth method, where

19   the growth rate is based on the equation $g = b \times$

20   ROE, where b is the percentage of earnings retained

21   and ROE is the expected earned rate of return on

22   book equity. In his DCF analysis of water and gas

23   distribution utilities, Mr. Rothschild estimates

24   the growth component using only the last method.

25   He rejects the customary alternatives of relying on

21

1　analysts' growth forecasts and on historical growth

2　rate in earnings, dividends, and book value.

3　　By relying solely on a single growth-

4　estimating technique in the DCF model as Mr.

5　Rothschild has done, the Commission would set a

6　very dangerous precedent for future ratemaking

7　procedures.　A single technique to estimate

8　investor growth expectations is likely to contain a

9　high degree of measurement error and may be

10　distorted by short-term aberrations.　The

11　Commission's hands should not be bound to one

12　single estimate of growth in the DCF determination

13　of equity costs.　The advantage of using several

14　different approaches in estimating growth is that

15　the results of each one can be used to check the

16　others.

17　**RETENTION GROWTH METHOD**

18　Q.　**PLEASE DESCRIBE MR. ROTHSCHILD'S IMPLEMENTATION OF**

19　　**THE RETENTION GROWTH METHOD.**

20　A.　To apply the retention ratio growth method in his

21　DCF analysis, Mr. Rothschild multiplies the

22　utility's retention ratio by the return on equity.

23　The latter is proxied by Value Line's forecast of

24　ROE, historical ROEs in 1994 and 1995, and by an

25　implied ROE based on Zack's Consensus growth rates.

22

1   I was unable to replicate his 11.15% ROE on

2   Schedule JAR 4.1. To compute the retention ratio,

3   in a strange turnabout, rather than simply take the

4   actual retention ratio and the retention ratio

5   forecast by Value Line as he did for the ROE, Mr.

6   Rothschild computes the retention ratio indirectly,

7   as one minus the book dividend yield divided by the

8   ROE, that is, $(1 - D/rB)$. In other words, the two

9   components of growth, ROE and retention ratio, are

10   determined simultaneously and are functionally

11   interdependent. Thus, any error in one component

12   is inherently compounded when applied to the other

13   component.

14   Mr. Rothschild correctly recognizes and adds

15   to his retention growth estimate any growth

16   stemming from external financing through common

17   stock issues. The growth results are shown on Line

18   7 in his Schedule 4 pages 1 and 2 for Value Line

19   Water Companies and Value Line Gas Distribution

20   companies, respectively. The average growth rate

21   range is 3.20%-3.21% for the water companies and

22   4.04% - 4.36% for the gas distribution companies.

23   Q.   **DO YOU HAVE ANY OBJECTIONS TO THE RETENTION GROWTH**

24   **ESTIMATES USED BY MR. ROTHSCHILD?**

25   A.   Since Mr. Rothschild's entire testimony and his

1   10.10% cost of equity recommendation hinge on the

2   retention growth cornerstone, it is important to

3   point out the dangers and flaws of this method.

4   There are two fundamental problems with Mr.

5   Rothschild's retention growth methodology:

6   (1) Mr. Rothschild's retention growth method

7   contains a fatal logical flaw: the method requires

8   an estimate of ROE to be implemented. In other

9   words, his method requires him to assume the ROE

10   answer to start with. But if the ROE input

11   required by the model differs from the recommended

12   return on equity, a fundamental contradiction in

13   logic follows. Mr. Rothschild's recommended 10.10%

14   return on equity is far removed from the ROE's he

15   uses in the retention growth method, both

16   historically and prospectively. On his Schedule 4

17   pages 1 and 2, he uses an expected return of 11.25%

18   for water utilities, and 12.0% for the gas

19   distribution companies, which are all well above

20   Mr. Rothschild's recommended 10.10% range. The

21   vast majority of the historical ROEs, Value Line

22   prospective ROEs, and Zack's imputed ROEs for each

23   water company reported on Schedule 6 pages 2 and 3

24   and for the gas distribution utilities reported on

25   Schedule 7 pages 2 and 3 and used in Mr.

24

1 Rothschild's retention growth computation exceeds

2 his recommended 10.10% and average about 11.25%.

3 Mr. Rothschild is assuming in effect that the

4 companies will earn at a return rate exceeding his

5 recommended equity range forever, but he is

6 recommending that a different rate be granted by

7 the commission. While this scenario may be

8 imaginable for an unregulated company with

9 substantial market power, it is implausible for a

10 regulated company whose rates are set so that they

11 will earn a return equal to their cost of capital.

12 I consider this logical flaw extremely damaging and

13 sufficient to reject Mr. Rothschild's results

14 produced by the method, and hence the crux of his

15 testimony. In essence, Mr. Rothschild is using an

16 ROE that differs from his final recommended cost of

17 equity, and is requesting the Commission to adopt

18 two different returns.

19 Mr. Rothschild, however, contends that there

20 is no circularity in this methodology because "r"

21 is defined as the future return on book equity and

22 "k" is the cost of equity, or the return investors

23 expect on the market price of their investment.

24 What Mr. Rothschild has failed to realize is that

25 in a regulated environment, **the return on book**

1   **equity is set equal to the cost of capital.**

2   **I am extremely perplexed as to why Mr. Rothschild**

3   **assumes that water utilities are expected to earn**

4   **11.25% forever, but yet he recommends 10.10%. The**

5   **only way that water utilities can earn 11.25% is**

6   **that rates be set so that they will in fact earn**

7   **11.25%. So, how can the cost of equity be any**

8   **different from 11.25%?**

9   In a strange twist of irony, Mr. Rothschild

10   cites a passage from the landmark Hope Natural Gas

11   Decision which cautions against the use of circular

12   logic:

13   *"The heart of the matter is that*

14   *rates cannot be made to depend upon*

15   *"fair value" when the value of the*

16   *going enterprise depends on earnings*

17   *under whatever rates may be*

18   *anticipated."*

19   Yet, this is exactly what Mr. Rothschild has done

20   by using an assumed ROE to recommend a different

21   ROE.

22   (2) The empirical finance literature

23   demonstrates that the retention growth method is a

24   poor explanatory variable of value, and is not

25   significantly correlated to measures of value, such

26

1   as stock price and price/earnings ratios. Mr.
2   Rothschild's rejection of the traditional use of
3   both historical growth rates and analysts' growth
4   forecasts in the DCF model is in flagrant
5   contradiction to the scholarly research and
6   academic literature on the subject.

7   Q.   **DO INVESTORS RELY ON HISTORICAL GROWTH RATES?**

8   A.   Yes, they do. I was surprised that Mr. Rothschild
9   did not examine historical growth rates in his DCF
10   analysis. Surely, investor growth expectations are
11   influenced to some extent by historical growth
12   rates in formulating their future growth
13   expectations. It is not perfectly clear as to why
14   Mr. Rothschild ignored this relevant data.
15   Ironically, his own estimates of expected ROE when
16   he implements the retention growth method are
17   partially driven by historical ROE's. Historical
18   indicators are widely used by analysts, investors,
19   and expert witnesses. Cohen, Zinbarg, and Zeikel
20   (Investment Analysis and Portfolio Management, 5th
21   edition, Irwin, 1987, Part 4 Security Analysis, pp.
22   537-538) which is a recommended textbook for CFA
23   (Chartered Financial Analyst) certification and
24   examination, suggest the calculation of historical
25   growth rates as a first step in security analysis.

27

1		Techniques of historical growth analysis for
2		individual companies are described in Chapter 12.
3		Professional certified financial analysts are
4		certainly well versed in the use of historical
5		growth indicators.
6		**ANALYSTS' GROWTH FORECASTS**
7	Q.	**CAN YOU COMMENT ON MR. ROTHSCHILD'S GROWTH**
8		**FORECASTS?**
9	A.	Yes. Mr. Rothschild's laborious and convoluted
10		procedure for computing retention (b x ROE) growth
11		rates requires several subjective input forecasts:
12		expected ROE, market-to-book ratio, dividend yield
13		on book, and new financing growth. It would appear
14		far more economical and expeditious to use
15		available growth forecasts directly instead of
16		relying on four individual forecasts of the
17		determinants of such growth. It only seems logical
18		that the measurement and forecasting errors
19		inherent in using four different variables to
20		predict growth far exceed the forecasting error
21		inherent in a direct forecast of growth itself.
22		It is also paradoxical that Mr. Rothschild
23		employs analysts' growth forecasts from Zack's,
24		which he earlier dismissed as inadequate, in order
25		to derive his expected ROE estimate in the

28

1   retention growth method, which itself provides a
2   measure of expected growth.   This procedure is
3   hopelessly circular: he uses "inadequate" analysts'
4   growth forecasts to obtain expected ROE to in turn
5   obtain growth.   Why not simply use the growth
6   forecast outright?

7   On page 17 of his testimony, Mr. Rothschild
8   states that analyst growth rates are improper to
9   use in the DCF model.   I disagree.   Retention
10   growth rates are poor surrogates for the consensus
11   growth expectations of investors.   As stated
12   earlier,   the   empirical   finance   literature
13   demonstrates that the retention growth method of
14   determining growth is a poor explanatory variable
15   of   market   value,   and   is   not   significantly
16   correlated to measures of value, such as stock
17   price and price/earnings ratios.   Averages of
18   analysts'   growth   forecasts   are   more   reliable
19   estimates of the investors' consensus expectations.
20   Studies in the academic literature also demonstrate
21   that the consensus growth forecast made by security
22   analysts   is   a   reasonable   indicator   of   investor
23   expectations,   and   that   investors   rely   on   such
24   analysts'   forecasts.   The   consensus   long-term
25   growth forecast of analysts provides a good proxy

1   for investors' growth expectations when applying

2   the DCF model. Mr. Rothschild has chosen not to

3   rely on analyst growth forecasts, in spite of the

4   superiority of such forecasts in representing

5   investor growth expectations.

6   Both empirical research and common sense

7   indicate that investors rely heavily on analysts'

8   growth rate forecasts. It stands to reason that

9   analysts make better forecasts than could be

10 obtained using only historical data, because

11 analysts have available not only past data but also

12 a knowledge of such crucial factors as current

13 economic trends, rate case decisions, construction

14 programs, new products, cost data, impending tax

15 law changes, and so on. The variations in

16 historical ROE's and payout ratios which concerned

17 Mr. Rothschild and caused him to question the

18 relevance of historical growth rates in the DCF

19 model are known to investors, and are reflected in

20 their growth forecasts.

21   Although historical information provides a

22 primary foundation for expectations, investors use

23 additional information to supplement past growth

24 rates in arriving at their forecasts. Not only do

25 analysts extrapolate past history, but they also

30

1   consider historical trends and anticipated economic

2   events before arriving at a growth forecast.

3   Q.   **CAN YOU SUMMARIZE YOUR COMMENTS ON MR. ROTHSCHILD'S**

4   **DCF GROWTH RATES?**

5   A.   In summary, Mr. Rothschild has disregarded both

6   historical growth rates and analysts growth

7   forecasts, two of the most widely used and

8   empirically validated sources of growth rates. He

9   has ignored the empirical findings of the finance

10   literature, pointing to the superiority of such

11   forecasts. His retention growth rate methodology

12   contains serious theoretical, conceptual,

13   empirical, and methodological flaws, and should be

14   disregarded by the Commission.

15   My own recommendation to the Commission with

16   regards to DCF growth rates, to the extent that the

17   Commission chooses to rely on his method, is that

18   equal weight should be accorded to DCF results

19   based on history and those based on analysts'

20   forecast. Very little weight should be accorded to

21   retention growth results, in view of the empirical

22   evidence and the conceptual infirmities discussed

23   above. Each proxy for expected growth brings

24   information to the judgment process from a

25   different light. Neither proxy is without blemish,

1   each has advantages and shortcomings. Historical

2   growth rates are available and easily verifiable,

3   but may no longer be applicable if structural

4   shifts have occurred. Analysts' growth forecasts

5   may be more relevant since they encompass both

6   history and current changes, but are nevertheless

7   imperfect proxies.

8   In view of the above, Exhibit _____ (RAM-3)

9   shows what I believe to be historical growth rates

10 for the water companies used by Mr. Rothschild in

11 his DCF analysis. The 4.2% average growth rate is

12 a full 100 basis points higher than that used by

13 Mr. Rothschild. If we average that result with the

14 3.9% analyst consensus growth forecast provided by

15 IBES, the proper growth rate to use in the DCF

16 analysis would be 4.059%. This growth figure

17 substantially exceeds Mr. Rothschild's average

18 retention growth estimates by approximately 70

19 basis points.

20 Q. **DO YOU SEE ANY DANGERS IN RELYING ON VALUE LINE AS**

21   **AN EXCLUSIVE SOURCE OF FORECASTS IN APPLYING THE**

22   **DCF MODEL?**

23 A. Yes. Mr. Rothschild's heavy reliance on Value Line

24   as a source of data in both his DCF and Risk

25   Premium analyses runs the risk of being

32

1   unrepresentative of investors' consensus

2   expectations. One would expect that averages of

3   analysts' growth forecasts such as those contained

4   in IBES or Zack's are more reliable estimates of

5   the investors' consensus expectations likely to be

6   impounded in stock prices. Moreover, the empirical

7   finance literature has shown that consensus

8   analysts' growth forecasts are reflected in stock

9   prices, possess a high explanatory power of equity

10   values, and are used by investors.

11   **4.   FLOTATION COST**

12 Q.   **WHAT FLOTATION COST TREATMENT DOES MR. ROTHSCHILD**

13   **RECOMMEND IN THIS CASE?**

14 A.   Mr. Rothschild is completely silent on the subject

15   of flotation cost allowance. I can only surmise

16   that he believes that no such allowance is

17   warranted. Mr. Rothschild's testimony contains a

18   flagrant inconsistency with regard to flotation

19   costs, however. He employs a version of the DCF

20   model that explicitly accounts for continuous

21   external common stock issues over time. In

22   estimating the growth component of the DCF model,

23   he adds 50 basis points for external growth through

24   stock issues for the water utilities and

25   approximately 120 basis points for growth by the

1   gas distribution utilities.   Yet, he completely

2   ignores the flotation costs that are associated

3   with such common stock issues.

4   Q.   **PLEASE COMMENT ON FLOTATION COST ADJUSTMENTS.**

5   A.   Flotation costs are very similar to the closing

6   costs on a home mortgage.   In the case of issues of

7   new equity, flotation costs represent the discounts

8   that must be provided to place the new securities.

9   Flotation costs have a direct and an indirect

10   component.   The direct component is a compensation

11   to   the   security   underwriter   for   his

12   marketing/consulting   services,   for   the   risks

13   involved in distributing the issue, and for any

14   operating   expenses   associated   with   the   issue

15   (printing, legal, prospectus, etc.).   The indirect

16   component represents the downward pressure on the

17   stock price as a result of the increased supply of

18   stock from the new issue.   The latter component is

19   frequently referred to as "market pressure".

20   Flotation costs for common stock is analogous

21   to the flotation costs associated with past bond

22   issues which, as a matter of routine regulatory

23   policy by the Commission, are amortized over the

24   life of the bond, even though no new bond issues

25   are contemplated.   In the case of common stock,

34

1 which has no finite life, flotation costs are not

2 amortized. Therefore, the recovery of flotation

3 cost requires an upward adjustment to the allowed

4 return on equity. Flotation costs associated with

5 stock issues are exactly like the flotation costs

6 associated with bonds and preferred stocks.

7 Flotation costs are incurred, they are not expensed

8 at the time of issue, and, therefore, must be

9 recovered on a deferred basis in future years.

10 The flotation adjustment is made to the DCF

11 analysis by dividing the expected dividend yield

12 component of the DCF by $(1 - f)$, where f is the

13 underpricing allowance factor. This type of

14 flotation cost allowance to the cost of common

15 equity capital is routinely discussed and applied

16 in most corporate finance textbooks.

17 According to empirical studies, underwriting

18 costs and expenses average at least 4% of gross

19 proceeds for utility stock offerings. (See Logue &

20 Jarrow: "Negotiation vs Competitive Bidding in the

21 Sale of Securities by Public Utilities," Financial

22 Management, Fall 1978). A study of 641 common stock

23 issues by 95 electric utilities identified a

24 flotation cost allowance of 5.5% (see Borum &

25 Malley: "Total Flotation Cost for Electric Company

35

1   Equity Issues," <u>Public Utilities Fortnightly</u>, Feb.

2   20th, 1986).

3   As far as the market pressure effect is

4   concerned, empirical studies suggest an allowance of

5   1%. Logue and Jarrow found that the absolute

6   magnitude of the relative price decline due to

7   market pressure was less than 1.5%. Bower and Yawitz

8   examined 278 public utility stock issues and found

9   an average market pressure of 0.72% (see Bower &

10   Yawitz, "The Effect of New Equity Issues on Utility

11   Stock Prices," <u>Public Utilities Fortnightly</u>, May 22,

12   1980).

13   Eckbo & Masulis ("Rights vs. Underwritten Stock

14   Offerings: An Empirical Analysis," Univ. of British

15   Columbia, Working Paper No. 1208, Sept. 1987) found

16   an average flotation cost of 4.175% for utility

17   common stock offerings. As far as the market

18   pressure effect, they found that the relative price

19   decline due to market pressure in the days

20   surrounding the announcement amounted to slightly

21   more than 1.5%. Adding the two effects, the

22   indicated total flotation cost allowance is almost

23   5.7%, corroborating the results of earlier studies.

24   Therefore, based on empirical studies, total

25   flotation costs including market pressure

36

1		conservatively amount to 5% of gross proceeds.
2		**5. BUSINESS RISK OF THE WATER INDUSTRY**
3	Q.	**PLEASE COMMENT ON MR. ROTHSCHILD'S ASSESSMENT OF**
4		**THE BUSINESS RISKS FACED BY THE WATER UTILITY**
5		**INDUSTRY.**
6	A.	I was astonished by Mr. Rothschild's statement at
7		page 41 lines 1-5 of his testimony that the risks
8		of the water business have not increased
9		substantially in recent years. I refer Mr.
10		Rothschild to the overview of the relative
11		investment risks of the water and electric-gas
12		utility industry which I provided for the
13		Commission in a paper entitled *Return on Common*
14		*Equity Determination for Florida Water & Wastewater*
15		*Utilities* in a workshop held on February 23, 1995.
16		The paper was provided in my direct testimony as
17		Exhibit _____ (RAM-2). The paper described how
18		changes in the operating environment of Florida
19		Water and Wastewater Utilities and SSU have
20		increased their investment risk and their cost of
21		capital, both in absolute terms and relative to
22		other utilities. The changing investment risk of
23		water utilities status relative to other utilities
24		was analyzed by examining trends in key financial
25		variables. It defies understanding and credulity

37

1   as to how Mr. Rothschild could possibly have

2   concluded that the risks of water utility industry

3   have not increased substantially in recent years

4   following the passage of the Safe Drinking Water

5   Act.

6   **6.   SIZE EFFECT**

7 Q. **DO YOU AGREE WITH MR. ROTHSCHILD THAT COMPANY SIZE**

8   **HAS NO EFFECT ON THE COST OF EQUITY?**

9 A. No, I do not. I was astounded by Mr. Rothschild's

10   position on page 39 of his testimony that company

11   size has no impact on the cost of equity because

12   size-related risk is diversifiable.   There is

13   considerable research and empirical evidence to the

14   contrary. Most, if not all, college-level finance

15   textbooks contain a discussion of the effect of

16   size on return.   I was surprised that Mr.

17   Rothschild was unaware of this vast literature on

18   the size effect.

19   Clearly, investment risk increases as company

20   size diminishes, all else remaining constant. Not

21   only is this intuitively transparent, but the size

22   phenomenon is well documented in the finance

23   literature.   Stocks of small firms earn higher

24   risk-adjusted returns than those of large firms.

25   Small companies have very different returns than

1 large ones and on average those returns have been

2 higher. The greater risk of small stocks does not

3 fully account for their higher returns over many

4 historical periods. The average small stock

5 premium is in excess of 5% over the average stock,

6 more than could be expected by risk differences

7 alone, suggesting that the cost of equity for small

8 stocks is considerably larger than for large

9 capitalization stocks. The size effect is well

10 documented in Mr. Rothschild's own source of data,

11 Ibbotson Associates, and yet he chose to ignore it.

12 **7. LIQUIDITY EFFECT**

13 Q. **DO YOU AGREE WITH MR. ROTHSCHILD'S VIEWS ON**

14 **LIQUIDITY?**

15 A. No, I do not. On page 45, Mr. Rothschild argues

16 that it is inappropriate to add a liquidity premium

17 to SSU because it is SSU's parent, Minnesota Power

18 and Light (MP&L), that raises the equity capital

19 for SSU. This is nonsense. Here again, Mr.

20 Rothschild is guilty of a fatal conceptual error.

21 SSU must be treated as a separate stand-alone

22 entity, distinct from MP&L because it is the cost

23 of capital for SSU that we are attempting to

24 measure and not the cost of capital for MP&L's

25 consolidated overall activities. Financial theory

39

1   clearly establishes that the cost of equity is the

2   risk-adjusted opportunity cost to the investor, in

3   this case, MP&L. The true cost of capital depends

4   on the use to which the capital is put, in this

5   case SSU.   The specific source of funding an

6   investment and the cost of the funds to the

7   investor are irrelevant considerations.

8   For example, if an individual investor borrows

9   money at the bank at an after-tax cost of 8% and

10   invests the funds in a speculative oil exploration

11   venture, the required return on the investment is

12   not the 8% cost but rather the return foregone in

13   speculative projects of similar risk, say 20%.

14   Similarly, the required return on SSU is the return

15   foregone in comparable risk investment, and is

16   unrelated to the parent's cost of capital.   The

17   cost of capital is governed by the risk to which

18   the capital is exposed and not by the sources of

19   funds.   The identity of the shareholders has no

20   bearing on the cost of equity or on the liquidity

21   of the investment because it is the risk to which

22   the equity funds are exposed which governs the cost

23   of equity.

24   Just as individual investors require different

25   returns from different assets in managing their

40

1   personal affairs, corporations should behave in the

2   same manner. A parent company normally invests

3   money in many operating companies of varying sizes

4   and varying risks. These operating subsidiaries

5   pay different rates for the use of investor

6   capital, such as long-term debt capital, because

7   investors recognize the differences in capital

8   structure, risk, and prospects between the

9   subsidiaries. Therefore, the cost of investing

10   funds in an operating utility subsidiary such as

11   SSU is the return foregone on investments of

12   similar risk and is unrelated to the identity of

13   the investor.

14   Besides, it is intuitively obvious that faced

15   with two identical risk investments, one being

16   liquid and easily marketable and the other highly

17   illiquid, the investor will require a higher return

18   from the illiquid investment.

19   **8.   RELATIVE RISK OF WATER AND GAS UTILITIES**

20   Q.   **DO YOU AGREE WITH MR. ROTHSCHILD THAT WATER**

21   **UTILITIES HAVE THE SAME DEGREE OF RISK AS GAS**

22   **DISTRIBUTION UTILITIES ?**

23   A.   No, I do not. Contrary to his assertion, Mr.

24   Rothschild's group of gas distribution utilities is

25   less risky than water utilities as shown on Exhibit

41

1   _____ (RAM-2) in my direct testimony because

2   relative to the gas companies group, the water

3   companies have: a lower Value Line Safety Rank

4   index, a lower Value Line Financial Strength index,

5   a higher beta risk factor, smaller market

6   capitalization, a higher debt ratio, a lower M/B

7   ratio, lower P/E ratio, lower interest coverage

8   ratio, and higher volatility of earnings per share,

9   revenues, and operating profits. The comparative

10   risk measures of the water and gas companies

11   unanimously and unambiguously indicate that the

12   former are riskier than the latter. Thus, a cost

13   of equity estimate based in part on the gas

14   companies group understates the cost of equity of

15   water utilities.

16   **9.   USED AND USEFUL ADJUSTMENT**

17 Q. **PLEASE RESPOND TO MR. ROTHSCHILD'S POSITION ON THE**

18   **COMMISSION'S USED AND USEFUL ADJUSTMENT.**

19 A. Mr. Rothschild argues on page 40 lines 10-11 that

20   the used and useful adjustment does not increase

21   SSU's risk because "*investors **eventually** receive*

22   ***much of** the compensation associated with what was*

23   *initially disallowed used and useful plant.*" Of

24   course, the key words in that quote are

25   "**eventually**" and "**much**", which clearly point to the

42

1   futurity and riskiness of the recovery. As I

2   discussed in my direct testimony, the net results

3   of the used and useful adjustment are to disallow

4   some significant investment and to disincent

5   company management to pursue scale economies in its

6   multi-year construction program for fear of

7   incurring used and useful penalties.

8   **10. WEATHER NORMALIZATION CLAUSE**

9   Q.   **DO YOU AGREE WITH MR. ROTHSCHILD'S POSITION THAT**

10   **WEATHER NORMALIZATION CLAUSES DO NOT INFLUENCE THE**

11   **COST OF EQUITY?**

12   A.   No, I do not. In another shocking assertion, Mr.

13   Rothschild argues that a weather normalization

14   clause does not lower risk, hence the cost of

15   equity, because weather is a diversifiable risk.

16   Mr. Rothschild correctly points out that under the

17   precepts of modern financial theory as embodied in

18   the CAPM, investors are compensated only for non-

19   diversifiable (beta) risks, that is, for risks that

20   are part and parcel of beta. Incidentally, it is

21   ironic that Mr. Rothschild has suddenly relied on

22   the fundamental precepts of the CAPM to make his

23   point after earlier refuting the model as a full-

24   fledged method of estimating investor return. In

25   any event, what Mr. Rothschild has forgotten are

43

1		the basic determinants of beta. In my direct
2		testimony and more formally in Chapter 14 of my
3		book, Regulatory Finance, I show that beta has
4		three main components: demand risk, operating
5		leverage, and financial leverage. In other words,
6		a security's beta is a function of the firm's
7		demand beta, which measures the demand volatility
8		of the firm's revenues. The latter is clearly
9		influenced by the absence or presence of a weather
10		normalization clause. Thus, Mr. Rothschild is
11		incorrect in his assertion that a weather
12		normalization clause exerts no impact on risk, and
13		hence on cost of equity.
14		**11. RISK PREMIUM ANALYSIS**
15	Q.	**PLEASE DISCUSS YOUR CONCERNS WITH MR. ROTHSCHILD'S**
16		**RISK PREMIUM ANALYSIS.**
17	A.	My concerns with Mr. Rothschild's risk premium
18		analysis are three-fold: 1) the lack of current
19		data, 2) the use of electric utilities as a proxy
20		for water utilities and 3) that changes in tax laws
21		have altered the debt-equity risk premium
22		relationship.
23		With regard to the first argument, Mr.
24		Rothschild compares the costs of debt and equity
25		over a five year period ending in 1993. Five years

1   is hardly enough data to make an informed judgment

2   as to the risk premium common stocks have commanded

3   over debt.   Secondly, Mr. Rothschild has chosen to

4   end his analysis in 1993 because he believes that

5   this particular five year time period was the least

6   volatile.   A valid risk premium analysis should

7   encompass as much data as is reasonable and include

8   up-to-date information, particularly when applied

9   to an industry which is experiencing a rising risk

10   profile.   My own risk premium analyses are month-

11   by-month studies over a 10-year horizon and include

12   data up to the time of regulatory filings.

13   My second criticism addresses Mr. Rothschild's

14   use of electric utilities as a proxy for the water

15   industry.   If a proxy is to be used for the water

16   industry, then a risk adjustment must be made to

17   account for the different risk environments and

18   investor expectations of the two industries.   No

19   such adjustment was made for this proxy group as

20   Mr. Rothschild states on page 23, "the difference

21   between my recommended cost of equity in this case

22   and the cost of equity indicated by the risk

23   premium method could be explained by the industry-

24   risk differential..."

25   Mr. Rothschild's third comment revolves around

45

1   the effect of tax law changes on the risk premium.

2   I have two problems with this argument. First, it

3   is important that the cost of equity not be

4   confused with the return to the equity investor.

5   Only from a return view is taxability a

6   consideration. From a utility cost of capital

7   viewpoint, the investor's tax bracket makes no

8   difference in the cost of capital. The cost of

9   equity is viewed correctly from the market place.

10   Second, if a regulatory commission were to seek to

11   enable the utility to compensate investors for

12   their after-tax returns, we could have as many

13   returns as there are tax bracket variations, and

14   they would defy analysis. Several institutional

15   investors such as pension funds are tax-exempt,

16   others are fully taxable. Even if tax adjustments

17   were warranted, it is impractical to determine the

18   constellation of tax brackets for all the company's

19   shareholders, and to determine the identity and tax

20   bracket of the marginal price-setting investor.

21 Q. **ARE MR. ROTHSCHILD'S RISK PREMIUM FINDINGS**

22   **CONSISTENT WITH THE EMPIRICAL FINANCE LITERATURE?**

23 A. No, not at all. Mr. Rothschild's risk premium test

24   produces a cost of equity of 9.76% for water

25   utilities and 10.17% for gas distribution

46

1 utilities. I find these estimates implausible,

2 since they are barely above SSU's borrowing rate.

3 Also, given that Treasury bonds are yielding about

4 6.5% currently, the risk premium between common

5 stocks and 30 year Treasury bonds implied in Mr.

6 Rothschild's risk premium results is about 3.5%.

7 The empirical risk premium literature indicates

8 much higher risk premiums.

9 Five published utility industry risk premium

10 studies are noteworthy:

11 Carleton, W.T., Chambers, W., and Lakonishok,

12 J. "Inflation Risk and Regulatory Lag." *Journal of*

13 *Finance,* May 1983. ("CCL")

14 Brigham, E.F., Shome, D.K., and Vinson, S. R.

15 "The Risk Premium Approach to Measuring a Utility's

16 Cost of Equity." *Financial Management,* Spring 1985,

17 33-45. ("BSV")

18 Harris, R.S. "Using Analysts' Growth Forecasts

19 to Estimate Shareholder Required Rates of Return."

20 *Financial Management,* Spring 1986, 58-67.

21 Harris, R.S. and Marston, F.C. "Estimating

22 Shareholder Risk Premia Using Analysts' Growth

23 Forecasts." *Financial Management,* Summer 1992, 63-

24 70. ("HM")

25 Maddox, F.M., Pippert, D. T., and Sullivan,

47

1   R.N. "An Empirical Study of Ex Ante Risk Premiums

2   for the Electric Utility Industry" *Financial*

3   *Management,* Autumn 1995, 89-95. ("MPS")

4   Over the period 1971-1980, and using DCF-style

5   measures of equity returns, CCL found risk premiums

6   of 6.15% and 7.08% over Treasury bond yields for

7   electric utilities with high and low bond ratings,

8   respectively. Using allowed ROE as a measure of

9   equity return, they found risk premiums between

10   6.2% and 6.7% for the 1972-1980 period. BSV found

11   an average equity risk premium of 5.13% for the Dow

12   Jones Utility Average electric utilities for the

13   period 1966-1984. Using an alternate measure of

14   expected growth for the DCF computation of equity

15   returns, they found a average risk premium of 4.75%

16   for the January 1980 - June 1984 period. For the

17   Standard & Poors Utility Index, Harris found an

18   average equity risk premium of 4.81%. Harris'

19   findings were consistent with the HM findings as

20   well. MPS found equity risk premiums of 3.4% for

21   the Value Line electric utilities. On the whole,

22   Mr. Rothschild's homemade risk premium is much

23   lower than that found in the empirical finance

24   literature.

25   **12. CAPITAL ASSET PRICING MODEL**

48

1   Q.   **PLEASE COMMENT ON MR. ROTHSCHILD'S CRITICISMS OF**

2   **YOUR CAPM METHODOLOGY.**

3   A.   Mr. Rothschild alleges two difficulties with my

4   implementation of the CAPM. First, he argues that

5   the yield on 90-day Treasury Bills provides an

6   adequate proxy for the risk-free rate rather than

7   the yield on long-term Treasury bonds. Second, he

8   argues that the geometric average historical return

9   should be used in calculating the historical market

10   risk premium rather than the arithmetic average.

11   He is incorrect on both counts. I demonstrate

12   below that the yield on long-term Treasury bonds is

13   the appropriate proxy for the risk-free rate in the

14   CAPM model and that the arithmetic mean is the only

15   correct measure of the market risk premium

16   component of the CAPM model.

17   **RISK-FREE RATE**

18   Q.   **WOULD YOU COMMENT ON MR. ROTHSCHILD'S USE OF THE 3**

19   **MONTH TREASURY BILL AS A MEASURE OF THE RISK FREE**

20   **RATE?**

21   A.   Mr. Rothschild believes that the risk-free rate is

22   best measured by the yield on three-month treasury

23   bills rather than the long term government

24   securities that I employ. I disagree. Only long-

25   term yields provide an appropriate proxy for the

1   risk-free rate. This is simply because common

2   stocks are long-term instruments more akin to long-

3   term bonds than to 90-day short-term securities.

4   Moreover, utility assets are very long-term in

5   nature.

6   Theoretically, the yield on 90-day Treasury

7   Bills is virtually riskless, devoid of default risk

8   and subject to a negligible amount of interest rate

9   risk.   But as a practical matter, the T-Bill rate

10   fluctuates widely, leading to volatile and

11   unreliable equity return estimates.   Moreover,

12   yields on 90-day Treasury Bills typically do not

13   match the equity investor's planning horizon.

14   Equity investors generally have an investment

15   horizon far in excess of 90 days.

16   More importantly, short-term Treasury Bill

17   yields reflect the impact of factors different from

18   those influencing long-term securities such as

19   common stock.   The premium for expected inflation

20   embedded into 90-day Treasury Bills is likely to be

21   far different than the inflationary premium

22   embedded into long-term securities yields.   On

23   grounds of stability and consistency, the yields on

24   long-term Treasury bonds match more closely with

25   common stock returns.   In his best-selling

50

corporate finance textbook, Brigham cites (see Brigham, E.F., _Financial Management: Theory and Practice_, 5th ed., Dryden Press 1988):

> *"Treasury bill rates are subject to more random disturbances than are Treasury bond rates. For example, bills are used by the Federal Reserve System to control the money supply, and bills are also used by foreign governments, firms, and individuals as a temporary safe-house for money. Thus, if the Fed decides to stimulate the economy, it drives down the bill rate, and the same thing happens if trouble erupts somewhere in the world and money flows into the United States seeking a temporary haven."* (Page 225)

Therefore, the 90-day Treasury Bill yield advocated by Mr. Rothschild is an inappropriate proxy for the risk-free rate in the CAPM model. Mr. Rothschild contends that Treasury bonds are risky because of interest rate risk. To that end, he has calculated a beta of 0.40 for Treasury bonds versus the market. This computation is

51

1   preposterous. While long-term Treasury bonds

2   possess a higher degree of interest rate risk than

3   Treasury bills, this is only true if the bonds are

4   sold prior to maturity. A substantial fraction of

5   bond market participants, usually institutional

6   investors with long-term liabilities (pension

7   funds, insurance companies), in fact hold bonds

8   until they mature, and therefore are not subject to

9   interest rate risk. Institutional bondholders

10   neutralize the impact of interest rate changes by

11   matching the maturity of a bond portfolio with the

12   investment planning period, or by engaging in

13   hedging transactions in the financial futures

14   markets. The merits and mechanics of such

15   immunization strategies are well documented by both

16   academicians and practitioners. Moreover, to

17   assign Treasury bonds a beta of 0.40 would put them

18   in the same risk class as gold mining stocks such

19   as Homestake Mining and Helmo Gold Mines, and close

20   to some utilities which have betas of 0.50. I

21   don't think any investor would believe that an

22   investment in a gold mine or utility stocks is

23   similar in risk to a bond backed by the U.S.

24   Treasury.

25   **ARITHMETIC VERSUS GEOMETRIC MEANS**

1   Q.   **PLEASE COMMENT ON THE USE OF ARITHMETIC AVERAGES**

2   **VERSUS GEOMETRIC AVERAGES IN IMPLEMENTING THE CAPM.**

3   A.   One major issue relating to the use of realized

4   returns is whether to use the ordinary average

5   (arithmetic mean) or the geometric mean return.

6   Mr. Rothschild erroneously argues for the use of

7   the geometric mean return. This is incorrect.

8   Only arithmetic means are correct for forecasting

9   purposes and for estimating the cost of capital.

10   This is formally shown in Brealey & Myers

11   ["Principles of Corporate Finance," Instructors'

12   Manual, Appendix C, McGraw Hill 1991], a widely

13   used and respected textbook on corporate finance.

14   This error is committed by Mr. Rothschild in

15   spite of the fact that the widely-cited Ibbotson &

16   Associates publication cited by Mr. Rothschild as a

17   data source on which he relies contains a detailed

18   and rigorous discussion of the impropriety of using

19   geometric averages in estimating the cost of

20   capital.

21   The net effect of Mr. Rothschild's use of

22   geometric means rather than arithmetic means is to

23   decrease his estimates of SSU's required return by

24   1.2% (120 basis points). The latter estimate is

25   derived by conservatively assuming that SSU's beta

1   is 0.60 and multiplying that beta by 2%, the

2   approximate difference between the arithmetic and

3   geometric mean risk premiums for stocks over

4   Treasury Bills.

5   There is no theoretical or empirical

6   justification for the use of geometric mean rates

7   of returns. I know of no textbook on finance or

8   scientific journal article which advocates the use

9   of the geometric mean as a measure of the

10   appropriate discount rate in computing the cost of

11   capital or in computing present values.

12   Q.   **CAN YOU PROVIDE A BRIEF EXPLANATION AS TO WHY THE**

13   **ARITHMETIC MEAN IS PREFERABLE TO THE GEOMETRIC MEAN**

14   **WHEN ESTIMATING THE COST OF CAPITAL?**

15   A.   The use of the arithmetic mean appears counter-

16   intuitive at first glance, because we commonly use

17   the geometric mean return to measure the average

18   annual achieved return over some time period, as

19   correctly pointed out by Mr. Rothschild. For

20   example, the long-term performance of a portfolio

21   is frequently assessed using the geometric mean

22   return.

23   But performance appraisal is one thing, and

24   cost of capital estimation is another matter

25   entirely. In estimating the cost of capital, the

1   goal is to obtain the rate of return that investors

2   expect, that is, a target rate of return.   On

3   average, investors expect to achieve their target

4   return.   This target expected return is in effect

5   an   arithmetic   average.   The   achieved   or

6   retrospective return is the geometric average.   In

7   statistical parlance, the arithmetic average is the

8   unbiased measure of the expected value of repeated

9   observations   of   a   random   variable,   not   the

10   geometric mean.

11   The geometric mean answers the question of

12   what constant return you would have had to achieve

13   in each year to have your investment growth match

14   the return achieved by the stock market.   The

15   arithmetic mean answers the question of what growth

16   rate is the best estimate of the future amount of

17   money   that   will   be   produced   by   continually

18   reinvesting in the stock market.   It is the rate of

19   return which, compounded over multiple periods,

20   gives the mean of the probability distribution of

21   ending wealth.

22   While the geometric mean is the best estimate

23   of performance over a long period of time, this

24   does   not   contradict   the   statement   that   the

25   arithmetic mean compounded over the number of years

55

1   that an investment is held provides the best

2   estimate of the ending wealth value of the

3   investment. The reason is that an investment with

4   uncertain returns will have a higher ending wealth

5   value than an investment which simply earns (with

6   certainty) its compound or geometric rate of return

7   every year.   In other words, more money, or

8   terminal wealth, is gained by the occurrence of

9   higher than expected returns than is lost by lower

10   than expected returns.

11   In capital markets, where returns are a

12   probability distribution, the answer that takes

13   account of uncertainty, the arithmetic mean, is the

14   correct one for estimating discount rates and the

15   cost of capital.

16   In conclusion, Mr. Rothschild commits a

17   serious logical error by relying on geometric

18   averages rather than on the conceptually correct

19   arithmetic averages of historical returns. This

20   error invalidates his discussion and reestimation

21   of my CAPM estimate.

22   **13.   MARKET-TO-BOOK RATIOS**

23   Q. **PLEASE COMMENT ON MR. ROTHSCHILD'S VIEWS REGARDING**

24   **MARKET-TO-BOOK RATIOS.**

25   A. On page 36 of his testimony, Mr. Rothschild asserts

1   that since current market-to-book (M/B) ratios for

2   water utilities are in excess of 1.00, this is an

3   indicator that the industry is earning returns

4   greater than their required returns and that the

5   regulating authority should lower the authorized

6   return. Mr. Rothschild would therefore find it

7   plausible that stock prices of the water utility

8   industry companies drop from the current 1.4 to the

9   desired M/B ratio range of 1.0.

10   There are several reasons why M/B ratios are

11   largely irrelevant and why I disagree with Mr.

12   Rothschild's view of the role of M/B in regulation.

13   1) Mr. Rothschild's inference that M/B

14   are relevant and that regulators should set an ROE

15   so as to produce a M/B of 1.0 is erroneous. The

16   stock price is set by the market, not by

17   regulators. The M/B ratio is the result of

18   regulation, not its starting point. The regime of

19   regulation envisioned by Mr. Rothschild, that is,

20   that the Commission will set an allowed rate of

21   return so as to produce a M/B of close to 1.0,

22   presumes that investors are congenital masochists;

23   they commit capital to a utility with a M/B in

24   excess of 1.0, knowing full well that they will be

25   inflicted a capital loss by regulators. This is

1   not a realistic or accurate view of regulation.

2   2)   The condition that the M/B will gravitate

3   toward 1.00 if regulators set the allowed return

4   equal to capital costs will be met only if the

5   actual return expected to be earned by investors is

6   at least equal to the cost of capital on a

7   consistent long-term basis. The cost of capital of

8   a company refers to the expected long-run earnings

9   level of other firms with similar risk.   If

10   investors expect a utility to earn an ROE equal to

11   its cost of equity in each period, then its M/B

12   ratio would be approximately 1.00, or about 1.05

13   with the proper allowance for flotation cost.

14   But a company's achieved earnings in any given

15   year are likely to exceed or be less than their

16   long-run average. Depressed or inflated M/B ratios

17   are to a considerable degree a function of forces

18   outside the control of regulators, such as the

19   general state of the economy, or general economic

20   or financial circumstances which may affect the

21   yields on securities of unregulated as well as

22   regulated enterprises. I regard the achievement of

23   a 1.05 M/B ratio as appropriate, but only in a

24   long-run sense. For utilities to exhibit a long-

25   run M/B ratio of 1.05, it is clear that during

58

1   economic upturns and more favorable capital market

2   conditions, the M/B ratio must exceed its long-run

3   average of 1.05 to compensate for the periods

4   during which the M/B ratio is less than its long-

5   run average under less favorable economic and

6   capital market conditions.

7   Historically, the M/B ratio for utilities has

8   fluctuated above and below 1.05. This indicates

9   that earnings below capital costs and M/B ratios

10   below 1.05 during less favorable economic and

11   capital market conditions must necessarily be

12   accompanied with earnings in excess of capital

13   costs and M/B ratios above 1.05 during more

14   favorable economic and capital market conditions.

15   3) M/B ratios are determined by the

16   marketplace, and utilities cannot be expected to

17   attract capital in an environment where industrials

18   are commanding M/B ratios well in excess of 1.00.

19   Moreover, if regulators were to currently set rates

20   so as to produce a M/B ratio of 1.05, not only

21   would the long-run target M/B ratio of 1.05 be

22   violated, but more importantly, the inevitable

23   consequence would be to inflict severe capital

24   losses on shareholders. Investors have not

25   committed capital to utilities with the expectation

1   of incurring capital losses from a misguided

2   regulatory process.

3   The fundamental goal of regulation should be

4   to set the expected economic profit for a public

5   utility equal to the level of profits expected to

6   be earned by firms of comparable risk, in short, to

7   emulate the competitive result. For unregulated

8   firms, the natural forces of competition will

9   ensure that in the long-run the ratio of the market

10   value of these firms' securities equals the

11   replacement cost of their assets. This suggests

12   that a fair and reasonable price for a public

13   utility's common stock is one that produces

14   equality between the market price of its common

15   equity and the replacement cost of its physical

16   assets. The latter circumstance will not

17   necessarily occur when the M/B ratio is 1.0; only

18   when the book value of the firm's common equity

19   equals the value of the firm's physical assets at

20   replacement cost will equality hold.

21   **CONCLUSIONS**

22   Q. **WHAT DO YOU CONCLUDE FROM MR. ROTHSCHILD'S DCF**

23   **ANALYSIS?**

24   A. My general conclusions are: (1) His DCF analysis

25   hinges solely on the "retention growth" method,

1   only one of several methods traditionally used in

2   regulatory proceedings, and certainly the most

3   fragile method. (2) His application of the method

4   is questionable and contains a serious logical

5   trap. (3) He has ignored historical

6   dividend/earnings growth rates and analysts growth

7   forecasts for dubious reasons. (4) I have already

8   alluded to the absence of a reasonable stock-bond

9   risk premium in his recommendation.

10   It is difficult not to conclude that Mr.

11   Rothschild's cost of capital testimony from which

12   CAPM, historical dividend/earnings growth DCF, and

13   analysts' growth forecasts DCF are absent is

14   grossly incomplete. It is also difficult to accept

15   Mr. Rothschild's claim that investors are expecting

16   10.10% when his own data indicates that investors

17   are expecting more.

18   My specific conclusions are that Mr.

19   Rothschild has committed several serious conceptual

20   and methodological errors in his DCF analysis: 1)

21   no flotation cost adjustment whatsoever, implying a

22   30 basis points deficiency, 2) exclusive reliance

23   on the retention method of specifying the DCF

24   growth rate, which is the most fragile and

25   empirically reprehensible approach to growth

1   estimation, 3) failure to consider historical

2   dividends/earnings growth rates and the analysts'

3   consensus growth forecasts, and 4) the misuse and

4   rejection of the CAPM. Any reasonable conservative

5   quantification of these errors and omissions easily

6   increases his cost of equity estimate to the same

7   level as suggested by the Commission's Leverage

8   Formula and my own recommendation.

9   In a nutshell, Mr. Rothschild's 10.10% cost of

10   equity recommendation is well below a credible

11   level, and there are serious problems with his

12   methods and his concepts.

13   **II.   COMMENTS ON MR. MAUREY'S TESTIMONY**

14 Q. **PLEASE SUMMARIZE MR. MAUREY'S RATE OF RETURN**

15   **RECOMMENDATION.**

16 A. In determining the cost of equity applicable to

17   SSU, Mr. Maurey bases his recommendation on the

18   leverage formula approved in Order No. PSC-95-0982-

19   FOF-WS on August 10. Use of the leverage formula

20   results in a cost of equity recommendation of

21   11.83%.

22 Q. **DO YOU HAVE ANY COMMENTS REGARDING MR. MAUREY'S**

23   **TESTIMONY?**

24 A. Yes, I do. As I have stated earlier in this

25   rebuttal, I endorse the use of the leverage formula

1   in this case. Several of the changes I suggested

2   to the Commission to improve the formula were

3   adopted in the August 1995 revision of the leverage

4   formula, thereby removing most of my concerns with

5   the original formula, as I explained in my original

6   testimony. I would, however, like to reiterate two

7   of my concerns that were not adopted: 1) the use of

8   a flat cost of debt over the full range of equity

9   ratios used in the formula and 2) the practice of

10   limiting the allowed return to the return indicated

11   by a 40% common equity ratio. I shall address each

12   of these concerns in turn.

13   First, the leverage formula assumes that the

14   cost of debt remains invariant over a common equity

15   ratio ranging from 100% all the way up to 40%. I

16   disagree. The cost of debt is higher for a company

17   with 40% equity than for a company which has no

18   debt. I recommend that the leverage formula allow

19   for the rising cost of debt as leverage rises.

20   Secondly, I also believe that there is nothing

21   magical about the 40% common equity floor imposed

22   by the formula. While I sympathize with the

23   Commission's desire to discourage the employment of

24   high leverage, there is nothing imprudent or

25   unusual about higher dosages of debt.   As I

1		discussed in my original testimony, the very small
2		private Florida water utilities do not have access
3		to the equity markets, generate limited internal
4		funds, and therefore must resort to the private
5		debt markets for funding. I reiterate my
6		recommendation that the 40% -100% common equity
7		constraint be relaxed to 30%-100%.
8	Q.	**DOES THIS COMPLETE YOUR REBUTTAL TESTIMONY?**
9	A.	Yes, it does.

EXECUTIVE SUMMARY

1. It is dangerous and inappropriate to rely on only methodology to estimate the cost of equity capital, let alone on one particular variant of that methodology, as Mr. Rothschild has done. Mr. Rothschild has chosen to rely on only one variant of one method, namely the retention ratio version of the DCF method, although he does performs a perfunctory risk premium check on his DCF result while he completely ignores the results he obtained from the CAPM. Moreover, his sole methodology contains a serious circular logical trap whereby Mr. Rothschild was forced to assume the ROE answer in order to produce the cost of equity. Therefore, since Mr. Rothschild's entire testimony rests on one particular methodology and since that methodology is logically circular, his cost of equity recommendation should be dismissed entirely.

2. Mr. Rothschild is completely silent on the Commission's Leverage Formula used to estimate the cost of equity of Florida water utilities, as if it did not exist. I can only presume that he is in disagreement with the Commission's established methodology.

3. Mr. Rothschild's cost of equity recommendation is unreasonably low, and is not a reliable estimate of SSU's cost of equity capital given his sole reliance on one particular and fragile cost of equity methodology. Reliance on one particular methodology violates corporate practice, financial theory, and the Commission's Leverage Formula.

4. There are serious logical inconsistencies in the retention growth method employed by Mr. Rothschild. Moreover, this method is the least empirically and theoretically valid.

5. Mr. Rothschild is completely silent on the subject of flotation costs, and his DCF estimates of equity costs are therefore understated. Yet, his retention growth term includes growth through external stock issues.

6. Mr. Rothschild erroneously contends that the business risks faced by SSU and the water utility industry have not increased in recent years and that Florida water utilities are not riskier than the national average.

7. Mr. Rothschild's view that company size is unrelated to return because it is an element of diversifiable risk is wrong.

8. Mr. Rothschild's contention that a liquidity premium is unwarranted because SSU's equity capital is raised by its parent is wrong.

9. Mr. Rothschild's view that gas distribution stocks and water utility companies are equally risky is inconsistent with the facts and with the Commission's Leverage Formula.

10. Mr. Rothschild's viewpoint that the used and useful adjustment does not increase SSU's risk is erroneous.

11. Mr. Rothschild's view that a weather normalization clause does not reduce risk is counterintuitive and inconsistent with financial theory.

12. Mr. Rothschild's risk premium analysis applied to electric utilities is stale and inapplicable to water utilities. Mr. Rothschild's contention that the risk premium is driven by changes in taxation ignores the presence of tax-exempt institutional investors.

13. Mr. Rothschild wrongly argues that the yield on short-term Treasury securities is the proper proxy for the risk-free rate in the CAPM. Only long-term yields provide an appropriate proxy for the risk-free rate when applying the CAPM to common stocks.

14. Mr. Rothschild wrongly argues that arithmetic means rather than geometric means should be used when measuring the market risk premium.

15. Mr. Rothschild's disregard for the CAPM and its results is totally out of the mainstream of corporate finance and corporate practice and violates the spirit of the Commission's Leverage Formula.

16. Market to Book ratios and regulation. Mr. Rothschild erroneously believes that market to book ratios above 1.0 are a sign that the utility is over-earning.

17. Mr. Rothschild's 10.10% cost of equity recommendation is well below a credible level, and there are serious problems with his methods and his concepts.