BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

In the Matter of the Application of Northern	)	
States Power Company	)	Docket No. EL11-019
dba Xcel Energy for Authority to	)	
Increase its Electric Rates	)	

RATE OF RETURN AND COST OF CAPITAL

TESTIMONY AND EXHIBIT OF BASIL L. COPELAND JR.
ON BEHALF OF
THE COMMISSION STAFF

April 16, 2012

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1 **I.   BACKGROUND AND QUALIFICATIONS**

2

3 **Q.   PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

4 A.   My name is Basil L. Copeland Jr. and my business address is 14619 Corvallis Road,

5   Maumelle, AR, 72113.

6 **Q.   WHAT IS YOUR OCCUPATION, BY WHOM ARE YOU EMPLOYED, AND FOR WHOM**

7   **ARE YOU TESTIFYING?**

8 A.   I am an economist, specializing in energy and utility economics, and a principal in

9   Chesapeake Regulatory Consultants, Inc., Annapolis, MD. I am testifying on behalf of the

10   Staff of the South Dakota Public Utilities Commission.

11 **Q.   PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.**

12 A.   I received my education at Portland State College (1967-1969), New Mexico Institute of

13   Mining and Technology (1969), and Oregon State University (1972-75). In 1974 I received a

14   Bachelor of Science degree in Economics from Oregon State University, and in 1976 a

15   Master of Science degree in Resource Economics (with a minor in Business Finance) from

16   the same institution.

17   From August 1975 to February 1977, I worked as a financial analyst and staff

18   economist for the Arkansas Public Service Commission. From March 1977 to August 1978, I

19   worked in a similar position for the Iowa State Commerce Commission. In September of

20   1978 I went to work for the Attorney General of Arkansas in a U.S. Department of Energy-

21   funded office of consumer services, with responsibility for economic analysis in electric utility

22   rate cases. While with the Attorney General, I assisted in the development of legislation that

23   created the Arkansas Department of Energy. In July of 1979, soon after the Department was

24   officially created, I became Deputy Director for Forecasting. In that position, I directed a staff

25   with broad responsibilities that included the development of an energy management

1   information system for monitoring energy supply and demand in Arkansas, including

2   comprehensive forecasts of energy demand by fuel source and sector.

3   I left the Arkansas Department of Energy in January 1981, and worked briefly as an

4   independent consultant before joining the consulting firm of Hess and Lim, Inc., in April 1981.

5   While employed by Hess and Lim, I served as a consultant on numerous rate cases before

6   the FERC and various state utility commissions. I left Hess & Lim in October 1986 to join

7   with two other consultants in the founding of Chesapeake Regulatory Consultants. I have

8   testified or provided technical assistance in over 150 proceedings before the FERC, the

9   FCC, and regulatory bodies in: Alabama, Arizona, Arkansas, California, Colorado, Georgia,

10   Illinois, Iowa, Kansas, Maine, Maryland, Mississippi, Montana, New Jersey, New Mexico,

11   New York, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Texas, Vermont,

12   Washington State, West Virginia, and the District of Columbia. On four occasions I have

13   been invited to appear on the program of the annual conference of Michigan State

14   University's Institute of Public Utilities, and I have served as faculty for the Michigan State-

15   NARUC summer training program for regulatory commission personnel.

16   I have published numerous articles, set forth in Appendix A, on a variety of utility

17   issues, including articles or comments in *Land Economics, American Economic Review,*

18   *Public Utilities Fortnightly, Journal of Business Research, Yale Journal on Regulation,*

19   *Journal of Portfolio Management, Energy Law Journal,* and the *Financial Analysts Journal*.

20   My 1982 article in the Financial Analysts Journal on the equity risk premium received a

21   Graham and Dodd award from the *Financial Analysts Federation*. I have also served as an

22   academic referee for two academic journals where I reviewed articles on utility economics

23   and finance. My article in the Spring 1991 issue of the *Energy Law Journal d*eals with the

24   constitutional standards for due process as applied to utility ratemaking under the celebrated

1   <u>Hope</u> case.[1] It offers a comparative analysis and critique of the 1989 Duquesne decision.[2]

2   A list of publications is provided at the end of my testimony.

3

4   **II.   OVERVIEW OF TESTIMONY**

5

6   **Q.   WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

7   A.   The purpose of my testimony is to present evidence with respect to the cost of capital for

8   Northern States Power ("NSP") and to recommend a fair and reasonable rate of return

9   based upon that evidence. I will also review and respond as necessary to NSP's

10   presentation of evidence on these matters.

11   **Q.   PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING THE COST OF CAPITAL**

12   **AND YOUR RECOMMENDED RATE OF RETURN.**

13   **A.**   Based on the evidence presented in my testimony, I conclude that the return on equity for

14   NSP should be in the range of 8.5 to 9.5 percent, and I recommend a rate of return on equity

15   at the midpoint of the range, 9.0 percent. Using my recommended rate of return on equity

16   and the capital structure and debt costs described later in my testimony, the overall cost of

17   capital and fair rate of return is 7.60 percent. My recommendations are summarized in the

18   following table, and in Exhibit____(BLC-1), Schedule 1:

19

20

21

22

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[1] "Procedural vs. Substantive Economic Due Process for Public Utilities," with Walter Nixon. **Energy Law Journal** 12 No. 1 (Spring 1991): 81-110.
[2] <u>Federal Power Comm'n v. Hope Natural Gas</u>, 320 U.S. 591 (1944); <u>Duquesne Light Co. v. Barasch</u>, 488 U.S. 591 (1989).

Northern States Power -- Minnesota
Capital Structure and Cost of Capital

Year Ending December 31, 2011

Line No.	Source A	Ratio B	Cost C	Wtd Cost D
1	Long Term Debt	47.27%	6.02%	2.85%
2	Common Equity	52.73%	9.00%	4.75%
3	Total	100.00%		7.60%

1 **Q.**   **PLEASE DESCRIBE HOW YOU HAVE ORGANIZED THE REMAINDER OF YOUR**

2   **TESTIMONY.**

3 **A.**   In Section III I present a brief discussion of basic principles regarding rate of return and the

4   cost of equity in regulation. In Section IV I present a survey of current research on the equity

5   risk premium that I believe is important to framing judgments concerning the reasonableness

6   of rate of return recommendations. In Section V I present a detailed discussion of the cost of

7   equity methodologies I employ, and present my findings based on those methodologies. In

8   Section VI I calculate an overall rate of return and discuss issues relating to capital structure

9   and cost of debt. In Section VII I discuss NSP's testimony and evidence regarding cost of

10   capital and rate of return.

11

12 **III.** **ROLE OF RATE OF RETURN AND THE COST OF EQUITY IN REGULATION**

13

14 **Q.**   **PLEASE EXPLAIN THE RELATIONSHIP BETWEEN RATE OF RETURN AND THE COST**

15   **OF EQUITY.**

1   A.   Typically, regulated utilities have utilized three sources of capital to capitalize their utility

2   assets: common stock, preferred stock, and long-term debt. The rate of return for a

3   regulated firm is usually based on its "weighted average cost of capital." This weighted

4   average cost of capital represents the cost of the individual sources of capital weighted by

5   their proportion as represented in the capital structure.

6   **Q.**   **HOW ARE CAPITAL COSTS MEASURED?**

7   **A.**   The cost of long-term debt can be directly measured from the interest rate (and related

8   costs) on the various issues of debt used to support the capital structure, and is only rarely a

9   direct source of significant controversy in establishing a rate of return for a regulated utility.

10   The cost of common equity, however, cannot be directly measured or estimated. It must be

11   inferred from market-based common stock dividend and price information using one or more

12   cost of equity estimation methodologies.

13   **Q.**   **WHY IS IT IMPORTANT TO BASE THE ALLOWED RATE OF RETURN ON EQUITY ON**

14   **THE MARKET COST OF EQUITY?**

15   A.   Basing the allowed rate of return on equity on the market cost of equity accomplishes two

16   significant and desirable regulatory objectives. First, it fairly balances the competing

17   interests of ratepayers and shareholders. Ratepayers are interested in receiving safe and

18   reliable service at the lowest possible cost. Shareholders are interested in receiving the

19   highest rate of return they can. A rate of return based on the market cost of equity fairly and

20   reasonably balances these competing interests. If the allowed rate of return on equity is

21   significantly below the market cost of equity, the impairment of the firm's financial integrity

22   undermines its ability to render safe and reliable service. So it is in the ratepayer's interest to

23   allow a rate of return on equity at least equal to the market cost of equity. Ratepayers,

24   however, have no interest in paying a rate of return significantly above the market cost of

25   equity. And while shareholders may delight at the opportunity to earn the excess profits

1   associated with a return on equity above the market cost of equity, they should not complain

2   if the allowed equity return is consistently established on the basis of the market cost of

3   equity. Such a return is commensurate with the financial risks they incur, and with the

4   returns they could earn elsewhere in the marketplace on comparable investments.

5   Second, an allowed rate of return on equity for the Company equal to the market cost

6   of equity provides the appropriate management incentives to operate the firm safely, reliably

7   and efficiently. An allowed rate of return on equity equal to the market cost of equity

8   provides the same kind of incentive to the managers of a regulated firm as do earnings per

9   share and market value goals for a competitive unregulated firm. If management has a

10   reasonable opportunity to earn a rate of return on equity equal to the market cost of equity, it

11   should be able to meet all reasonable goals and expectations of both shareholders and

12   ratepayers.

13

14   **IV.   EQUITY RISK PREMIUM SURVEY**

15

16   **Q.   WHAT IS THE EQUITY RISK PREMIUM?**

17   A.   The equity risk premium ("ERP") is the additional return that investors require on stock

18   relative to a risk free investment to compensate for market risk. It is implicit in rate of return

19   methodologies like the Discounted Cash Flow ("DCF") method, and explicit in methodologies

20   like the Capital Asset Pricing Model ("CAPM").[3] While every equity investment has its own

21   inherent risk premium required by investors, most discussion and research of the equity risk

22   premium focuses on the market risk premium – the equity risk premium for the market as a

23   whole.

---

[3]The DCF and CAPM methodologies are described in more detail later in my testimony.

1 **Q.** **WHY SHOULD THE COMMISSION BE INFORMED ABOUT THE EQUITY RISK**

2 **PREMIUM?**

3 A. In the case of methodologies like CAPM, the market risk premium is an explicit component of

4 the methodology, and an accurate rate of return using this methodology is highly dependent

5 upon the accuracy of the estimated market risk premium. But even with methodologies

6 where the risk premium is implicit, knowledge of the market risk premium provides a

7 benchmark for assessing the plausibility of cost of equity estimates. Furthermore, there has

8 been a groundswell of research on the equity risk premium in recent years that is

9 fundamentally undermining some long-held beliefs about the equity risk premium. I believe

10 that familiarity with this research can help the Commission make a more informed decision

11 about the appropriate rate of return for NSP.

12 **Q.** **WHAT HAS SPARKED THE INTEREST IN RECENT YEARS IN THE EQUITY RISK**

13 **PREMIUM?**

14 A. The reasons are varied. For many, it is the quest to solve what has come to be known as

15 the "Equity Premium Puzzle." This quest, and the term "equity premium puzzle," stems from

16 a highly influential article published in 1985 by Ranjish Mehra and Edward Prescott.[4] The

17 puzzle is that through much of the 20th century, returns on stocks relative to risk free

18 investments have been much higher than what can be explained by economic theory. A

19 veritable cottage industry of academic research has grown up trying to solve this puzzle.

20 While there is almost no end to the suggestions on how to reconcile theory and evidence on

21 the ERP, there is widespread consensus that the ERP has declined in recent decades, and

22 is not as great as was once believed necessary to attract investment. This has very

23 important implications for determining the cost of equity.

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[4]Mehra, Rajnish, and Edward C. Prescott, "The. Equity Premium: A Puzzle," Journal of Monetary Economics, March 1985, 15, 145-62.

1   Somewhat related, recent interest in the equity risk premium has been sparked by

2   attempts to explain, or understand, the unprecedented "bull market" of the 1990's. Were the

3   returns earned on stocks during the 1990's rational? Were they part of the "required

4   return?" Do (or can) investors rationally expect such returns to persist in the future? These

5   questions are extremely pertinent to regulatory decisions about the cost of capital because of

6   the widespread use of the Ibbottson Associates' (now Morningstar) data on market returns in

7   rate of return testimony. I cover this in more detail below.

8   Third, with proposals (during the Bush administration) to modify social security to

9   allow investments in the stock market, and more recently (during the Obama administration)

10   the debate over the cost of health care reform, the question of the future performance of the

11   stock market and future investment returns has become an important public policy issue.

12   More specifically, the ERP is an explicit public policy variable in various proposals to modify

13   social security and price the cost of health care reform. What are public policy planners

14   assuming about the future of the stock market? Are those assumptions plausible? How do

15   they compare with the rates of return that rate case witnesses are proposing? As I note

16   below in discussing these estimates of the ERP, I think they should be of interest to

17   regulatory commissions because they provide an independent perspective on the ERP that is

18   nevertheless similar to what regulatory commissions face from a public policy point of view.

19   For a variety of reasons, the ERP is no longer an issue of narrow interest to utility

20   regulation and utility rates of return. I believe that the Commission should be informed of

21   developments in this area, and that this information should factor into the Commission's

22   decision regarding the fair rate of return for NSP.

23   **Q.   HOW WOULD YOU CHARACTERIZE THE CONSENSUS OF CURRENT RESEARCH IN**

24   **THIS AREA?**

1   A.   I will present a survey of the evidence below so the Commission can reach its own

2   conclusion about what might be the consensus view here. Broadly, though, I think that

3   current thinking about the ERP falls into one of three categories. Before I summarize these

4   categories, it is helpful to have a historical perspective. The most common historical

5   perspective is realized return data published by Morningstar (formerly Ibbotson Associates).

6   For the period 1926 through 2007, the historical equity return premium for common stocks

7   averaged 7.10 percent above the income return on long term government bonds, and this

8   has, in the past, often been touted as evidence of the equity risk premium. For the period

9   1926 to 2008, the average historical equity return premium fell dramatically to 6.5 percent

10   because of the market "crash" of 2008. Through 2010, as the market rebounded somewhat,

11   the historical equity return premium for common stocks averaged 6.7 percent.

12   It is important to note that this historical estimate is based on an <u>arithmetic</u> mean (or

13   average), and that were we to use a <u>geometric</u> mean, the historical data through 2010

14   yielded a return premium of only 4.8 percent. I discuss the relative merits of the two ways of

15   measuring historical returns in detail later in my testimony. In any case, these returns – 6.7

16   percent arithmetic, and 4.8 percent geometric – give us a historical "benchmark" from which

17   to characterize current thinking about the ERP.

18   **Q.**   **PLEASE DESCRIBE THE THREE BROAD CATEGORIES OF CURRENT THINKING**

19   **REGARDING THE EQUITY RISK PREMIUM.**

20   **A.**   In the first category are those who believe that the ERP remains relatively high. Today, few

21   predict that the future ERP will be as high as the historical return on stocks vis-a-vis risk free

22   investments, but some still believe that the future will come close to realizing the same kind

23   of returns. Estimates of the ERP in this category tend to fall into the 4-6 percent range.

24   In the second category, which is as close as we get to a consensus, are those

25   experts who believe that future stock returns will be substantially lower than returns

1   historically realized through much of the 20th Century, but still comfortably above bond

2   returns. These estimates of the ERP tend to fall into the 2-4 percent range.

3   The third category is characterized as those who believe that the current ERP is very

4   low, if not zero, and that stocks are not likely to significantly outperform bonds in the

5   foreseeable future. Here we are looking at ERP estimates of 0-2 percent, and in some

6   cases even less.[5]

7 **Q.**   **WHY IS THERE SUCH A DISPARITY OF OPINION ABOUT THE EQUITY RISK**

8   **PREMIUM?**

9 A.   With few exceptions, there is uniform agreement across all three groups that the current or

10   foreseeable future ERP is lower than the historical realized premium on stocks vis-a-vis

11   bonds.[6] They disagree mainly over how much lower, not that it is lower per se. Thus Peter

12   Arnott, editor of the <u>Financial Analysts Journal</u>, and a contributor to recent research on the

13   ERP, thinks it fair to say:

14   Few serious observers of the capital markets argue that the future risk premium for stocks
15   relative to bonds can rival the lofty excess return that stocks have delivered in the past.[7]

16

17   That said, it is still common to see rate of return witnesses simply extrapolating historical

18   returns for an equity risk premium. But one can find little serious research these days to

19   back up such an approach.

20   As to the disparity in views as to how far the risk premium has fallen, I think the

21   differences owe to a combination of the following factors:

---

[5] The equity risk premium can be negative, or less than zero, when investors have an absolute preference for stocks over bonds. This can occur during times of rapid inflation. Inflation erodes the value of bonds, because the coupon rate is fixed; stocks can better adapt to inflation because firms can pass on the inflationary effect of higher input prices in the output prices of goods sold. This makes stocks a "hedge against inflation" and can lead to a situation where stocks are considered less risky than bonds.

[6] In other words, lower than the 6.7 percent arithmetic and 4.8 percent geometric means realized historically. Keep this in mind when viewing the results presented below.
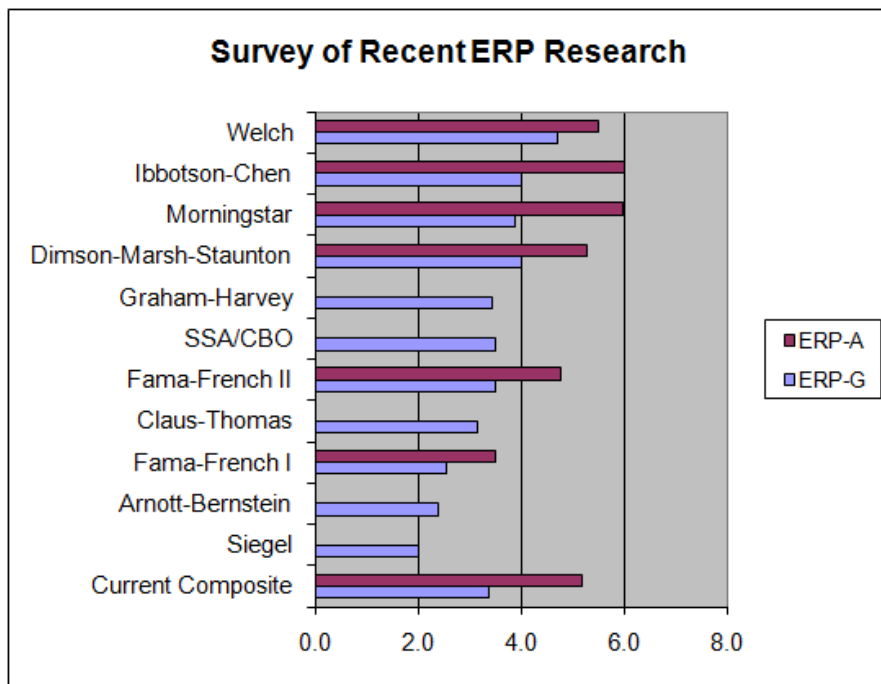
[7] Arnott, Peter, "The Meaning of a Slender Risk Premium," Financial Analysts Journal, March/April 2004, pp. 6-8.

1 ▪ The extent to which researchers use strictly forward-looking fundamental

2 valuation models versus analysis of historical return data;

3 ▪ The selection of time frames when analyzing historical data;

4 and

5 ▪ Methodological issues such as whether to use geometric or arithmetic averages

6 in estimating the ERP, and whether to use Treasury bills or bonds as the proxy for

7 determining the risk free rate.

8 I will highlight examples of these kinds of differences in surveying recent studies of the ERP.

9 **Q. WHAT STUDIES OR EVIDENCE ABOUT THE ERP DOES YOUR REVIEW ENCOMPASS?**

10 **A.** The studies I review in this survey are summarized in the following chart:

Survey of Recent ERP Research

11

12 Details and sources used in composing the chart are presented in Exhibit____(BLC-1),

13 Schedule 3. The darker (red) bars, labeled "ERP-A", represent arithmetic estimates of the

14 ERP; the lighter (blue) bars, labeled "ERP-G" represent geometric estimates of the ERP. As

15 just noted, the upper end of recent estimates falls in the 4 to 6 percent range. But even this

1   can be misleading because they do not all use the same base for a risk-free rate, therefore

2   some of these higher estimates are actually lower than they appear. I bring this out in the

3   discussion below, and take it into account when summarizing the results in terms of a

4   Current Composite.

5 **Q.   PLEASE DESCRIBE THE WELCH AND IBBOTSON-CHEN STUDIES.**

6 A.   These studies fall toward the upper end of the range of recent estimates of the market risk

7   premium. In 2001, Ivo Welch, Professor of Economics and Finance at Brown University, and

8   a National Bureau of Economics Research Associate in the Corporate Finance group,

9   published survey results, updating an earlier survey, of the views of finance and economics

10   professors on the ERP. With results from over 400 respondents, Welch reported 30 year

11   equity premium forecasts of 4.7 percent (geometric) and 5.5 percent (arithmetic).[8] He

12   observed that this was a significant decline from a survey taken just three years earlier. It is

13   further notable that the survey used Treasury <u>bills</u> for the risk-free rate. The ERP measured

14   relative to long term Treasury <u>bonds</u> would be <u>even lower</u> (the 6.7 arithmetic and 4.8

15   geometric risk premium averages from Morningstar/Ibbotson Associates are relative to

16   bonds). Professor Welch posted an online update in early 2009 in which he reported that

17   "[t]ypical expected equity premia are between 5% and 6% per year."[9] The lower end of this

18   range is based on a geometric mean return, and the upper end is based on an arithmetic

19   mean return. Again, it should be noted that Professor Welch's survey asks for premiums

20   relative to Treasury <u>bills</u>, so these results would be lower if measured relative to long term

21   Treasury <u>bonds</u>.

22   Recent studies by Pablo Fernandez help place Welch's results in perspective. In one

23   study, Fernandez publishes results based on responses from 1400 economic and finance
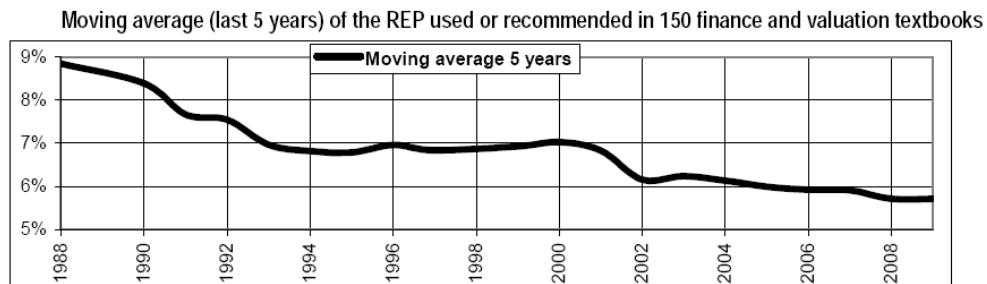
[8]Welch, Ivo, "The Equity Premium Consensus Forecast Revisited" (September 2001). Cowles
Foundation Discussion Paper No. 1325. http://ssrn.com/abstract=285169.

[9]The updated results are posted online at http://welch.econ.brown.edu/academics/equpdate-results2009.html.

1   professors.[10] The mean ERP, 6.3 percent, is similar to the results obtained by Professor

2   Welch. But Fernandez includes this telling quote from Aswath Damodaran, a finance

3   professor at the Stern School of Business at New York University:

4   the risk premiums in academic surveys indicate how far removed most academics are
5   from the real world of valuation and corporate finance and how much of their own
6   thinking is framed by the historical risk premiums [e.g. Ibbotson
7   Associates/Morningstar]... The risk premiums that are presented in classroom
8   settings are not only much higher than the risk premiums in practice but also
9   contradict other academic research.[11]

10

11   We will see further proof of this when examining evidence from surveys of corporate CFO's

12   (Chief Financial Officers) later in my testimony. In other research, Fernandez documents

13   how the ERP used in textbooks has been falling, demonstrated visually in the following graph

14   ("REP" in the graph refers to what we are referring to as ERP):[12]

Moving average (last 5 years) of the REP used or recommended in 150 finance and valuation textbooks

15

16   Academic references to the equity risk premium have steadily declined, and according to

17   Fernandez, the latest textbooks use an equity risk premium of 5.7 percent, down from nearly

18   9 percent two decades ago. Bear in mind that most professors, and even textbook authors,

19   do not do original ERP research. They simply repeat "the conventional wisdom," which has

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[10]Fernandez, Pablo, "Market Risk Premium used in 2008 by Professors: a survey with 1,400 answers."
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1344209.
[11]The quotation will be found on page 8 of the previously cited Fernandez paper. The bracketed reference to Ibbotson Associates/Morningstar is here supplied to clarify the meaning of "historical risk premiums." Fernandez shows that historical returns are the most often cited source of the ERP used by professors in the classroom. For a fuller and harsher presentation of Professor Damodaran's view of this, see Damodaran, Aswath, "Equity Risk Premiums (ERP): Determinants, Estimation and Implications - A post-crisis Update," October 2009, http://www.stern.nyu.edu/~adamodar/pdfiles/papers/ERP2009.pdf.
[12]Fernandez, Pablo, "The Equity Premium in 150 Textbooks," September 14, 2009,
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1473225.

1   until recent years been dominated by the historical return research of Ibbotson

2   Associates/Morningstar. Nevertheless, it is significant to observe that even among finance

3   professors and textbook authors the ERP they use has been falling, and is now no more than

4   about 6 percent.

5   In my view, though, the exemplary study supporting a high ERP is by Roger Ibbotson

6   and Peng Chen.[13] Using a variety of historical and supply-side (forward-looking) data, they

7   concluded that the ERP was about 4 percent geometrically, and 6 percent arithmetically. In

8   light of the controversy that often surrounds the question of geometric versus arithmetic

9   returns when measuring the ERP, which I discuss in more detail later, it is notable that they

10   present estimates of both, and in an interview Ibbotson cites the lower geometric mean as

11   his basis for estimating the current risk premium.[14] But the more important thing to note is

12   that they find their 4-6 percent ERP to be 1.25 percent <u>lower</u> than the historical averages. In

13   other words, they agree with Arnott that future stock returns will not produce as high of a

14   premium over bonds as has been realized historically.

15   **Q.   IS WHAT IBBOTSON AND CHEN PUBLISHED IN THE FINANCIAL ANALYSTS JOURNAL**

16   **INCONSISTENT WITH WHAT MORNINGSTAR PUBLISHES IN ITS YEARBOOK?**

17   A.   No. Morningstar has recently been presenting a "supply-side" estimate of the ERP in its

18   annual yearbooks. In the 2007 edition of Morningstar this "supply-side" estimate was 6.35

19   percent arithmetically, and 4.33 percent geometrically. In the 2010 edition, the "supply side"

20   estimate of the ERP is 5.99 percent on an arithmetic mean basis, and 3.88 percent on a

21   geometric return basis. So while Morningstar still publishes the historical returns, they now

---

[13]Ibbotson, Roger, and Peng, Chen, "Long-Run Stock Returns: Participating in the Real Economy," <u>Financial Analysts Journal</u>, January/February 2003, 88-98.

[14]Lord, Mimi, "Is the Equity Risk Premium Still Thriving, or a Thing of the Past?" Journal of Financial Planning, April 2002, Article 7. http://www.fpanet.org/journal/articles/2002_Issues/jfp0402-art7.cfm

1   use the "supply-side" estimate of the ERP for forward looking expectations of the ERP. In

2   the survey chart above, I have included both the original Ibbotson-Chen results, as well as

3   the 2010 Morningstar "supply side" ERP.

4   **Q.   PLEASE EXPLAIN WHAT IS MEANT BY A "SUPPLY-SIDE" ESTIMATE AND HOW IT**

5   **DIFFERS FROM THE HISTORICAL RETURN.**

6   A.   A "supply-side" estimate recognizes that historical returns may incorporate <u>unanticipated</u>

7   capital gains or losses. There is no quarrel that over the time frame under consideration

8   (here 1926-2010), investors actually <u>received</u> a return of 4.8 percent (geometric) or 6.7

9   percent (arithmetic) relative to the income return on long term government bonds. But is this

10   what investors were actually <u>expecting</u>? There is now growing awareness that over long

11   periods of time, stocks and bonds may be realizing unanticipated capital gains or losses as a

12   result of changes in the cost of capital. The "supply-side" approach recognizes this and

13   seeks to remove the unanticipated component of the return from the historical series in order

14   to more accurately estimate what investors were actually expecting, as opposed to what they

15   actually received. This is typically done either by adjusting the historical return for long-term

16   changes in Price/Earnings ("P/E") ratios, or dividend yields (Dividend/Price). Ibbotson and

17   Chen use changes in P/E ratios to develop their "supply-side" estimate. Had they used

18   dividend yields, as some researchers have done, the "supply-side" ERP would have been

19   even lower. Moreover, the "supply-side" ERP estimates also vary considerably over time. I

20   present independently derived estimates of the "supply-side" ERP taking these

21   considerations into account later in my testimony.

22   **Q.   PLEASE DESCRIBE THE FAMA-FRENCH ESTIMATES OF THE ERP.**

23   **A.**   The best way to summarize their findings is to quote from the abstract of their article in the

24   <u>Journal of Finance</u>:

25   We estimate the equity premium using dividend and earnings growth rates to measure the
26   expected rate of capital gain. Our estimates for 1951 to 2000, 2.55 percent and 4.32 percent,

1   are much lower than the equity premium produced by the average stock return, 7.43 percent.
2   Our evidence suggests that the high average return for 1951 to 2000 is due to a decline in
3   discount rates that produces a large unexpected capital gain. Our main conclusion is that
4   average stock returns of the last half-century is a lot higher than expected.[15]
5
6   In other words, as the cost of equity capital (the "discount rate" for equity capital) fell, it

7   produced large, unanticipated capital gains. This is just another way of reflecting the

8   intuition behind the "supply-side" estimate of the ERP discussed above: historical returns

9   themselves only tell us what investors realized on an <u>ex post</u> or after-the-fact basis. The

10   cost of capital, though, is an <u>ex ante</u> or forward-looking concept.

11   What Fama and French did, to avoid extrapolating <u>ex post</u> returns that are not

12   indicative of what investors actually expected, was to use forward looking valuation models

13   essentially identical to the familiar DCF (discounted cash flow) model we use in regulation to

14   estimate the cost of equity for public utilities. In one model they used dividends; this model

15   yields the 2.55 percent ERP cited in the abstract. When they used earnings, the estimated

16   ERP was the 4.32 percent.[16] Either result is considerably below the 6.7 percent arithmetic

17   return premium, or the 4.8 percent geometric return premium, that has been realized

18   historically. Again, what this indicates is that investors historically realized unanticipated

19   returns, and that these cannot be realistically extrapolated in estimating the current expected

20   ERP.

21   **Q.   PLEASE DESCRIBE THE DIMSON-MARSH-STAUNTON AND GRAHAM-HARVEY**

22   **STUDIES.**

23   **A.**   Somewhat in the vein of the classic historical analysis of Morningstar/Ibbotson Associates,

24   the Dimson-Marsh-Staunton research goes further by using a longer historical dataset –

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[15]Fama, Eugene F., and French, Kenneth R., "The Equity Premium," <u>Journal of Finance</u>, V57, No. 2 (2002), 637-659.

[16]The ranges presented in the chart for the Fama-French study are the "bias-adjusted" figures shown in Table IV of the article, with the "annual" result being interpreted as "arithmetic" and the "long-term" result being interpreted as "geometric."   In the table, the ERP estimated from dividend growth is labeled "Fama-French I" and the ERP estimated from earnings growth is labeled "Fama-French II."

1 beginning in 1900 rather than 1926 – and extending the analysis to equity markets in

2 countries other than just the US. But in what now is becoming conventional wisdom, they

3 recognize that the historical series includes unanticipated capital gains, and subtract these to

4 yield what is essentially a "supply-side" estimate of the historical equity risk premium. For

5 the US, the 1900-2001 realized return premium was 5.6 percent (geometric); adjusted for

6 unanticipated capital gains and a declining cost of equity capital, they derived a 4.0 percent

7 (geometric) ERP for the US over the entire 1900-2001, and projected a 5.3 percent

8 (arithmetic) ERP going forward.[17] Based on evidence I will present later, I'm sure these

9 numbers would be much smaller if they used only the latter half of the 20th century. These

10 results also measure the ERP relative to Treasury bills, which makes them higher than the

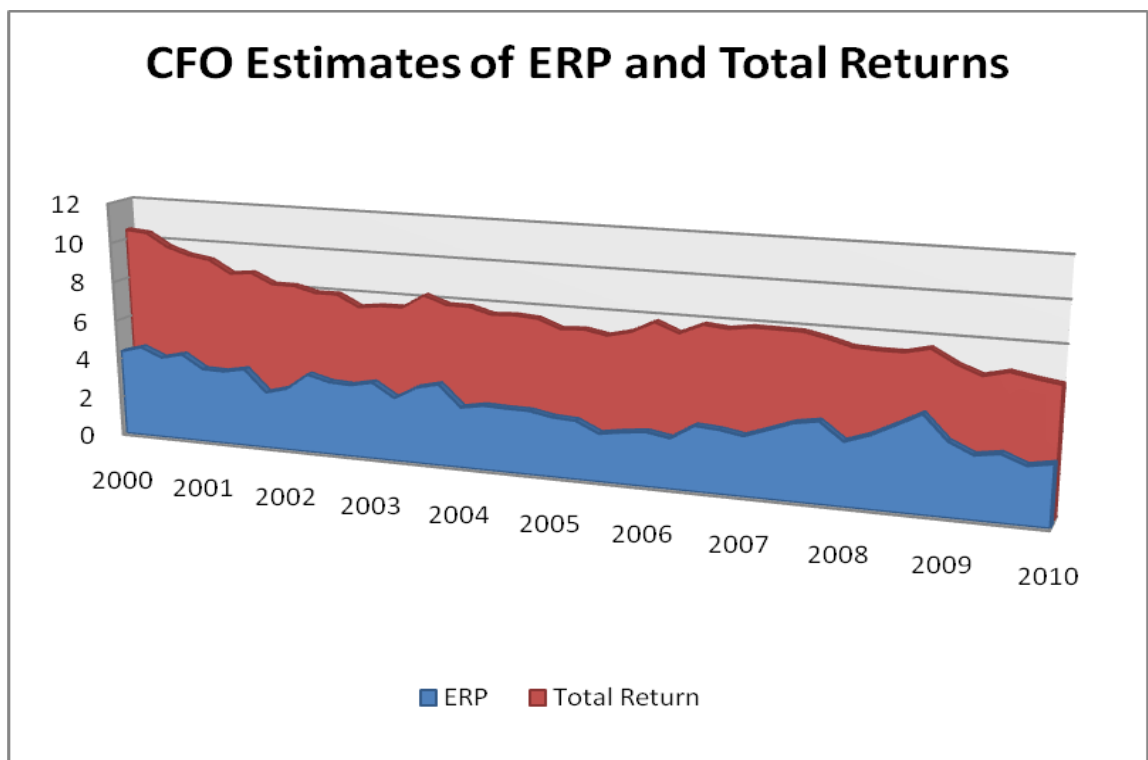11 ERP one would use for longer term investments.[18]

12 The Graham-Harvey study takes a different, and somewhat unique, perspective to

13 estimating the ERP. Since June of 2000 Duke University has been including in its quarterly

14 survey of CFO's a question about expected 10-year average returns on the S&P 500.

15 Graham and Harvey compare these estimates to 10-year Treasury bond rates at the time of

16 the survey to derive implied expectations regarding the ERP. The lowest expected ERP

17 reported by CFO's since this question was added to the survey was 2.88 percent in March

18 2002; the highest ERP was 4.74 percent, in February 2009, and the latest ERP was 3.00

19 percent. The average for all quarters since the survey began is 3.46 percent, and this is

20 what is depicted in the chart on Schedule 3 of my exhibit, and on Page 11 above.[19]

[17]Dimson, E., Marsh, P.R., and Staunton, M., "Global evidence on the equity risk premium," Journal of Applied Corporate Finance, Vol. 15, No. 4 (2003), 27-38.

[18]As explained below, I take into account whether a study used Treasury bills or bonds in deriving my "current composite" of the ERP.

[19]Graham, J.R., Campbell, R.H., "The Equity Risk Premium in 2010," August 9, 2010.
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1654026

1   I think it is important to emphasize how the ERP from the CFO surveys is determined.

2   They are not asked what they think the ERP is directly. They are asked what they think the

3   market return will be relative to 10 year government bonds, and the ERP is derived by

4   determining the difference between the two. This means that we can compute what the total

5   expected market return was from the CFO surveys, and I think the results are highly

6   informative. The following chart depicts the ERP and the total expected return since the

7   surveys began:

CFO Estimates of ERP and Total Returns

ERP   Total Return

8

9   Since early 2001, the total expected market return projected by the surveyed CFO's

10   has been in the <u>single-digit</u> range, i.e. <u>below 10 percent</u>. This is notable because there

11   seems to be resistance among public utilities and some rate of return witnesses to the notion

12   that expected market returns and the cost of equity capital are in the single digits. Yet here

13   we have several hundred CFO's being surveyed, and over 13,000 survey results now over

14   the past decade, and the consensus is clearly that the total expected market return, i.e. the

15   cost of equity capital for the market as a whole, is well below 10 percent. Somewhat in the

1 vein of Professor Damodaran's observation that academic and classroom assessments of

2 the ERP are often unrealistic and at odds with real world expectations, I would suggest the

3 same of regulated utilities and witnesses who cannot conceive that the cost of equity might

4 currently be in the single digits.

5 **Q. PLEASE DESCRIBE THE EQUITY RISK PREMIUM SHOWN FOR SOCIAL SECURITY**

6 **ADMINISTRATION AND THE CONGRESSIONAL BUDGET OFFICE.**

7 **A.** The ERP used by actuaries of the Social Security Administration (SSA) to project expected

8 stock returns in analyzing proposals for reforming Social Security during the Bush

9 administration was 3.5 percent.[20] More recently, the same ERP -- 3.5 percent -- has been

10 used by the Congressional Budget Office (CBO) in its analysis of budget projections.[21] I

11 think that these are very important examples of what a credible estimate of the ERP is from a

12 public policy perspective. The Commission, of course, is making a "public policy" decision

13 about the ERP when it sets an allowed rate of return on equity for the utility. However, the

14 Commission's decision only affects the utility and its customers. Social Security, or the

15 impact of other issues on the Federal government budget, are public policy issues that affect

16 the nation as a whole, which means that ERP assumptions made by these agencies will be

17 subjected to even more intense scrutiny.

18 **Q. WHAT DO YOU BELIEVE WOULD HAVE BEEN THE RESULT OF PROPOSALS TO**

19 **MODIFY SOCIAL SECURITY THAT ASSUMED AN ERP OF 6.7 PERCENT (THE**

20 **HISTORICAL ARITHMETIC RETURN PREMIUM TO COMMON STOCK THROUGH 2010)?**

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[20]Goss, S.C., Wade, A.H., Chaplain, C., "OASDI Financial Effects of the Social Security Guarantee Plus Act of 2005 (H.R. 750), http://www.ssa.gov/OACT/solvency/CShaw_20050512.pdf . See also Campbell, J. Y., Diamond, P. A., and Shoven, J. B., "Estimating the Real Return on Stocks Over the Long Term," papers presented to the Social Security Advisory Board, August 2001. http://www.ssab.gov/Publications/Financing/estimated rate of return.pdf .
[21] Congressional Budget Office, "How CBO Projects the Real Rate of Interest on 10-Year Treasury Notes, December 2007. http://www.cbo.gov/ftpdocs/88xx/doc8842/12-21-10-Yr_Rates.pdf.

1   A.   I can assure the Commission that such proposals would have been rejected out of hand. The

2   adverse effects of using a 6.7 percent ERP would have been monumental, and would have

3   provoked considerable opposition. In the case of Social Security, this would have resulted in

4   wholly unrealistic estimates of the returns that retirees might expect on funds invested in the

5   stock market. Critics of the proposal would have blasted this. In the case of budget

6   projections, and the pricing of the cost of health care, this would have added further fuel to

7   those opposed to the health care reform proposals of the Obama administration.

8   Q.   **IF IT IS UNREASONABLE FOR THE SSA OR THE CBO TO ASSUME THAT THE STOCK**

9   **MARKET WILL RETURN 6.7 PERCENT (OR MORE) ABOVE A RISK FREE RETURN,**

10   **HOW DOES 6.7 PERCENT (OR MORE) SUDDENLY BECOME REASONABLE WHEN**

11   **PRESENTED IN RATE OF RETURN TESTIMONY?**

12   A,   It does not. A 6.7 percent ERP is simply not in the realm of a reasonable projection of the

13   current ERP in the current economy. I would point out here that NSP's rate of return

14   witness, declines to use this as an estimate of the risk premium in one of his rate of return

15   methodologies because he considers it <u>too low</u>. I will also note here that such high

16   estimates of the ERP are incompatible with actuarial assumptions for typical pension plan

17   forecasts, including NSP's. I cover this more specifically later in my response to the

18   testimony of NSP's rate of return witness.

19   **Q.**   **PLEASE DESCRIBE THE CLAUS-THOMAS, ARNOTT-BERNSTEIN, AND SIEGEL**

20   **ESTIMATES OF THE ERP SHOWN IN THE CHART ON SCHEDULE 3 OF YOUR EXHIBIT,**

21   **AND ABOVE ON PAGE 13 OF THIS TESTIMONY.**

22   **A.**   These studies bring us to the lower end of current thinking about the ERP. The Claus-

23   Thomas study was published in the *Journal of Finance* under the provocative title "Equity

24   Premia as Low as Three Percent? Evidence From Analysts Earnings Forecasts For

25   Domestic and International Stock Markets." These studies used what they call an "abnormal

1   earnings" version of the discounted cash flow model of stock valuation. While it is an over-

2   simplification to describe it this way, it is similar in construct to a two-stage or non-constant

3   DCF model (which I discuss and utilize later in my testimony). In my view, the key intuition in

4   their approach is recognizing that analysts' forecasts, such as the I/B/E/S or Zack's

5   consensus forecasts often used in DCF analysis, are abnormally high and cannot be

6   projected indefinitely or into perpetuity. When this is taken into account, the studies find that

7   *the implied* ERP from analysts' forecasts averaged 3.36 percent from 1985 to 1998.[22]

8   The Arnott-Bernstein study, published in the *Financial Analysts Journal*, looks at an

9   even longer period of time – 1802 to 2001 – to estimate what can reasonably be called a

10   "normal" risk premium.[23] One finding from their analysis is that stock returns, especially in

11   the 20th century, have been the product of "happy accidents," while bond returns experienced

12   the opposite. Putting this in the language used earlier, stocks have enjoyed a series of

13   unanticipated capital gains, while bonds have experienced an unanticipated capital loss.

14   When historical returns are adjusted for these "accidents," Arnott and Bernstein find that the

15   "normal" ERP is just 2.4 percent. Moreover, almost all of the "happy accidents" for stocks

16   have accumulated since 1981, and when they take this into account they suggest that the

17   current ERP could be zero, or even negative! But what I depict in the chart is their "normal"

18

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[22]Claus, J., and Thomas, J., "Equity Premia as Low as Three Percent? Evidence From Analysts Earnings Forecasts For Domestic and International Stock Markets," Journal of Finance, Vol. 56, No. 5 (2001), 1629-1666.

[23]Arnott, R.D., and Bernstein, P.L., "What Risk Premium is 'Normal'", Financial Analyst Journal, March/April 2002, 64-86.

1   ERP of 2.4 percent.

2   The final ERP shown in the chart (Schedule 3 of my exhibit) is a forecast by Jeremy

3   Siegel. Siegel is the author of several well known studies and books analyzing historical

4   returns. In a 2001 forum on the equity risk premium, he projected an ERP of 2 percent.[24]

5 **Q.** **PLEASE DESCRIBE THE CURRENT COMPOSITE SHOWN IN THE CHART ON**

6   **SCHEDULE 3.**

7 **A.** The Current Composite takes into account all the ERP's presented in the chart, taking into

8   consideration whether they were based on Treasury bills or bonds, and whether they

9   represent geometric or arithmetic means. In deriving this Current Composite I associate

10   geometric means with Treasury bond yields, and arithmetic means with Treasury bill returns.

11   (I describe the reason for doing this later when I discuss the issue of geometric versus

12   arithmetic means in the estimation of the ERP on page 33 below). As shown on the chart,

13   the studies show an approximate average geometric ERP of 3.38 percent, and an

14   approximate average arithmetic ERP of 5.18 percent.

15 **Q.** **HOW SHOULD THE COMMISSION MAKE USE OF THIS INFORMATION IN**

16   **DETERMINING A RATE OF RETURN FOR NSP?**

17 **A.** Schedule 3 provides the basis for at least one benchmark in judging the reasonableness of

18   rate of return on equity recommendations. For example, a geometric mean ERP of 3.5

19   percent relative to a current long term government bond yield of about 4.4 percent implies a

20   total market return of 7.9 percent. Bear in mind, this is a projection of the return for "the

21   market as a whole" or for a stock of "average risk." Since utilities are still of somewhat less

22   risk than the market as a whole or the average stock in the S&P 500 index, one could argue

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[24]Siegel, Jeremy, "Historical Results I," Equity Risk Premium Forum, November 8, 2001, AIMR, 30-34.
http://www.cfapubs.org/doi/pdf/10.2469/op.v2002.n1.4018 (the link is no longer active, but a hard copy is provided in Mr. Copeland's workpapers).

1   that this represents an <u>upper bound</u> to what is a fair and reasonable return on equity for NSP

2   under current market conditions. In other words, if there is wide-spread support and

3   consensus for the idea that investors cannot reasonably expect a return of more than 8

4   percent on the market as a whole at this point in time (and this is certainly borne out by the

5   CFO surveys), then the ROE (return on equity) that NSP is asking for in this case, 11.00

6   percent, is not within the realm of possibility of meeting the test of what is a fair and

7   reasonable rate of return on equity, which must balance investor interests with ratepayer

8   interests. While I will take into consideration other evidence in determining what a

9   reasonable ROE to recommend is, I believe this evidence of a "low" or "slender" risk

10   premium is important for putting into perspective how unreasonable NSP's requested ROE of

11   11.00 percent is.

12

13   **V.**   **NORTHERN STATES POWER'S COST OF EQUITY CAPITAL**

14

15   **Q.**   **WHAT METHODS DID YOU USE TO DETERMINE NSP'S COST OF EQUITY CAPITAL?**

16   A.   I used two variations of the "Discounted Cash Flow" ("DCF") methodology. I also performed

17   a supplemental analysis using the Capital Asset Pricing Model (CAPM).

18

19   **A.**   **DCF ANALYSIS**

20

21   **Q.**   **PLEASE EXPLAIN THE BASIC PROCEDURES INVOLVED IN USING THE "DISCOUNTED**

22   **CASH FLOW" METHODOLOGY.**

23   **A.**   In its most basic form, the DCF theory is a "constant growth" model in which the investor's

24   required return on common stock equity equals the dividend yield on the stock plus the

1   expected rate of growth in the dividend. This relationship is commonly represented

2   mathematically as:

3                                    $k = D/P + g$

4   where k is the cost of equity capital (the investor's required return), D/P is the dividend yield

5   (the dividend divided by market price), and g is the expected rate of growth in the dividend.

6   Depending on the nature of the assumptions and mathematical procedures employed in the

7   derivation of the model, the dividend yield portion of the total return is variously represented

8   as D_0/P_0 or D_1/P_0 where D_0 and D_1 represent the "current dividend" and the "next period

9   dividend," respectively. Depending further on what is assumed about the frequency of the

10   dividend payout and the compounding of intra-period retained earnings, as an annual yield

11   D_0/P_0 will tend to understate the effective yield, while D_1/P_0 will tend to overstate it. A valid

12   conceptual argument can be made for using an average of the two, sometimes presented in

13   the form $D_0(1+.5g)/P_0$. This is the general form of the constant growth model I used in my

14   initial DCF analysis.

15   **Q.   WHAT OTHER STEPS ARE INVOLVED IN IMPLEMENTING THE DCF METHODOLOGY?**

16   A.   The principal steps in implementing the DCF approach are the selection of a sample of

17   companies to which to apply the method, and the selection of measures of expected growth.

18   On the selection of a sample of companies to which to apply the method, I will ordinarily rely

19   on the sample used by the applicant's cost of capital witness unless there is a reason not to.

20   Here, NSP's witness utilizes a sample of 10 electric utilities. It should be noted that the

21   relevant entity for "comparability of risk" here is NSP's parent company, Xcel, because it is

22   Xcel that goes to the marketplace and issues common stock. The sample proposed by

23   NSP's witness is sufficiently comparable to Xcel that it provides a reasonable basis for

24   determining the cost of equity and fair rate of return on equity for NSP.

1   **Q.**   **WHAT DATA DID YOU EXAMINE IN ORDER TO ESTIMATE THE INVESTOR EXPECTED**

2   **GROWTH RATE FOR YOUR DCF ANALYSIS?**

3   **A.**   For my constant growth DCF study, I utilized the Zacks consensus estimate of projected

4   growth in earnings per share ("EPS"), and Value Line estimates of growth in dividends per

5   share ("DPS"), growth in book value per share ("BVPS"), and the Value Line estimate of "%

6   Retained to Common Equity" (a measure of long term sustainable growth).[25] Theoretically, if

7   the constant growth assumptions are valid, earnings, dividends, and book value per share

8   should all grow at approximately the same rate. Where this is the case, it is sometimes

9   possible to derive reasonable and accurate estimates of the cost of equity using only one of

10   these growth measures as a "proxy" for the expected rate of growth in dividends. But if the

11   payout ratio is not constant, using just projected earnings or dividend growth can result in

12   distorted estimates of the DCF cost of equity.

13 **Q.**   **WHAT ARE YOUR ESTIMATES OF THE PROJECTED GROWTH RATES FOR THESE**

14   **MEASURES?**

15 **A.**   The projected growth rates used in my constant growth DCF study for the sample of 22

16   combination utilities are shown on Exhibit __ (BLC-1), Schedule 4. As can be seen from

17   Columns F and G, there is some disparity between the EPS growth rates projected by Zacks

18   and the DPS growth rates projected by Value Line, especially in median (which is a better

19   measure of central tendency for a sample this small). The median projected EPS growth

20   rate, 5.70 percent, is substantially higher than the median DPS growth rate of 3.68 percent.

21   The median % Return to Common Equity in Column I, 4.0 percent, is also well below the

22   median Zacks forecast of 5.70 percent, implying that the projected earnings growth rate is

---

[25] Zacks and Value Line are sources of financial data widely used by investors. Besides basic financial data, Zacks surveys institutional investors to collect data on expected earnings growth (referred to as "consensus" estimates of expected earnings growth). "% Retained to Common Equity" is a measure of the ratio of retained earnings to common equity, or the "plowback ratio." It is equivalent to the "br" measure of expected dividend growth used in some presentations of the DCF model.

1   unsustainable for the long term. But the constant growth DCF model is a model of investors'

2   long-term dividend growth expectations. Consequently, based on current projections, relying

3   solely upon projected EPS growth rates will overstate the investors' long-term growth

4   expectations. Similarly, relying solely upon projected DPS growth rates would understate the

5   investors' long-term growth expectations.

6   **Q.   UNDER THESE CONDITIONS, WHAT IS THE BEST WAY TO ESTIMATE THE CONSTANT**

7   **GROWTH DCF COST OF EQUITY TO AVOID OVERSTATING OR UNDERSTATING**

8   **INVESTORS LONG TERM GROWTH EXPECTATIONS?**

9   **A.**   Under these conditions, the best way to estimate the constant growth DCF cost of equity is

10   to rely upon an average of the EPS, DPS, and BVPS projections. Short-run or near-term

11   changes in payout ratio do not impact BVPS growth as significantly as they do EPS and DPS

12   growth, and over time EPS and DPS growth rates will always revert to the rate of growth in

13   BVPS.[26] For this reason, an average of these various growth rate measurements is required

14   to reasonably estimate investors' long-term growth expectations. Averaging them in the way

15   I do in Schedule 4, the median expected growth rate (Column J) is 4.47 percent, and the

16   mean is 4.74 percent. Lower than either the mean or median based on Zacks alone, this is a

17   more reasonable estimate of the expected growth rate for a constant growth form of the DCF

18   model.

19   **Q.   PLEASE DESCRIBE THE RESULTS OF YOUR CONSTANT GROWTH DCF STUDY.**

20   **A.**   The results are shown on Exhibit __(BLC-1), Schedule 4, Column K. Column K is the sum of

21   Column E and the average of Columns F, G, H and I (the average is shown in Column J).

---

[26] A trend in the payout ratio faces two limits – a payout ratio of 100 percent if the payout ratio is rising, and a payout ratio of zero if the payout ratio is declining. At these limits growth in dividends or earnings becomes equal to the rate of growth in book value per share. If the trend in payout ratio levels off, so that payout ratio stabilizes, growth in dividends and earnings will equal growth in book value per share. So regardless of the trend in payout ratio, growth in dividends and earnings will always, ultimately, revert to growth in book value per share.

1   Column E is the dividend yield portion of the DCF cost of equity, and is computed using a

2   180-day moving average stock price.[27] By averaging the growth rates in Columns F, G, H

3   and I, we avoid the bias that arises from relying solely upon a single measure of expected

4   growth. The mean and median estimate of "k" are 9.04 percent and 8.95 percent,

5   respectively. The difference between the median and the mean reflects the impact of

6   "outliers," or atypical observations, in the calculation of the mean. For that reason the

7   median is the more reliable measure of central tendency, especially for small samples.

8   Here, though, the two are close enough to conclude that, using the constant growth form of

9   the DCF model, the cost of equity appears to be about 9 percent.

10   **Q.   DID YOU UNDERTAKE ANY ADDITIONAL DCF ANALYSIS?**

11   **A.**   Yes, I did. In addition to the more traditional form of the DCF methodology, I developed DCF

12   estimates using a "dividend discount model" ("DDM"). DDMs are more general forms of the

13   DCF methodology, which embody less restrictive assumptions than the traditional

14   methodology. The traditional methodology is sometimes referred to as the "constant growth

15   model," and assumes that dividends, earnings, book value per share, and share price all

16   grow at the same uniform rate of growth into perpetuity. While this is rarely the case in

17   actuality, it is not an unreasonable assumption if the differences are small, a condition which

18   implicitly requires a relatively constant dividend payout ratio. Where dividend payout ratios

19   are expected to trend upward or downward over extended periods of time, use of five-year

20   earnings growth projections of the type published by Zacks, Value Line, or other investment

21   services in a constant growth form of the DCF model can produce distorted and unreliable

---

[27] However, I compare the 180 day moving average to "Bollinger Bands" around the recent stock price. Bollinger Bands are bands used in charting stock prices, and plot a range of two standard deviations around a 20 day moving average. If the 180 day moving average is outside the Bollinger Band, I use the price indicated by the Bollinger Band in the place of the 180 day moving average. Thus the stock price I use is always within two standard deviations of a 20 day moving average, answering any concern that use of a 180 day moving average represents stale price data. While "Bollinger Bands" are most commonly associated with "technical" analysis of stock price movements, their use here implies no agreement with the theory or practice of technical

1   results. Multiple-period dividend discount models provide more reliable and accurate

2   measures of the expected DCF return under such conditions.

3 **Q.**   **PLEASE EXPLAIN IN FURTHER DETAIL HOW THE MULTIPLE PERIOD DIVIDEND**

4   **DISCOUNT MODEL IS DERIVED.**

5 **A.**   Multiple period dividend discount models are based on finite horizon DCF models of the

6   form:

7
$$P_0 = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + ... + \frac{D_t}{(1+k)^t} + \frac{P_t}{(1+k)^t}$$

8   Where

9
$$P_t = \frac{D_t(1+g)}{(k-g)}$$

10   Here t is a finite time period at the end of which the stock would be sold for P_t. By

11   postponing the period of constant growth to some finite point of time in the future, dividends

12   can be projected during the interim that follow any pattern consistent with expected earnings

13   growth and dividend payout ratios.

14 **Q.**   **ARE SUCH DDM MODELS ACTUALLY USED BY INVESTORS TO ESTIMATE EXPECTED**

15   **RETURNS?**

16 **A.**   Yes. Firms such as Prudential-Bache and Merrill Lynch have used such models to develop

17   expected returns, which are then used by their investment analysts in making stock buy-

18   hold-sell recommendations. Standard textbooks also present them along with constant

19   growth models.

20 **Q.**   **PLEASE DESCRIBE IN FURTHER DETAIL YOUR IMPLEMENTATION OF THIS**

21   **METHODOLOGY.**

---

analysis. They simply provide a readily available means of adjusting for the effect of dramatic short term price movements in developing an "average" price for DCF analysis.

1 **A.** The basic data employed in my implementation of this methodology is presented, for the 10

2 company sample of combination utilities, in Exhibit____(BLC-1), Schedule 5. This is a

3 summary sheet with input data and the resulting DDM estimates of the cost of equity. The

4 basic input data consists of the current dividend yield, an estimated EPS projection for 2011,

5 the current Zacks consensus EPS growth projection, an estimate of long-term growth into

6 perpetuity, and estimated retention ratios for 2011, 2015, and 2030. The DDM analysis

7 assumes that earnings grow from 2011 to 2015 at the indicated Zacks consensus EPS

8 growth rate (as noted for each company), and at the long-term growth rate (4.0 percent, the

9 median value of Value Line's "% Retained to Common Equity") thereafter. The period from

10 2015 to 2030 is a transition period during which the retention ratio changes from the value

11 projected by Value Line in the year 2015 to a common value of 0.39 (the median Value Line

12 estimate for 2015) for all companies in the sample in the year 2029. The use of a common

13 retention rate or payout ratio, and growth rate, reflect the statistical property of "mean

14 reversion," that statistical observations tend to revert, or regress, toward the sample mean

15 over time. Constant growth assumptions — long-term growth of 4.0 percent, and a retention

16 ratio of 0.39 percent — apply after the year 2030, allowing the determination of a terminal

17 share price for the year 2030. These long-term conditions after 2030 are applied to all the

18 companies in the sample. Having generated a series of cash flows, the model generates an

19 expected return, *k*, by solving the following equation:

20
$$0 = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + ... + \frac{D_t}{(1+k)^t} + \frac{P_t}{(1+k)^t} - P_0$$

21 The solution to this equation is the value of *k* which makes the right hand side of the

22 equation zero. This can only be done by trial and error. However, there are generally

23 available computer algorithms for finding the solution to such formulas automatically. The

24 DDM returns shown on Exhibit____(BLC-1), Schedule 5, were developed using the "Goal

1   Seek" option in an Excel spreadsheet. I calculated the mean DDM return for the 10 company

2   sample at 8.54 percent, and the median DDM return at 8.42 percent.

3

4   **B.   CAPM ANALYSIS**

5

6 **Q.   DID YOU UNDERTAKE A SUPPLEMENTAL ANALYSIS OF THE COST OF EQUITY FOR**

7   **THE SAMPLE OF COMPARABLE COMPANIES TO VALIDATE YOUR DCF RESULTS?**

8 **A.**   Yes, I did. I used the Capital Asset Pricing Model ("CAPM") to develop a third estimate of

9   the cost of equity. CAPM is a risk premium methodology based on the principle that the cost

10   of equity capital equals the cost of a risk-free investment, plus a "risk premium" to

11   compensate investors for the risks associated with a specific equity investment. Under the

12   CAPM methodology, the overall market risk premium for common stock is adjusted to reflect

13   the risk of a specific stock or sample of stocks using the stock's beta coefficient. A beta

14   coefficient is a financial market measure used in developing a risk-adjusted risk premium

15   that reflects the market risk of an individual stock (sometimes referred to as its "systematic

16   risk") relative to the risk of the market as a whole. This stock-specific risk premium is then

17   added to an appropriate "risk-free" rate to yield a total required rate of return.
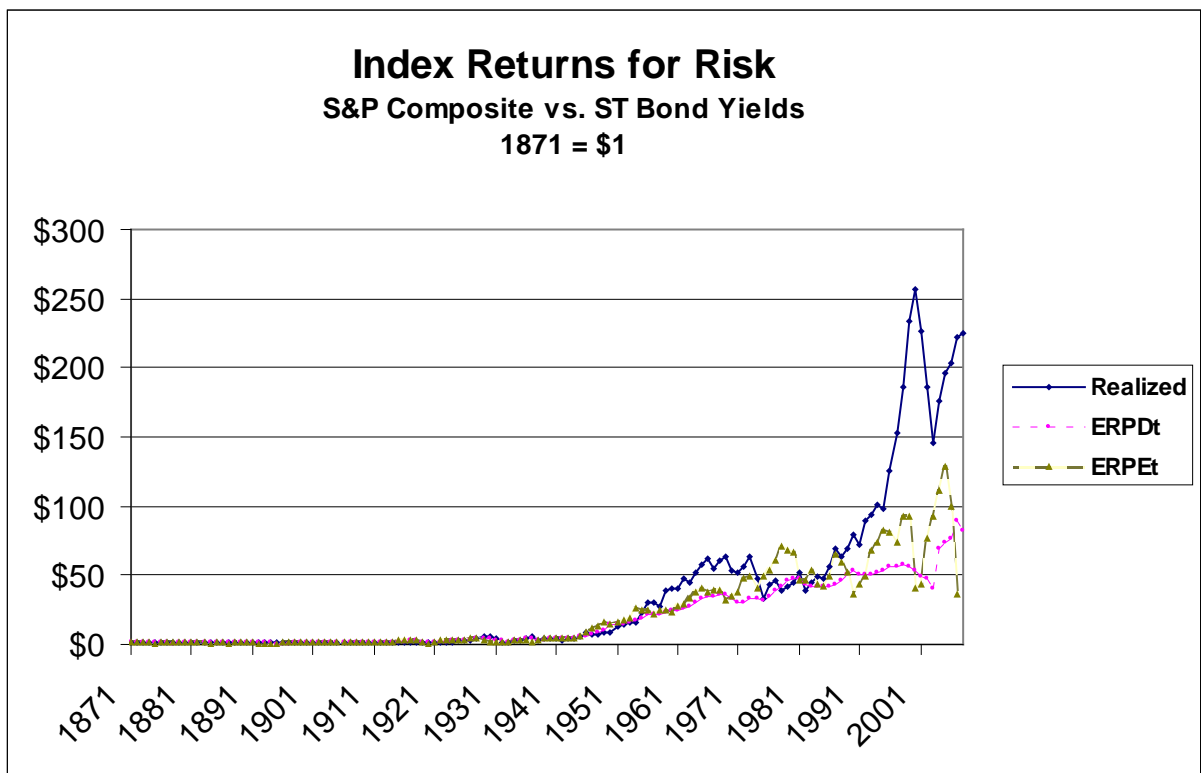
18   Mathematically, the CAPM methodology can be stated as:

19                                $$k \quad = \quad r_f + \beta r_p$$

20   where r_f is the risk-free rate, β is the stock's beta coefficient, and r_p is the market risk

21   premium. For an estimate of the required return on stock, the yield on long-term government

22   bonds is conventionally used to estimate the risk-free rate. More problematic is the estimate

23   of the market risk premium.

24 **Q.   HOW DID YOU ESTIMATE THE MARKET RISK PREMIUM?**

1   **A.**   My estimate of the market risk premium, or ERP, is based on an analysis of historical data

2   from 1872 to 2008. Using that data, I take the historical return on stocks relative to a yield

3   on bonds and deconstruct the returns to remove the effect of changes in valuation or cost of

4   capital. In effect, I am creating a "supply-side" estimate of the historical ERP. Unlike

5   Ibbotson and Chen, who just adjust for changes in P/E ratios, I adjust for changes both in

6   earnings ("ERP-Et") and dividend yields ("ERP-Dt"). I then construct index series which

7   show what $1.00 invested in stock in 1871 has returned relative to bonds, i.e. what has been

8   the compounded return for bearing risk. The following chart compares the two series with

9   actual realized returns:

10

11

12

13

Index Returns for Risk
S&P Composite vs. ST Bond Yields
1871 = $1

Legend: Realized, ERPDt, ERPEt

22

23   The three series do not begin to diverge until the early 1950's. In other words, until the early

24   1950's, there were no significant trends or changes in dividend yields or P/E ratios that would

25   cause the historically realized risk premium to be significantly different than the <u>expected</u> risk
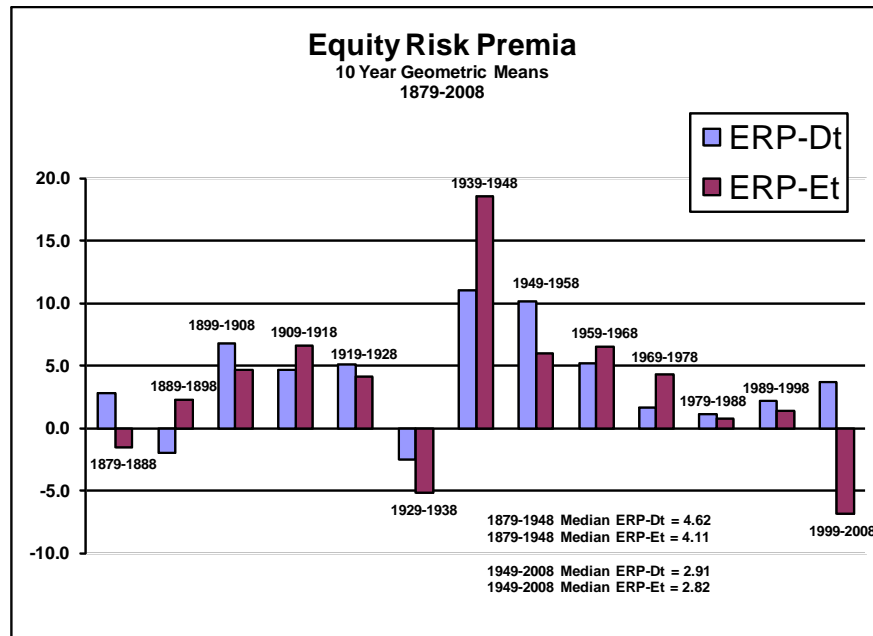
1   premium. Since the early 1950's, however, there have been significant secular (long term)

2   changes in P/E ratios and dividend yields that indicate an overall downward trend in the cost

3   of equity capital. This downward trend in the cost of equity capital has produced significant,

4   and frequently large, unanticipated capital gains. The "ERP-Dt" and "ERP-Et" series quantify

5   these unanticipated capital gains and remove them from the realized returns to derive

6   implied estimates of the <u>expected</u> ERP.

7   Geometric mean risk premiums for selected holding periods from the series depicted

8   in the charts are shown in the following table:

Geometric Mean Risk Premia for Selected Holding Periods			
Period	**ERP-R$_t$**	**ERP-D$_t$**	**ERP-E$_t$**
1872-2008	4.03	3.27	2.66
1872-1950	2.85	3.40	3.58
1926-2008	5.39	4.15	2.99
1951-1981	4.89	4.09	5.05
1951-2008	5.24	3.10	1.56
1981-2008	5.62	2.00	-2.17

10 For the period 1951-2008, the ERP based on dividends is 3.10 percent, while for the period

11 1981-2008, the ERP based on dividends was 2.00 percent.

12   The following figure presents another way of looking at the historical ERP, with non-

13 overlapping 10 year geometric averages:

Equity Risk Premia
10 Year Geometric Means
1879-2008

1

2   As shown in the figure, the median 10 year average geometric risk premium using dividends

3   for 1879-1948 was 4.62 percent, while from 1949-2008 it was 2.91 percent. Using earnings,

4   the median geometric risk premium for 1879-1948 was 4.11 percent, while for 1949-2008 the

5   median was 2.82 percent.

6 **Q.**   **BASED ON THE EVIDENCE YOU HAVE PRESENTED, WHAT IS YOUR CONCLUSION**

7   **ABOUT THE CURRENT ERP?**

8 **A.**   I believe that a reasonable estimate of the current ERP is on the order of 3.0 to 3.5 percent.

9 **Q.**   **YOU HAVE PRESENTED EVIDENCE BASED ON GEOMETRIC MEANS. WHAT WOULD**

10   **A COMPARABLE ARITHMETIC ERP BE AT THE PRESENT TIME?**

11 **A.**   The relationship between the geometric and arithmetic means is based on the volatility

12   (standard deviation) of annual returns. My analysis indicates an annual standard deviation in

13   the ERP of about 4 to 5 percent, which would make the arithmetic mean only about 8 to 10

14   basis points higher than the geometric mean. I conclude, conservatively, that the geometric

15   and arithmetic risk premiums are both currently in the range of 3.0 to 3.5 percent.

1 **Q.**   **THE DIFFERENCE BETWEEN GEOMETRIC AND ARITHMETIC MEANS CAN**

2   **SOMETIMES MAKE A LARGE DIFFERENCE IN THE RESULTING ESTIMATE OF THE**

3   **COST OF EQUITY. WHICH IS THE CORRECT ONE TO USE?**

4 **A.**   There is far more controversy over this issue than there should be. That is because many

5   practitioners and even some "authorities" make broad and sweeping generalizations that

6   ignore or gloss over relevant evidence and considerations. The best known examples of this

7   are the Morningstar/Ibbotson Associate annual yearbooks. But there have been several

8   challenges to their assertion that the arithmetic mean is the only relevant measure of the

9   historic ERP, and it is notable that many of the authorities who have done recent work in this

10   area present evidence of the geometric mean.[28] In any case, I think the best, relatively non-

11   technical summary of the issue here is that of Professor Aswath Damodaran:

12   *Geometric versus Arithmetic Risk Premiums: Which is better?*

13   The conventional wisdom is that the arithmetic mean is the better estimate. This is true if

14   (1) you consider each year to be a period (and the CAPM to be a one-period model)

15   (2) annual returns in the stock and bond markets are serially uncorrelated
16

17   As we move to longer time horizons, and as returns become more serially correlated (and
18   empirical evidence suggests that they are), it is far better to use the geometric risk premium. In
19   particular, when we use the risk premium to estimate the cost of equity to discount a cash flow
20   in ten years, the single period in the CAPM is really ten years, and the appropriate returns are
21   defined in geometric terms.
22

23   In summary, the arithmetic mean is more appropriate to use if you are using the Treasury bill
24   rate as your riskfree rate, have a short time horizon and want to estimate expected returns
25   over that horizon.
26

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[28]For challenges, see Russell J. Fuller and Kent A. Hickman, "A Note on Estimating the Historical Risk
Premium," Financial Practice and Education, Fall/Winter 1991, pp. 45-48; George G. Cassiere, "Geometric
Mean Return Premium Versus the Arithmetic Mean Return Premium – Expanding on the SBBI 1995 Yearbook
Examples," Business Valuation Review, March 1996, Pp. 20-23; and most recently and notably, Eric Jacquier,
Alex Kane, and Alan J. Marcus, "Geometric or Arithmetic Mean: A Reconsideration," Financial Analysts
Journal, November/December 2003, pp. 46-52.

1   The geometric mean is more appropriate if you are using the Treasury bond rate as your
2   riskfree rate, have a long time horizon and want to estimate the expected return over that long
3   time horizon.[29]

4

5   In estimating a market cost of equity for NSP, we are not estimating a short-term, one-year

6   rate of return. If we were doing that, then a case could be made for using the arithmetic

7   mean with a <u>short term treasury bill </u>rate.

8   So the case is easily made to support the use of a <u>geometric</u> mean ERP in estimating

9   market cost of equity for a utility. However, the difference between the geometric and

10   arithmetic mean is probably not as dramatic as often thought. The difference is a

11   mathematical function of the volatility, or standard deviation, of the ERP. My research shows

12   that a properly estimated ERP has much less volatility than ERPs that incorporate

13   unanticipated gains. ERPs that incorporate unanticipated gains typically have a standard

14   deviation of about 20 percent. My research shows that an ERP based only on anticipated

15   capital gains is much less, on the order of about 4-5 percent. The usual formula for relating

16   the arithmetic and geometric ERP's is:

17        $ERP_A = ERP_B + \sigma^2/2$

18   Where the standard deviation is 20 percent, the difference is 200 basis points. But where

19   the standard deviation is only 4 percent, the difference is 8-10 basis points. This renders the

20   controversy over which of the two to use to little more than "a tempest in a teapot."

21 **Q.**   **WHAT IS THE RESULTING CAPM ESTIMATE OF THE COST OF EQUITY?**

22 **A.**   As shown on Schedule 6 of Exhibit_____(BLC-1), using CAPM with a risk premium of 3.50

23   percent, and a current long term treasury bond rate of 3.2 percent, the average cost of equity

24   for the 10 company sample is 5.65 percent.

25 **Q.**   **THE CAPM RESULT IS CONSIDERABLY LOWER THAN THE DCF RESULTS. WHY IS**

26   **THAT?**

---

[29]   Aswath Damodaran, <u>Applied Corporate Finance: A User's Manual</u>, online version,

1 **A.** CAPM was not originally proposed as a model of <u>long-term</u> investor expectations. Strictly

2 speaking, it was initially developed as a theory of relative rates of return using <u>short-term</u>

3 investor expectations. In the purest application of it, the risk free rate is the 90 day return on

4 Treasury <u>bills</u>, not long term Treasury bonds. But utility ratemaking envisions setting rates

5 that will be in place for an indefinite period of time, and thus a longer investor return horizon

6 is required. In my opinion, CAPM is not as accurate in estimating long term expectations as

7 the DCF methodology. While it can be useful for comparison, primary reliance should be

8 given to results obtained using the DCF methodology.

9 But even acknowledging that primary reliance should always be given to the DCF

10 approach over the CAPM methodology, here the results seem particularly low. That owes,

11 not to any deficiency in the risk premium estimate employed, but to abnormalities in the

12 Treasury bill and bond market that probably makes the 30 year Treasury bond yield, here

13 3.20 percent, a poor estimate of the "risk free" rate in the current market environment. As I

14 will note again later, in my review of the testimony of NSP's witness on cost of capital, the

15 current yield on the one month Treasury bill is zero, and yields on the 5-year Inflation

16 Indexed Treasury bond are actually negative. These low yields imply that currently investors

17 are more worried about default risk than they are about inflation (and given the current

18 economy, that is understandable). But this has the unusual (compared to a more normal

19 economic environment) effect of driving up, or sustaining, higher prices on Treasury bills and

20 bonds than would otherwise be the case. Now this "flight to safety" comes at the expense of

21 other investment choices, such as common stock. So while the yield on the "risk free rate"

22 as measured by the 30 year Treasury bond has been driven down, this doesn't mean that the

23 <u>real</u> risk free rate for equities has fallen. Whatever decline in Treasury rates and yields as

24 occurred with this flight to safety is probably offset by a corresponding rise, currently, in the

http://pages.stern.nyu.edu/~adamodar/New_Home_Page/AppldCF/derivn/ch4deriv.html#ch4.1

1   premium for default risk reflected in equity returns. The bottom line, here, is that current

2   Treasury rates and yields are probably a poor guide to the risk free rate for equities,

3   implicating the negative utility of the CAPM methodology for determining a cost of equity at

4   the present time.

5   One final thought here, on all of this, is to call attention to the fact that utility <u>stocks</u>

6   have something of the same utility (value) as Treasuries as a safe haven in the kind of "flight

7   to safety" that we are seeing with Treasury rates and yields. While not the same safe haven

8   for "widows and orphans" they were once considered, they still attract investors who see

9   their steady dividend streams, coupled with some prospects for growth, as an alternative

10   between Treasuries and other equities with less attractive dividend prospects. This helps to

11   explain why, even in the current market environment, where default risk has probably risen

12   above historical norms, investors are content with equity returns on utility stock that are in

13   the single digits.

14

15   **C.   SUMMARY**

16

17   **Q.   CONSIDERING THE EVIDENCE YOU PRESENT, WHAT IS YOUR ESTIMATE OF THE**

18   **REASONABLE COST OF EQUITY FOR NSP?**

19   **A.**   Based on the DCF results presented on Schedules 4 and 5, I believe that the best estimate

20   of NSP's cost of equity at the present time is about 9 percent. Reflecting the uncertainty

21   involved in estimating the cost of equity, I believe that a reasonable range for the rate of

22   return on equity is 8.5 to 9.5 percent, but that absent other considerations, the fair rate of

23   return on equity is at the midpoint of the range. Thus I recommend a rate of return on equity

24   of 9.0 percent.

25

1　**VI.　CAPITAL STRUCTURE, COST OF DEBT, AND OVERALL RATE OF RETURN**

2

3　**Q.　WHAT CAPITAL STRUCTURE AND COST OF DEBT DO YOU PROPOSE FOR**

4　　　　**DETERMINING THE OVERALL RATE OF RETURN?**

5　**A.**　I have calculated the overall rate of return using the capital structure and cost of debt shown

6　　　　on Schedules 1 and 2 of my Exhibit____(BLC-1), with a capital structure consisting of 47.27

7　　　　percent long term debt, 52.73 percent common equity, and cost rates of 6.02 percent for

8　　　　long term debt and 9.0 percent for common equity.

9　**Q.　IS THIS THE CAPITAL STRUCTURE PROPOSED BY NSP?**

10　**A.**　No, it is not, though when all is said and done the capital structure ratios are very similar.

11　　　　However, that is merely fortuitous, and there is a significant issue with respect to capital

12　　　　structure (and cost of debt) which precludes relying explicitly on the capital structure

13　　　　proposed by NSP. That issue is NSP's use of a 13 month average in developing the debt

14　　　　and equity balances used in the capital structure. Whatever merit a 13 month average has

15　　　　otherwise, it doesn't apply to capital stock balances, and can actually lead to significant

16　　　　distortions in the appropriate capital stock ratios and associated embedded debt costs. This

17　　　　can be illustrated by looking more closely at the capital structure and debt cost rates in

18　　　　NSP's initial filing.

19　　　　　　Specifically, I call attention here to Footnote 3 of Exhibit____(DSD-1), Schedule 8,

20　　　　Page 1 of 1 accompanying the testimony of Mr. Dane, NSP's rate of return witness. As

21　　　　noted in the footnote, NSP issued two $250 million mortgage bond issues on August 11,

22　　　　2010, at cost rates of 1.95 percent, and 4.95 percent, and under the 13 month average

23　　　　approach only included 5 of 13 months in determining both the balance amount included in

24　　　　the capital structure, and the associated impact on embedded cost of debt. But at year end

25　　　　2010 -- NSP's capital structure purports to be "Actual Year 2010" -- it was known with

1   certainty (i.e., was "known and measurable") that on a forward going basis that the annual

2   balances associated with these two issues would be $500 million, not the $192,308,000 (two

3   times $96,154,000) included in Mr. Dane's calculation of the debt balances and associated

4   embedded debt costs. Since the cost rates on these new issues were below the average

5   embedded cost of debt, this approach, whether intended or not, would deprive ratepayers of

6   the full effect -- a known and measurable effect, on a forward going basis -- of these new

7   debt issues.

8   Now as it happens, NSP retired a $175 million bond issue (coupon rate = 4.75%) in

9   2010, and under the 13 month average methodology only included $107,692,000 in its

10   capital structure balances and cost of debt. But this doesn't change anything. In fact,

11   considering both what was retired and issued, the 13 month average approach results in

12   $300 million at an average (weighted) cost of 3.88 percent, while using the known year end

13   2010 balances there was $500 million at an average (weighted) cost of 3.40 percent. So

14   even factoring in what was retired, the 13 month average understates the appropriate

15   amount ($300 million versus $500 million) and overstates the effective (weighted) coupon

16   rate (3.88% versus 3.40%).

17   But regardless of the specific outcome, as a matter of general "principle" a 13 month

18   average is inappropriate for capital balances. Here, the general "rule" is that the most

19   accurate estimate of capital structure and embedded debt costs is based on capital balances

20   and cost/coupon rates at the end of the test year with known and measurable changes.

21   Moreover, this is the only approach that is truly "fair" and "balances" the competing interests

22   of investors and ratepayers. If interest rates are rising, the 13 month average approach will

23   fail to recover the full "known and measurable" effect of a new bond issue, and would

24   prevent investors from a full recovery of the cost of (debt) capital. But if interest rates are

25   falling -- as is the case here -- the 13 month average approach fails to pass through to

1   ratepayers the full benefit of the lower debt cost, and allows the utility to earn more than its

2   cost of debt on a going forward basis. Using the year end balances to develop capital

3   structure ratios and embedded debt costs is fair and reasonable to both investors and

4   ratepayers.

5   **Q.**   **ARE THERE OTHER ISSUES WITH RESPECT TO THE DETERMINATION OF THE**

6   **EMBEDDED COST OF DEBT?**

7   **A.**   Yes. Mr. Dane's development of the embedded cost treats the recovery of debt expense

8   and premiums and discounts incorrectly, effectively "double counting" the effect of these

9   items on the appropriate cost rate required to recover these costs. There are two different

10   approaches to <u>correctly</u> recovering such costs. To explain, first note that a debt cost <u>rate</u> is

11   effectively a ratio composed of a numerator ("N") over a denominator ("D"), or N/D. While

12   the issues are the same with respect to premiums and discounts as they are with respect to

13   debt expense, I will just consider debt expense in this initial explanation. When a company

14   issues debt, and incurs debt expense, this has the "effect" of reducing the actual net

15   proceeds to the company, and raising the "effective" cost of debt relative to the stated

16   coupon rate. This higher "effective" cost of debt can be estimate in one of two ways, either

17   by <u>raising</u> the numerator of the debt cost rate ratio, N/D, or by <u>reducing</u> the denominator.

18   The second approach, I would point out, is reflected in NSP's original filing, Statement G,

19   Page 3 of 8. The first approach would involve adding to N, the numerator, an amount equal

20   to the annual amortization of debt expense (or the amortizations of debt premium and

21   discount), and dividing now higher N by the original full amount of D, the face value of the

22   amount of debt issued. In theory either approach -- raising N, or lowering D -- is defensible,

23   and should yield similar results. In practice, they will not always yield the exact same result

24   because of differences in amortization schedules and recovery periods associated with

25   multiple debt issues. But they will be close.

1   What is most certainly <u>not</u> appropriate, and yet is what NSP and Mr. Dane propose, is

2   to calculate the <u>effective</u> cost of debt by doing <u>both</u>, i.e. by raising "N" and by lowering "D."

3   This effectively double counts the effect of debt expense and premiums and discounts on the

4   annual cost rate. To demonstrate, consider the following example:

Coupon Rate	Amount	Premium Discount	Expense	Capital Employed	Interest Charge	Discount Amortization	Expense Amortization	Cost of Capital	Capital Cost %
A	B	C	D	E	F	G	H	I	J
5.00%	100,000	800	1,200	98,000	5,000	80	120	5,200	5.31%
							Actual Annual Rate, Column I Divided by Column B =		5.20%

6   The example assumes a $100,000 debt issue at a cost (coupon rate) of 5 percent. The

7   discount is assumed to be $800, and the expense $1,200, so that the net proceeds are only

8      $98,000. The "spreadsheet" illustrated above effectively mimics the way Mr. Dane has

9   calculated the embedded debt cost in his Exhibit____(DSD-1), Schedule 8, Page 1 of 1. Mr.

10   Dane adds the annual amortizations, $200 here in this example, Columns G and H, to the

11   annual interest charge, here $5,000 in Column F, to derive an annual "cost of capital" of

12     $5,200, and then divides, not by the full amount of the issue ($100,000 in Column B above),

13   but by the net proceeds ("Capital Employed"), here $98,000 in Column E. The result, $5,200

14   divided by $98,000 produces a capital cost rate of 5.31 percent, which would then be applied

15   in a capital structure, not to the balance used to determine it, $98,000, but to the full original

16   amount of the issue, $100,000. In this example, which assumes a 10 year amortization, over

17   a period of 10 years the total return, in dollars, would be $53,100. But this is excessive. An

18   annual amortization of $200 for ten years would fully recover the expense and

19   discount/premium of $2,000, and when the $50,000 for the annual interest costs are taken

20   into consideration, the total required return for 10 years would be $52,000, not $53,100.

21   Do note that the correct annual cost rate can be determined directly by dividing the

22   sum of interest and annual amortizations, $5,200, by the total face value of the bond

1   issuance, $100,000, yielding an effective cost rate of 5.20 percent. If one would object that

2   this does not capture the time value of the $2,000 of "capital not available" associated with

3   the initial expense and discount, that completely misses the point. The company is being

4   allowed to include the full amount of the face value in its capital structure. Thus, company is

5   receiving a return on the $2,000 of "capital not available," and that is sufficient.

6   This "capital not available" argument seems to underlie the misunderstanding implicit

7   in NSP's reply to a data request asking about its treatment of unamortized losses on

8   reacquired debt. In its response to Staff DR 2-14, NSP submitted the following:

9   Question:
10   Explain why it is appropriate on Schedule 8 to recognize Unamortized losses on reacquired
11   debt *both* as a reduction in "Capital Employed" and by increasing the annual "Cost of Capital"
12   by an amortization allowance.
13
14   Response:
15   Capital Employed is the net proceeds available to the Company after all premiums, losses,
16   discounts and expenses have been removed, therefore it is appropriate to include the
17   unamortized loss in question. The cost of capital includes all annual costs associated with
18   the debt, i.e., annual interest expense and annual amortization expense of all of the
19   discounts, issuance expenses, premiums, or losses. Loss on reacquired debt affects both
20   capital employed and cost of capital; therefore needs to be included in the calculation of both
21   items to get the true cost of debt.
22
23   The issue here involves the implicit "capital not employed." While this may not be available

24   as actual capital for investment, in the capital structure that I am recommending on my

25   Schedule 1 the full face value of the Company's debt ($3,346.9 million) is treated <u>as if it is</u>

26   <u>available</u> and NSP is allowed a return on the "capital not employed." This does differ from

27   NSP's approach, which is to include only the "capital employed" amount in the debt ratio.

28   But that is inconsistent with the way we treat the equity portion of the capital structure. The

29   equity balance is not net of issuance costs, and includes the full "face value" of equity

30   issued, not just "capital employed." By reducing the debt in the capital structure to "capital

31   employed," while <u>not</u> reducing the equity to "capital employed," there is a slight

32   overstatement of the equity ratio relative to the debt ratio. The consistent approach is to

1   base the capital structure ratios on the face values of the debt and equity balances, and then

2   reflect any implicit costs associated with issuances, discounts, reacquired debt, etc. as

3   adjustments to the cost <u>rate</u>. That is the approach I have taken in developing the debt cost

4   in Schedule 2 of my Exhibit____(BLC-1), and the capital structure ratios in Schedule 1.

5   **Q.**   **HOW MUCH OF AN ISSUE IS THIS?**

6   **A.**   In responses to Staff DR's 2-12 and 2-14, NSP provided an update to their debt rate

7   calculations in which they reduced their calculation of the embedded cost of debt from 6.33

8   percent to 6.13 percent. This reduction is attributable to the effect of now having a full 13

9   months of the newer debt balances in the debt cost calculations, giving full effect to the lower

10   debt costs associated with the two recent $250 million bond issues. By happenstance, then,

11   the balances in their debt cost calculation are comparable to what I've used in mine. The

12   remaining difference, then, between the debt cost that I propose of 6.02 percent, and the

13   6.13 percent reflected in NSP's updated cost of debt, is attributable to this issue of having

14   double counted the effect of recovering debt expense, debt premium and discount, and the

15   loss on reacquired debt.

16

17   **VII.**   **ANALYSIS OF COMPANY TESTIMONY ON RATE OF RETURN ON EQUITY**

18

19   **Q.**   **PLEASE DESCRIBE YOUR ANALYSIS OF NSP'S TESTIMONY ON RATE OF RETURN**

20   **ON EQUITY.**

21   **A.**   NSP's testimony on rate of return on equity is presented by Daniel S. Dane. Mr. Dane

22   estimates the cost of equity using a constant growth DCF analysis and a "Bond Yield Plus

23   Risk Premium" approach. In addition, he considers the Capital Asset Pricing Model

24   ("CAPM") analysis, but declines to make use of it. His DCF methodology is implemented

25   with shortcomings that bias the result in favor of investors, and leads to an overstated

1   estimate of their required rate of return. His "Bond Yield Plus Risk Premium" approach is

2   conceptually and structurally flawed, and is incapable of yielding any kind of meaningful

3   inferences regarding the cost of equity.

4   **Q.   WHAT ARE THE SHORTCOMINGS THAT BIAS MR. DANE'S DCF ANALYSIS?**

5   **A.**   In implementing the constant growth DCF methodology, Mr. Dane relies exclusively upon

6   projected earnings forecasts, and gives no consideration to dividends. As I explained earlier

7   in my testimony, if dividends are expected to grow more slowly than earnings, then excluding

8   dividends leads to an overestimation of the cost of equity. The issue here is not the use of

9   analysts forecasts of earnings per share; the issue is the use of this as a metric of growth

10   <u>exclusively</u> when there is evidence that the assumptions of the <u>constant growth</u> form of the

11   DCF model are not consistent with actual market realities. Since the DCF approach to

12   estimating the cost of equity is a present value methodology that <u>explicitly</u> enumerates the

13   present value of <u>dividends</u> as a valuation methodology, it is always important to consider

14   under what circumstances earnings projections will result in an accurate valuation when

15   substituted for dividend growth. And it is incontrovertible that in the context of the <u>constant</u>

16   growth form of the DCF model, substituting earnings for dividends yields an unbiased

17   estimate of the DCF return only if payout ratios are constant, or subject to non-systematic

18   (random, non-trending) variation.

19   Yet Mr. Dane presents no evidence, or gives no consideration, to whether the strict

20   assumptions of the DCF model are currently satisfied. His growth projections, which

21   consists entirely of earnings forecasts from three investment services, results in an average

22   growth rate projection for his sample of just a little over 6 percent. (On his Exhibit____(DSD-

23   1), Schedule 2, Page 1 of 3, the means for his three sources of earnings growth are 6.01

24   percent, 6.75 percent and 5.59 percent. The average of the three sources is 6.12 percent.)

25   This is reasonably close to the 5.88 percent (mean) and 5.70 percent (median) I show for

1   projected EPS growth in my Schedule 5, Column K. But as shown on my Schedule 5,

2   Column G, the average (mean) projected DPS growth rate for the comparable period (five

3   years out) is 5.49 percent, and the median projected DPS growth rate is only 3.68 percent.

4   Projected growth in book value per share for the comparable period, in Column H, is 3.72

5   percent, using the mean, and 3.72 percent using median. The longer term growth prospects

6   for the sample, based on % Retained to Common Equity in Column I of my Schedule 5, are

7   about 4.0 percent (median, with a mean of 3.85 percent). In a word, all of these other growth

8   projections imply that the ~6.0 percent growth in earnings projected for the near future (five

9   years) is <u>not sustainable</u>. In other words, the market conditions required to use earnings

10   growth projections without considering other growth projections are not applicable at the

11   present time, and a DCF estimate, such as Mr. Dane's, that relies exclusively on earnings,

12   and ignores dividends, will overstate the DCF required return. The only choices here, to

13   estimate the DCF cost of equity reliably, are to factor in the impact of other growth metrics,

14   such as I've done in my Schedule 4, or explicitly relax the constant growth model

15   assumptions like I've done with the DDM presented on my Schedule 5.

16 **Q.**   **CAN YOU QUANTIFY THE IMPACT THIS ISSUE CREATED BY MR. DANE'S EXCLUSIVE**

17   **RELIANCE UPON EARNINGS PROJECTIONS HAS ON THE DIFFERENCE IN YOUR**

18   **RATE OF RETURN RECOMMENDATIONS?**

19 **A.**   Yes. I am recommending a rate of return of 9.0 percent, while Mr. Dane is recommending a

20   rate of return of 11 percent. With respect to the dividend yield component of the DCF

21   approach, there is not a lot of difference between my results, and Mr. Dane's. Using the

22   median results for yield (4.44 percent) and DCF cost of equity (8.95 percent) shown on my

23   Schedule 4, the implied expected growth rate is approximately 4.50 percent, compared to the

24   approximately 6 percent reflected in Mr. Dane's DCF analysis. Thus as much as 150 basis

25   points of the 200 basis points separating our recommendations could be accounted for by

1   this issue. Were we to use the results shown on my Schedule 4, essentially all of the

2   difference would be accounted for by this issue. Conservatively, we can account for at least

3   175 basis points because of this difference, and use this as a reasonable estimate of the

4   overstatement or bias in Mr. Dane's DCF analysis.

5

6   **Q.**   **ARE THERE ANY OTHER ISSUES WITH RESPECT TO MR. DANE'S DCF ANALYSIS?**

7   **A.**   Yes, there is. Mr. Dane applies a "flotation cost adjustment" that adds 26 basis points, or a

8   bit over a quarter of a percent, to his recommended rate of return. Generally, flotation cost is

9   not a <u>significant</u> element of the required rate of return, at least not when computed correctly.

10   I generally do not recommend an explicit allowance for flotation cost, because any cost

11   incurred is so small that it will not seriously impact a utility's ability to earn a fair rate of return

12   if it is ignored. In this case, I believe that the double leverage impact of Xcel preferred stock

13   is, while small, sufficient to completely offset the possible impact of flotation costs.

14   **Q.**   **PLEASE EXPLAIN.**

15   **A.**   First, there is the issue of the <u>correct </u>way to compute flotation costs. The rate of return

16   required to recover flotation costs can be expressed as

$$r \;=\; zf$$

19   where z is the rate of growth in new shares, and f is the percentage allowance for stock

20   expense and underpricing. (The derivation of this equation is presented in Schedule 7 of

21   Exbibit_____(BLC-1), Page 2 of 2.) The method for calculating a flotation cost allowance by

22   Mr. Dane uses the following variant of the DCF equation

$$k = \frac{D}{P(1-f)} + g$$

24   where the divided yield, D/P, is adjusted upward by $1/(1 - f)$ where f is the same as in the

25   preceding equation. Under certain, but highly unusual and unrealistic assumptions, the two

1   would produce the same general result. But under more plausible and realistic assumptions,

2   the method used by Mr. Dane substantially overstates the adjustment required to recover

3   flotation costs.

4 **Q.** **PLEASE EXPLAIN WHY THE METHOD USED BY MR. DANE IS UNREALISTIC AND**

5   **OVERSTATES THE ADJUSTMENT REQUIRED TO RECOVER FLOTATION COSTS.**

6 **A.** When factored into the rate of return allowance and proposed by Mr. Dane, the allowance is

7   allowed on all shares. But not all shares represent common stock raised through public

8   market offerings, and Mr. Dane's approach allows the recovery of this expense on shares of

9   stock where the expense was not incurred. That is part of the problem. The other part of

10   the problem is that the return is an <u>annual</u> allowance, but common stock is not issued every

11   year. Thus while the allowance might be appropriate in the year in which the common stock

12   was issued, in the following year(s) the allowance would still be received (presuming the

13   company is earning its cost of equity capital) even though the expense is not being incurred.

14   The formula I derive (and apply) in my Schedule 7 takes both of these factors into account.

15   Mr. Dane's method of adjustment does not.

16 **Q.** **PLEASE ILLUSTRATE WHAT DIFFERENCE IT MAKES AND WHY IT MATTERS WHICH**

17   **APPROACH IS USED TO ADJUST FOR FLOTATION COSTS.**

18 **A.** First of all, it makes a difference, and matters, because only a fraction of the common equity

19   of the company is actually raised through public stock offerings. Mr. Dane points out, for

20   example, that in August of 2010, Xcel issued 21.85 million shares in conjunction with a public

21   issue. (The transaction was not actually completed until the end of November, but that does

22   not affect the point made here.) But the number of shares outstanding increased in 2010

23   from approximately 458 million shares as of December 31, 2009, to approximately 482

24   million shares as of December 31, 2010, an increase of 24 million shares. So not all the

25   share growth in 2010 came from the new stock issue. In 2009, when there was no public

1   issuance of new common stock, shares outstanding increased from 454 million to 458

2   million. The additional shares come mostly from the dividend reinvestment program

3   ("DRIP"), and secondarily from stock issued as a part of executive compensation plans.

4   These are not insignificant sources of stock growth. In 2011, Xcel expected to raise $75

5   million from its dividend reinvestment program. Whatever merit Mr. Dane's methodology

6   might have to recovering a cost associated with public stock issuance is inapplicable to stock

7   raised through DRIP or executive compensation, and allowing a recovery of "flotation cost"

8   on stock where the expense was not incurred is gratuitous and unwarranted.

9   On my Schedule 7, Page 1 of 2, I show that of an average annual (compound) growth

10 in shares outstanding from 2000 to 2011 of 3.31 percent per year, only 1.19 percent per year

11 was attributable to publicly issued shares. Now if we assumed that shares grew at 5 percent

12 a year, and that all of this growth came from public issuances, then Mr. Dane's flotation cost

13 allowance of 26 basis points would be about right:

14   5% (annual growth) x 5.28% (flotation cost percentage) = 26.4 basis points

15 But when we consider that for the past decade, the rate of growth in new shares attributable

16 to public issuances is only 1.19 percent, then the appropriate adjustment falls to about 6

17 basis points:

18   1.19% (annual growth) x 5.28% (flotation cost percentage) = 6.3 basis points

19 So were an explicit allowance for flotation cost to be made, it would only be on the order of 6

20 basis points, not 26 basis points as in Mr. Dane's rate of return recommendation.

21 **Q.** **WHY HAVE YOU NOT INCORPORATED AN ADJUSTMENT OF THIS MAGNITUDE INTO**

22   **YOUR RATE OF RETURN RECOMMENDATION?**

23 **A.** Given the relative imprecision with which we can estimate the cost of equity, which is why

24   witnesses usually proffer their recommendation as a range on the order of 100 basis points,

25   flotation cost is often so little that it is within the range of "rounding error" and may

1   reasonably be ignored. In this instance, however, there is an additional consideration that

2   leads me to reject a specific allowance for flotation cost. NSP does not raise equity capital

3   directly. When discussing equity capital raised in the marketplace, the relevant entity is Xcel.

4   Xcel raises equity in the form of preferred stock as well as in the form of common stock.

5   Under normal circumstances, the lower cost preferred stock would be explicitly reflected in

6   the capital structure. Here, however, it is not. Nevertheless, the preferred stock exists, and

7   provides Xcel with a degree of financial leverage in the equity that it supplies NSP. Since the

8   leverage exists at a parent company level, and not at the subsidiary level, Xcel is able to

9   exploit what is called "double leverage" in the equity it invests in NSP, and for which it is

10   seeking an explicit return in this proceeding. The first layer of leverage is the leverage

11   obtained using the preferred stock at the parent level; the second layer of leverage is the

12   leverage obtained at the subsidiary from NSP's debt (first mortgage bonds). In my Schedule

13   7, Exhibit____(BLC-1), Page 1 of 2, I show that this double leverage effect is equivalent to

14   about 6 basis points of return on equity. Were I to make an explicit 6 basis point adjustment

15   to return on equity to compensate for Xcel's flotation cost, I would contend that it can be

16   offset by the 6 basis points of return that Xcel receives from the double leverage effect of its

17   preferred stock. At some point, adjustments like these imply a precision in estimating the

18   cost of equity that is illusory, and here especially where they are offsetting, I believe they

19   may be reasonably ignored in establishing a fair and reasonable rate of return on equity for

20   NSP that is based on the cost of equity capital for Xcel.

21 **Q.**   **WHAT ARE THE ISSUES PRESENTED BY MR. DANE'S "BOND YIELD PLUS RISK**

22   **PREMIUM" APPROACH.**

23 **A.**   The first, and most significant, problem is methodological. Mr. Dane's "bond yield plus risk

24   premium" analysis is based on a regression of <u>allowed</u> rates of return on bond yields over

25   time. This is not an estimate of the <u>required</u> rate of return. For many years now, utilities

1   have had very high market to book ratios, indicating that their allowed rates of return have

2   generally been well above the required rate of return, or cost of equity. Mr. Dane's "bond

3   yield plus risk premium" analysis would simply perpetuate the excess return that has

4   sustained prices substantially above book value. A regulatory approach based upon

5   adoption of this method of analysis would largely be an abdication of regulatory

6   responsibility.

7   This type of analysis also presents a major "assumes facts not in evidence" problem

8   for ratemaking. We have absolutely no idea of what went into the determinations of the

9   allowed ROE's from the rate cases used in Mr. Dane's analysis. Were those cases all rightly

10   decided? How many of them represent utilities comparable in risk to NSP? Were

11   concessions made in the allowed ROE that compensate for the way different jurisdictions

12   treat the broad variety of revenue requirement issues that arise in ratemaking? We do not

13   have a clue. And that is the point. All we have here is a large amorphous group of allowed

14   ROE's thrown into the witches' brew of a regression analysis. We do not know what went

15   into those allowed ROE's. How are we supposed to make any sense of what comes out of

16   the regression analysis? We cannot.

17   Additionally, there are fundamental statistical flaws in the analysis. In regression

18   analysis, a "dependent" variable (left side of an equation) is regressed on one or more

19   "independent" variables (right side of the equation). Functionally, Mr. Dane's regression is

20   supposed to represent:

21        $RP = f(BY)$

22   where "RP" is the risk premium, and "BY" is the bond yield. But BY in Mr. Dane's

23   regressions is not an independent variable. It is functionally related to RP via the allowed

24   rate of return (where "AROE" is the allowed rate of return on equity):

25        $BY = AROE - RP$

1   Substituting the second equation into the first:

2          $RP = f(AROE - RP)$

3   Now when this is estimated statistically, RP is being regressed upon a variable derived <u>from</u>

4   <u>itself</u>, setting up a form of the classic statistical problem of "spurious correlation." Note that
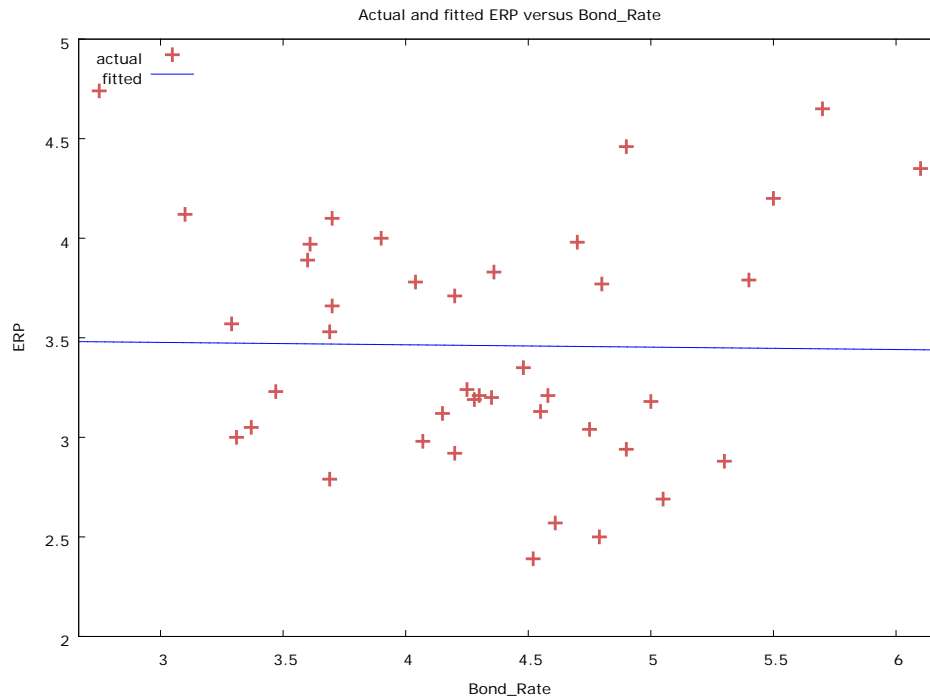
5          $RP = AROE - BY$

6   so that

7          $(AROE - BY) = f(AROE - RP)$

8   Implicitly, the allowed rate of return on equity is now on both sides of the equation. Modeling

9   this relationship statistically is valid if, and only if, the allowed rate of return on equity and

10   bond yield are <u>statistically independent</u>. Errors would then be random, and the relationship

11   could be modeled with a statistical regression equation. But allowed rates of return and

12   bond yields are hardly independent. When bond yields rise, allowed rates of return rise, and

13   often the result is <u>causal</u> because regulators take rising interest rates to be evidence of a

14   rising cost of equity, thus justifying a rising allowed rate of return. Whether the rise is 1 to 1,

15   or some other relationship, the very dependence between the two means that the form of the

16   regression used by Mr. Dane is statistically invalid.

17   To sum up, Mr. Dane's risk premium method implicitly assumes what it claims to

18   prove (a relationship between allowed rates of return and bond rates in the form of a risk

19   premium), and then claims to have proven what it assumed with a statistical analysis that is

20   flawed and improper (a risk premium that varies with bond yield). Beyond this fundamental

21   conceptual flaw, the posited relationship -- an inverse relationship between risk premium and

22   bond yield -- can be demonstrated to be nonexistent. Earlier I referred to survey data of

23   CFO expectations regarding risk premium. When this data is correlated with bond yields, it

24   shows no discernable relationship of the kind posited by Mr. Dane:

Actual and fitted ERP versus Bond_Rate

1

2   The scatter diagram shown above looks like a random relationship, and statistically it is. The

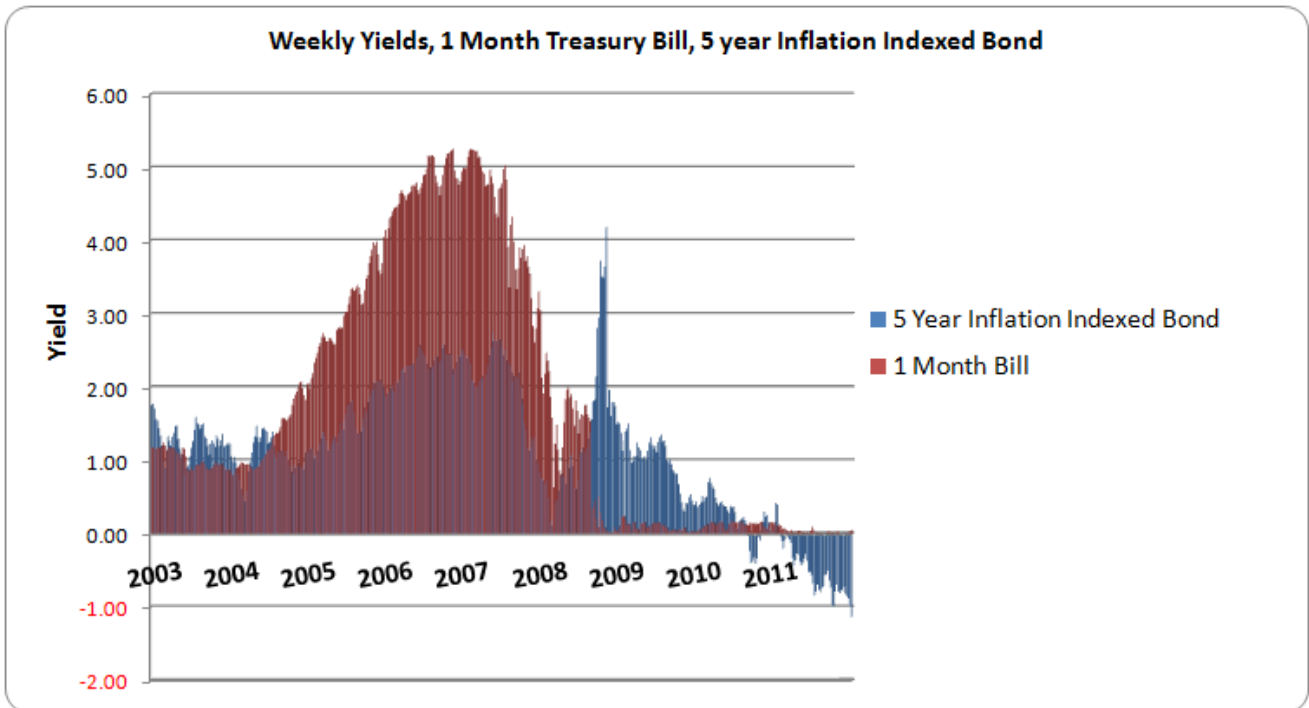3   relationship posited by Mr. Dane is nonexistent.

4 **Q.**   **MR. DANE CONSIDERS, BUT DECLINES TO USE, THE CAPITAL ASSET PRICING**

5   **MODEL (CAPM) OF ESTIMATING THE COST OF EQUITY. DO YOU AGREE WITH HIS**

6   **REASONING?**

7 **A.**   I agree only up to a point. I've already discussed what I think are the theoretical and

8   practical limitations of the CAPM approach, and why it might be producing unusually low

9   estimates at the present time. I do not agree that the problem, in part, is with the

10   measurement of the "Market Risk Premium" (his "MRP" is equivalent to the "ERP" -- Equity

11   Risk Premium -- that I discuss at length earlier in my testimony). Mr. Dane thinks that a

12   historically based ERP (or MRP, such as the Ibbotson/Morningstar estimate of 6.7 percent is

13   <u>too low</u>. While there are reasons not to use the CAPM at the present time, that is not one of

14   them. Nor do I agree that current estimates of the "beta coefficient" are sufficiently

15   unreliable to question the value of CAPM. But despite these differences in reasons why, I

1   agree that that at this time a fair rate of return on equity can and should be determined

2   without consideration of the results of a CAPM analysis.

3   **Q.**   **MR. DANE CITES A FEDERAL RESERVE OPINION STATING THAT CURRENT**

4   **ESTIMATES OF THE EQUITY RISK PREMIUM ARE "QUITE ELEVATED TO LONGER-**

5   **TERM NORMS." HOW DOES THAT IMPACT YOUR CONCLUSIONS ABOUT THE**

6   **EQUITY RISK PREMIUM?**

7   **A.**   Mr. Dane does not provide the correct context for understanding this comment (reported in

8   minutes for the March 15, 2011 meeting of the Federal Reserve Open Market Committee.)

9   The Federal Reserve is probably not looking at long term historical risk premium such as that

10   being discussed by Mr. Dane, or reported by Ibbotson/Morningstar. The Federal Reserve is

11   probably looking at expected returns as reflected by current Treasury bill and bond returns

12   (yields), which are presently close to zero, and in some cases appear to even be negative,

13   as shown in the following chart:

Weekly Yields, 1 Month Treasury Bill, 5 year Inflation Indexed Bond

14

1   In recent months, the yield on the 1 month Treasury bill has been essentially zero, and the

2   yield on the 5 year inflation indexed Treasury bond has been negative (a -2.15 percent as of

3   February 3, 2012). Normally, these will be higher, implying a lower risk premium all other

4   things being equal. So with a negative return on the 5 year inflation indexed Treasury bond,

5   and essentially no return on the 1 month Treasury bill, from the Federal Reserve's

6   perspective the equity risk premium would be "quite elevated" relative to longer term norms.

7   But that really says nothing about what the Federal Reserve considers to be the "longer term

8   norm." Based on the analysis presented earlier of the ERP, a reasonable estimate of the

9   longer term norm of the ERP presently would be about 3.5 percent. "Quite elevated" relative

10   to 3.5 percent might be 4 to 6 percent. But given the base from which this is being

11   determined -- a zero or even negative "risk free rate" -- it still leaves the required equity

12   return in single digits. In the end, Mr. Dane's citation does not constitute an argument from

13   which to bootstrap anything close to the kind of double digit return on equity that he contends

14   is justified.

15 **Q.   DO YOU HAVE ANY OTHER OBSERVATIONS WITH RESPECT TO MR. DANE'S**

16 **RECOMMENDED RETURN ON EQUITY AND NSP'S REQUEST BASED UPON HIS**

17 **RECOMMENDATION?**

18 **A.**   Yes, I do. Mr. Dane's recommendation, and NSP's request based on that recommendation,

19   are out of touch with the assumptions built into Xcel's pension fund projections. In a sense,

20   this is a matter that goes back to my previous discussion of current expectations regarding

21   the ERP (equity risk premium). There I alluded to how such expectations factor into to

22   macroeconomic policy considerations such as social security and health care reform. Here,

23   they factor, at least implicitly, into corporate pension plan projections. These pension plan

24   projections embody expectations of rates of return from various asset classes, such as

25   stocks and bonds (with further classification between domestic and international markets).

1   In reviewing such plans, I've noticed two things, in particular, of interest. The first is that

2   expected rates of return built into pension plan forecasts have been <u>declining</u> (and thus we

3   should expect utility rate of return requests to be declining, also). The second is that

4   expected equity returns, at least for "large cap" U.S. equities, are in the <u>single digits</u>. The

5   latter is consistent with my ERP analysis, and in particular with the total equity return

6   projections implied by the CFO surveys I reviewed earlier. Mr. Dane's testimony, and his

7   recommended rate of return on equity of 11.0 percent, is completely out of touch with this

8   financial reality, as if were prepared in a vacuum isolated from such inconvenient truths.

9 **Q.** **ARE THE RETURN PROJECTIONS BUILT INTO XCEL'S PENSION PLAN FORECASTS**

10   **COMPARABLE TO WHAT YOU'VE SEEN IN OTHER UTILITY PENSION PLAN**

11   **FORECASTS?**

12 **A.** Yes, they are. The overall rate of return expectation as reported in Xcel's 2010 SEC 10-K

13   shows a steady decline year by year from 8.75 percent in 2008 to 7.50 percent for 2011.

14   This is a weighted overall return. But embedded in the 7.50 percent expected return for

15   2011 is an expected return of 8.9 percent on "large cap" equities such as would dominate an

16   overall market index such as the S&P 500. This single digit ROE is comparable to what I've

17   seen in other utility pension plan projections. Thus Xcel's pension plan forecasts reflected

18   an expected return on equity more in line with my recommended return of 9.0 percent, than

19   Mr. Dane's recommended rate of return on equity of 11.0 percent.

20

21 **VIII.** **CONCLUSION**

22

23 **Q.** **BASED ON YOUR REVIEW OF THE COMPANY'S TESTIMONY, AND YOUR**

24   **INDEPENDENT ANALYSIS OF THE COST OF EQUITY FOR NSP, WHAT IS YOUR**

1   **CONCLUSION REGARDING A FAIR RATE OF RETURN ON EQUITY FOR THE**

2   **COMPANY, AND A FAIR AND OVERALL RATE OF RETURN?**

3   **A.**   My independent analysis of the cost of equity for NSP shows that it is in the range of 8.5 to

4   9.5 percent. I have shown that when adjusted for obvious biases, Mr. Dane's DCF analysis

5   supports a rate of return on equity within this range as well. I believe that the evidence is

6   substantial and compelling that such a rate of return is a fair and reasonable rate of return on

7   equity. Combining this with my proposed capital structure of 52.73 percent common equity

8   and 47.27 percent long term debt, and an embedded cost of debt of 6.02 percent, the overall

9   rate of return would be 7.60 percent. This is more than adequate to preserve NSP's financial

10   integrity and its access to capital, and satisfies the requirement for a rate of return that

11   adequately balances consumer and investor interests.

12   **Q.**   **DOES THAT COMPLETE YOUR ANALYSIS OF THE COMPANY'S TESTIMONY, AND OF**

13   **YOUR TESTIMONY AS A WHOLE?**

14   **A.**   Yes, it does.