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Witness:	*Seoung Joun Won, PhD*
Sponsoring Party:	*MoPSC Staff*
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MISSOURI PUBLIC SERVICE COMMISSION

FINANCIAL AND BUSINESS ANALYSIS DIVISION

FINANCIAL ANALYSIS DEPARTMENT

SURREBUTTAL TESTIMONY

OF

SEOUNG JOUN WON, PhD

SPIRE MISSOURI, INC., d/b/a SPIRE
SPIRE EAST and SPIRE WEST
GENERAL RATE CASE

CASE NO. GR-2021-0108

Jefferson City, Missouri
July 2021

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Q. Please state your name and business address.

A. My name is Seoung Joun Won and my business address is P. O. Box 360, Jefferson City, Missouri 65102.

Q. Who is your employer and what is your present position?

A. I am employed by the Missouri Public Service Commission ("Commission") and my title is Regulatory Compliance Manager for the Financial Analysis Department, in the Financial and Business Analysis Division.

Q. Are you the same Seoung Joun Won who prepared the Rate of Return section of Staff's Cost of Service Report ("COS Report"), filed May 12, 2021, and the rebuttal testimony on the same topic filed June 17, 2021, in this proceeding?

A. Yes, I am.

Q. What is the purpose of your surrebuttal testimony?

A. The purpose of my surrebuttal testimony is to respond to the rebuttal testimonies of Dylan W. D'Ascendis, Adam Woodard and David Murray. Mr. D'Ascendis sponsored return on equity ("ROE") testimony on behalf of Spire Missouri Inc. ("Spire Missouri" or the "Company"). Mr. Woodard sponsored ROE, rate of return ("ROR") and capital structure testimony on behalf of Spire Missouri. Mr. Murray sponsored ROE, ROR, and capital structure testimony on behalf of

The Office of the Public Counsel ("OPC"). Within this testimony, Staff will address issues related to a just and reasonable ROR to be applied to Spire Missouri's gas utility rate base for ratemaking purposes in this proceeding. Staff's analyses and conclusions are supported by the data presented in Staff's surrebuttal workpapers.

I. EXECUTIVE SUMMARY

Q. Please provide a summary overview of your surrebuttal testimony.

A. In Staff's COS Report, Staff recommended an authorized ROE of 9.37%, within a reasonable range of 9.12% to 9.62%.[1] Staff also recommended that the Commission use Spire Missouri's own capital structure of 54.25% common equity and 45.75% long-term debt, and a cost of debt value of 4.00%, resulting in the overall midpoint ROR of 6.92%, taken from the calculated range of 6.78% to 7.05%. Staff is still reviewing true-up data as of May 31, 2021, to decide if its capital structure and cost of debt recommendations and, subsequently, ROR, will change.

In this surrebuttal testimony, Staff will respond to the rebuttal testimony of Spire Missouri's witnesses, Mr. D'Ascendis and Mr. Woodard, on the ROE issue and then respond to the rebuttal testimony of OPC witness, Mr. Murray, on the capital structure issue.

Q. What is the overview of your response to the rebuttal testimonies of Mr. D'Ascendis and Mr. Woodard?

A. Staff's surrebuttal will focus on Mr. D'Ascendis' and Mr. Woodard's recommended ROE. Mr. D'Ascendis and Mr. Woodard recommended an ROE of 9.95% within a range of 9.94% to 12.07%.[2] In his rebuttal testimony, Mr. D'Ascendis made incorrect claims

[1] On page 5, Staff's COS Report.
[2] On page 8, D'Ascendis' Rebuttal Testimony.

about Staff's authorized ROE estimation methodology based on his misunderstandings and erroneous assumptions. In this testimony, Staff will briefly recount the reasons why Staff holds that Mr. D'Ascendis' biased COE estimates are incorrect because a detailed explanation on these points was already provided in my rebuttal testimony. Although there are many issues in Mr. D'Ascendis' rebuttal testimony, Staff will only address major issues related to Mr. D'Ascendis' disagreement with Staff's COE estimation methods. Staff will also address Mr. Woodard's argument that the ROE for Spire Missouri should be higher than Missouri-American Water Company because the natural gas utility sector has more business risk than the water utility sector.[3]

Q. What is the overview of your response to the testimony of Mr. Murray?

A. Mr. Murray maintained his original recommendations of 9.25% for ROE, 8.5% to 9.5% for a reasonable ROE range, 6.27% for ROR based on his recommended capital structure of 47.36 percent common equity, 45.35 percent long-term debt, and 7.28 percent short-term debt, applied to cost of long-term debt of 4.12% and cost of short-term debt of 0.2%.[4] Mr. Murray did not rebut Staff's ROE recommendation. Mr. Murray's recommended equity ratio of 47.36 percent is 684 basis points lower than the Commission authorized common equity ratio of 54.20 percent, for Spire Missouri in the 2017 rate cases.[5] Mr. Murray's recommended common equity ratio is based on a 5-quarter average proportion of equity contained in Spire Inc.'s capital structure for the end-of-quarter balances for the period September 30, 2019, through September 30, 2020.[6] Staff will respond to Mr. Murray's argument in his rebuttal testimony that the Commission's order

[3] On page 11, lines 12-14, Woodard's Rebuttal Testimony.
[4] On page 34, lines 24-26, Murray's Rebuttal Testimony, and on pages 54-55, Murray's Direct Testimony.
[5] On page 45, Amended Report and Order issued March 7, 2018, in Case Nos. GR-2017-0215 and GR-2017-0216.
[6] On page 3, lines 12-14, Murray's Direct Testimony.

to use Spire Missouri's capital structure in Spire Missouri's last 2017 rate case does not hold for this proceeding.[7]

II. RESPONSE TO THE TESTIMONY OF SPIRE MISSOURI WITNESSES

Q. Please summarize Mr. D'Ascendis' rebuttal testimony.

A. Mr. D'Ascendis updated his COE analyses using estimation methods such as discounted cash flow ("DCF"), risk premium model ("RPM"), and capital asset pricing model ("CAPM") from his direct testimony and addressed capital market conditions and their effect on Spire Missouri's investor-required return. Mr. D'Ascendis also responded to Staff's COS report and Mr. Murray's direct testimony regarding the ROE issue.

Q. What is Mr. D'Ascendis' updated recommended ROE?

A. Mr. D'Ascendis maintained his recommended ROE of 9.95% but proposed a new ROE range of 9.44% to 12.53% (unadjusted), and 9.66% to 12.75% (adjusted) based on his updated COE analyses as of May 28, 2021.[8]

Q. What did Mr. D'Ascendis change in his updated COE analysis?

A. Mr. D'Ascendis' updated COE analyses is now based on data as of May 28, 2021, instead of as of September 30, 2020. Mr. D'Ascendis also changed his natural gas utility proxy group by eliminating NiSource Inc. ("NI") from his proxy group. Mr. D'Ascendis eliminated NiSource because it has less than 60% of net operating income and assets attributable to natural gas distribution operations.[9] Because Mr. D'Ascendis excluded NI, his utility proxy group is now identical to Staff's seven natural gas utilities proxy group. Table 1 presents the list of Mr. D'Ascendis' new natural gas utility proxy group and associated Ticker symbols:

[7] On page 4, lines 17-19, Murray's Rebuttal Testimony.
[8] On pages 4-5, D'Ascendis' Rebuttal Testimony.
[9] On page 7, lines 7-8, D'Ascendis' Rebuttal Testimony.

Table 1. Natural Gas Utility Proxy Group

Natural Gas Utility	Ticker
Atmos Energy Corporation	ATO
New Jersey Resources Corporation	NJR
Northwest Natural Holding Company	NWN
ONE Gas, Inc.	OGS
South Jersey Industries, Inc.	SJI
Southwest Gas Holdings, Inc.	SWX
Spire Inc.	SR

Mr. D'Ascendis' COE estimation models and input data estimation methods remained the same.[10] Because Mr. D'Ascendis did not change his estimation models and input data, Staff's concerns with his recommended COE remains the same as expressed in rebuttal testimony. Specifically, Mr. D'Ascendis continued to apply the same COE estimation models to his natural gas utility ("NGU") proxy group and to non-price regulated ("NPR") companies.[11] Table 2 is a comparison of Mr. D'Ascendis' COE estimate results of his direct testimony and rebuttal testimony:

Table 2. Comparison of D'Ascendis' COE Estimates[12]

	Cost of Equity Estimate (%)					
	September 30, 2020			May 28, 2021		
	NGU	NPR	Diff	NGU	NPR	Diff
Discounted Cash Flow Model (DCF)	9.74	11.71	1.97	9.44	12.83	3.39
Risk Premium Model (RPM)	10.04	12.53	2.49	10.79	12.62	1.83
Capital Asset Pricing Model (CAPM)	11.58	11.74	0.16	11.89	11.84	-0.05
Average	10.45	11.99	1.54	10.71	12.43	1.72

Mr. D'Ascendis' updated average NPR COE estimate is now 12.43%; even greater than his initial COE estimate of 11.99%. Staff will not repeat here all its explanation of its concerns with

[10] On page 7, lines 10-12, D'Ascendis Surrebuttal Workpaper.
[11] D'Ascendis Surrebuttal Workpaper.
[12] Summary of CE Models, Staff Surrebuttal Workpaper 2. Diff is the COE estimate difference between Natural Gas Utilities (NGU) and Non-Price Regulated Proxy Groups (NPR).

Mr. D'Ascendis' estimation models and input data. For a detailed explanation of Staff's concerns with Mr. D'Ascendis' COE estimation models and input data, please see my rebuttal testimony.

Q. Please summarize Staff's concerns with Mr. D'Ascendis' COE estimation models and input data.

A. The list of Mr. D'Ascendis' flawed COE estimation procedures with a brief summary and the page number of associated explanation in my rebuttal testimony is as follows:

1. Overstated Recommended ROE (Pages 4-6)

D'Ascendis' recommended ROE of 9.95% is much higher than the average authorized ROE of 9.44% in fully litigated gas utility rate cases completed in 2020.[13] Mr. D'Ascendis' recommended ROE is based on overstated COE estimates using upward biased input variables such as projected growth rates for the DCF model, equity risk premium ("ERP") for the RPM, and market risk premium ("MRP") for the CAPM.

2. Inadequate Non-Price Regulated Proxy Group (Pages 6-11)

Mr. D'Ascendis' updated COE of 12.43% for the NPR companies is unreasonably overestimated.[14] The NPR companies are not comparable to Spire Missouri or price regulated natural gas utilities. The earnings per share ("EPS") growth rates and ERP of the NPR companies are significantly higher than those of price regulated natural gas utilities. It is common sense that NPR companies have a significantly higher business risk than price-regulated natural gas utilities.

[13] S&P Global Market Intelligence.
[14] R-1.2 Summary of CE Models, D'Ascendi Surrebuttal Workpaper.

3. Excessive Projected Short-Term Growth Rate for DCF (Pages 11-14)

For his DCF COE estimate, Mr. D'Ascendis exclusively used short-term analysts' projected earnings growth rates in his constant-growth DCF model.[15] Analysts are of the consensus that long-term growth rates for utilities will eventually converge to the level of long-term gross domestic product ("GDP").[16] If Mr. D'Ascendis had more reasonably used 5.37% as his growth rate in the DCF model, his DCF COE estimate would be 8.43%.[17]

4. Faulty Equity Risk Premium for Risk Premium Model (Pages 14-25)

For his updated RPM COE estimate, Mr. D'Ascendis used two risk premiums: 11.03% for the Predictive Risk Premium Model ("PRPM") and 10.55% for the RPM, estimated using the total market approach ("TMA"). Most research results indicated that ERP is not higher than 7%.[18] For his updated PRPM COE estimates, Mr. D'Ascendis used ERP range of 7.34% to 9.44%, based upon all companies in his NGU proxy group except one.[19] Also, for his TMA RPM estimate, Mr. D'Ascendis used an ERP of 6.56%, which is too high compared to COVID-adjusted implied ERP of 4.38% reported on July 1, 2021, by Professor Aswath Damodaran.[20] If Mr. D'Ascendis had used proper ERPs for his RPM analysis, his RPM COE estimate would be 8.43%.[21]

5. Inflated Market Risk Premium of Capital Asset Pricing Model (Pages 25-34)

Mr. D'Ascendis employed the traditional CAPM and the empirical CAPM ("ECAPM") using Value Line and Bloomberg Beta, with risk-free rate of 2.88% and an average MRP

[15] R-1.3 DCF Summary, D'Ascendis Surrebuttal Workpaper.
[16] Morin, R. A. (2006). New Regulatory Finance. Public Utilities Reports, page 302.
[17] DCF, WONs Rebuttal Workpaper.
[18] Morin, R. A. (2006). New Regulatory Finance. Public Utilities Reports, page 129.
[19] R-1.12 Ind. PRPM Results, D'Ascendi Surrebuttal Workpaper.
[20] Damodaran On-line Home Page (nyu.edu), Stern Business School, NYU, Retrieved in July 5, 2021, (http://pages.stern.nyu.edu/~adamodar/New_Home_Page/home.htm).
[21] Recalculated COE, Won's Rebuttal Workpaper.

of 9.62%.[22] Mr. D'Ascendis' MRP is too high compared to Professor Damodaran's MRP of 4.72% for the US total market.[23] If Mr. D'Ascendis had used the proper input values for his CAPM analysis, his CAPM COE estimate would be 7.06% instead of his updated CAPM COE of 11.81%.[24]

6. Unreliable Empirical Capital Asset Pricing Model (Pages 34-35)

Mr. D'Ascendis' updated his ECAPM COE estimate of 11.98% using Dr. Roger Morin's adjustment factor of 25%. Dr. Morin's adjustment factor of 25% was estimated using data from 1926 to 1984. However, there is no evidence Dr. Morin's finding would hold with data after 1984.[25] Furthermore, Dr. Morin also cited other studies that found that CAPM produced returns between –9.61% and 13.56%, meaning that CAPM actually can overestimate COE in some instances.[26] Such variations in findings do not lend credibility to Mr. D'Ascendis' use of the ECAPM.

7. Inappropriate Adjustment of Cost of Equity (Pages 35-37)

Mr. D'Ascendis updated his adjustments to his COE for size, 0.10%, credit risk, –0.10%, and flotation cost, 0.22%.[27] Staff is not aware of any Commission order agreeing to application of size adjustments for the purpose of determining the authorized ROE of Missouri natural gas or electric utility in past rate cases. Also, equity flotation costs of Spire Inc. should be borne by Spire, Inc.,

[22] MRP WP1, D'Ascendis' Direct Workpaper.
[23] pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html, Stern Business School, NYU, Retrieved in July 5, 2021, (http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html).
[24] Recalculated COE, Won's Rebuttal Workpaper.
[25] On page 35, Footnote 128. Won's Rebuttal Testimony.
[26] Morin, R. A. (2006). New Regulatory Finance. Public Utilities Reports. page 190.
[27] On page 7, D'Ascendis' Direct Testimony.

not Spire Missouri's ratepayers. Therefore, Mr. D'Ascendis' updated size and flotation costs should not be considered for the determination of authorized ROE.

Q. Please summarize Mr. Woodard's rebuttal testimony.

A. Mr. Woodard proposed an updated capital structure as of May 31, 2021. Mr. Woodard's new recommended capital structure is composed of 45.72 percent long-term debt and 54.28 percent common equity. With Mr. D'Ascendis' recommended ROE of 9.95%, Mr. Woodard proposed a cost of debt of 3.99% and an allowed ROR of 7.23%.[28] Mr. Woodard disagreed with the OPC's recommended capital structure of 45.35% debt and 47.36% equity. In addition, Mr. Woodard supported Mr. D'Ascendis recommended ROE of 9.95% and disagreed with the recommended ROEs of 9.37% and 9.25% made by Staff and OPC, respectively. Staff will respond to Mr. Woodard's updated recommended capital structure in true-up testimony because Staff is still reviewing true-up data as of May 31, 2021.[29] In this surrebuttal testimony, Staff will address Mr. Woodard's argument that the ROE for gas utilities should be higher than water utilities because of business risk.[30]

Q. What are the specific areas in which Staff is responding to the Spire Missouri's witnesses?

A. The following are the specific areas in which Staff is responding to the testimonies of Mr. D'Ascendis and Mr. Woodard:

- Capital Market Conditions,
- COE and Authorized ROE,
- The Discounted Cash Flow Model,

[28] On page 5, Woodard Rebuttal Testimony.
[29] Staff's Data Request No. 0459 has not been responded by Spire Missouri.
[30] On page 11, lines 12-14, Woodard's Rebuttal Testimony.

- The Capital Asset Pricing Model and Empirical CAPM,
- The Rule of Thumb Test using Risk Premium Model, and
- Comparison Authorized ROEs.

Staff will discuss each in turn, below.

Q. Please summarize the key issues in Mr. D'Ascendis' rebuttal testimony that you will address in your surrebuttal testimony.

A. In his rebuttal testimony, Mr. D'Ascendis did not correctly understand how Staff utilized various capital market indicators to show that COE has decreased since Spire's last general rate cases in its comparative COE analysis. Mr. D'Ascendis focused on the isolated effect of each economic variable such as volatility or interest rate so that he miscomprehended the aggregate effect of various economic indicators on COE estimation models. For example, concerning the PE ratio's effect on COE, Staff argued that 'all else the same,' a higher PE ratio means a lower COE. In an attempt to show that Staff is wrong, Mr. D'Ascendis ignored the condition 'all else the same.' Furthermore, Mr. D'Ascendis adopted inappropriate input values for his DCF, RPM, and CAPM analyses and rebutted Staff's proper input variables. Overall, because of his erroneous assumption that the market-data derived COE is equal to the authorized ROE, Mr. D'Ascendis mischaracterized the relationship between Staff's COE estimation and authorized ROE recommendation.

1. Capital Market Conditions

Q. What is Staff's response to Mr. D'Ascendis' statement that "Dr. Won claims that capital markets are **less risky** now compared to those during the Company's last rate case (Case Nos. GR-2017-0215 and GR-2017-0216)"?[31]

[31] On page 9, lines 3-4, D'Ascendis Rebuttal Testimony.

A. Mr. D'Ascendis' statement is incorrect. Staff did not make that statement. According to Mr. D'Ascendis' response to Staff's data request, Mr. D'Ascendis used the wording on page 5, lines 10-12, in Staff's COS report as the basis for his statement:[32]

> Staff's recommended authorized ROE takes into consideration that COE fell by 43 basis points since the period of the last Spire Missouri's rate cases.

However, the meaning of "COE fell by 43 basis points" is not equivalent to "capital markets are less risky" because COE is not just determined solely by a risk factor. In addition, there is no such statement to be found in Staff's COS report or my rebuttal testimony.

Q. What is Staff's response to Mr. D'Ascendis' claim that there is no strong correlation between GDP and interest rates because the correlation coefficient between annual GDP growth rates and long-term interest rates from 1929-2020 was - 0.13?

A. It is an elementary economic fact that real GDP is sensitive to interest rates - an increase in real GDP, all else being equal, will cause an increase in average interest rates in an economy.[33] A low correlation coefficient does not imply the relationship between two variables is insignificant. Therefore, Mr. D'Ascendis' claim is an inaccurate statement.

Q. On page 16, lines 6-19, Mr. D'Ascendis stated that:

> Dr. Won's position is that a higher P/E ratio translates into a lower earnings yield (dividend yield), which indicates a lower ROE estimate. [Footnote Omitted]. When we look to the data underlying Dr. Won's claim, we observe that his position is incorrect.

What is Staff's response to Mr. D'Ascendis' statement?

[32] Staff's Data Request, No. 0439.
[33] Lesson summary: aggregate demand (article) | Khan Academy (https://www.khanacademy.org/economics-finance-domain/ap-macroeconomics/national-income-and-price-determinations/aggregate-demand-ap/a/lesson-summary-aggregate-demand) and Effect of a Real GDP Increase (Economic Growth) on Interest Rates (saylordotorg.github.io) (https://saylordotorg.github.io/text_international-finance-theory-and-policy/s10-11-effect-of-a-real-gdp-increase-.html). Both Retrieved in July 2, 2021.

A. Mr. D'Ascendis' conclusion is wrong because it ignores the context of Staff's analysis on PE ratios. In Staff's COS report, Staff clearly stated that **if all other things are equal**, at a higher PE ratio, the earnings yield (dividend yield) is lower, which translates into a lower COE estimate.[34] The statement holds if other things remain the same. However, other things such as the projected dividend growth rate and projected GDP growth rate changed (decreased) from the previous Spire Missouri rate case to the current rate case.[35] Considering these other changes, the net result, as indicated by Staff's DCF model, is that COE declined by 52 basis points since the time of Spire's last rate case.[36] Therefore, Mr. D'Ascendis' conclusion is wrong.

Q. On page 20, lines 14-16, Mr. D'Ascendis stated that:

> Despite Dr. Won's claim that "[i]n times of economic slowdown, utility equities perform better than the overall market," as shown on DWD Schedule R-2 and in Table 3, above, that is not the case.

What is Staff's response to Mr. D'Ascendis' statement?

A. Again Mr. D'Ascendis has tried to isolate Staff's statement and ignore the context of Staff's reasoning. Mr. D'Ascendis left out the following important statement from his excerpt of Staff's statement:

> From around October 2018 to around May 2020, the utilities sector showed similar performance to the overall market, although there was a notable decline starting in March 2020 in both the utilities and the overall market.[37]

[34] On page 17, lines 13-15, Staff COS Report.
[35] Schedule SJW-13, Appendix 2, Staff COS Report.
[36] On page 12, lines 15-16, Staff COS Report.
[37] On page 11, lines 20-22, Staff COS Report.

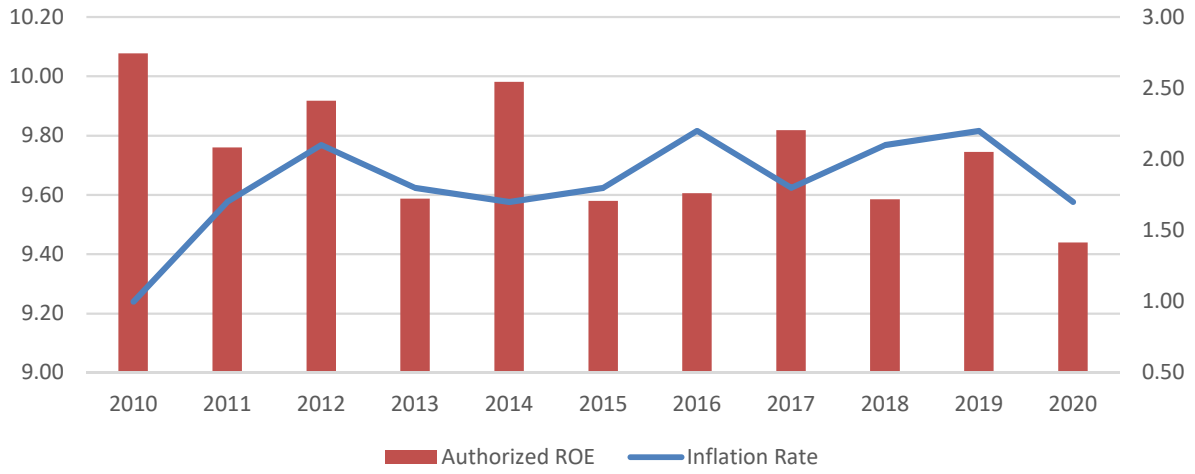
The statement that utilities perform relatively better than non-regulated companies in times of economic slowdown is backed by empirical evidence.[38] Demand for utility stocks increases when the economy is slowing down, because investors shift their funds into utilities to protect their investments. Utilities are considered a defensive sector because its returns are not as sensitive to economic changes as other sectors.[39]

Q. On page 22, lines 15-17, Mr. D'Ascendis stated that since inflation is positively correlated to both interest rates and authorized ROEs, increases in inflation would indicate a rising cost of common equity for Spire. Do you agree with the statement?

A. No, I do not agree with the statement for multiple reasons. First, there is no clear evidence that the current inflation surge will be continued. Federal Reserve Chair Jerome Powell said inflation had picked up but should move back toward the U.S. central bank's 2% target once supply imbalances resolve.[40] Second, it is unclear how the inflation rate will impact on the authorized ROE. Because of the impacts of other economic factors, a theoretical positive relationship between the inflation rate and the COE is not always realized. As shown in Figure 1 below, there is no consistent correlation between average natural gas utility authorized ROEs and annual inflation rates in the past decade. Therefore, even if there will be some higher inflation rates, it is hard to justify a higher authorized ROE:

[38] Salisu, A. A., Raheem, I. D., & Eigbiremolen, G. O. (2020). The behaviour of US stocks to financial and health risks. International Journal of Finance & Economics.
[39] Defensive Stock Definition (investopedia.com).
[40] Bloomberg, June 21, 2021, 3:36 PM CDT Updated on June 21, 2021, 4:21 PM CDT. (Powell Renews Forecast for Inflation Subsiding Toward Fed's Goal - Bloomberg).

Figure 1. Authorized ROE and Inflation Rate



Q. On page 23, lines 19-20, Mr. D'Ascendis stated that "Dr. Won's own CAPM result of 6.40% fails his "rule of thumb" criterion for a reasonable ROE." Do you agree with the statement?

A. No, I do not. In his footnote No. 29, Mr. D'Ascendis stated:

> Given the Company's embedded cost of debt of 4.00%, a reasonable ROE based on the "Rule of Thumb" would range between 7.00% and 9.00%. While I do not agree with the "Rule of Thumb" RPM, as will be discussed in detail below, this emphasizes the unreasonableness of Dr. Won's ROE model results.

Mr. D'Ascendis' conclusion is based on his misunderstanding of Staff's methodology. First of all, Staff's reasonableness check is not for authorized ROE but for COE estimates. Remember, Staff does not view the ROE and the COE as identical. As Mr. D'Ascendis correctly stated, Staff recognizes that the market-based COE is not equal to the authorized ROE in this proceeding. But Staff's methodology uses changes in COE in its comparative analysis as the basis for its authorized ROE recommendation, so the level of COE is important. Second, on Mr. D'Ascendis' reference to Spire's 4.00% embedded cost of debt as the reason why Staff's 'Rule of Thumb" fails,

Mr. D'Ascendis forgets that Spire has recent debt issued at 3.40%.[41] Therefore, Staff's CAPM COE estimate of 6.40% is consistent with Staff's rule of thumb criterion for a COE estimation.[42]

2. COE and Authorized ROE

Q. Why is Mr. D'Ascendis' assumption that the market-based COE estimate is equal to the authorized ROE wrong?

A. Mr. D'Ascendis' naïve assumption that a market-based COE and a regulatory authorized ROE are equal is not supported by recent theoretical and empirical evidence. First of all, COE is defined as a stock market value-based concept.[43] In contrast, authorized ROE is an accounting book value-based concept.[44] Therefore, a simple calculation of COE does not produce a just and reasonable authorized ROE.

Q. Why is the market-based concept of COE not the same as the book-based concept of authorized ROE?

A. As was already explained in Staff's COS Report, COE is the return required by investors and authorized ROE is the return set by a regulatory utility commission. Although some experts contend that COE and ROE are synonymous, Staff's position is that they need not be. Observed utility COEs have been, generally, significantly lower than ROEs in recent years.[45] Because observed COEs have been significantly low lately, instead of directly recommending the estimated COEs, Staff recommends the authorized ROE based on change in COE from period to period.

[41] Staff's Data Request No. 0416.
[42] Given the most recent Spire Missouri approximate cost of debt of 3.3%, a reasonable ROE based on the "Rule of Thumb" would range between 6.30% and 8.30%.
[43] On page 378, CFA Program Curriculum, 2020, Level I, Volume 4.
[44] On page 389, Ibid.
[45] On page 5, Footnote 5, Staff's COS Report.

The easiest way to understand the difference between COE and authorized ROE is thinking about how the two return measures are used in practice. When investors invest their money to buy the common equity stock of a company, they want to know the expected rate of return and compare it to their required rate of return from their investment. The COE can be thought of as the minimum expected rate of return that a company must offer its investors to purchase its shares in the primary market and to maintain its share price in the secondary market.[46] The important point here is that investors pay their money based on the market value of the common equity stock and not just based on the book value of the equity of a company. To calculate the expected minimum rate of return of common equity, investors estimate COE using the stock valuation of stock models such as the discounted cash flow ("DCF") or the capital asset pricing model ("CAPM").[47] Investors' expected return from their common stock can be easily calculated by multiplying COE by the market value of common stock.

In contrast, an authorized ROE has a totally different financial context. The purpose of an authorized ROE is to calculate just and reasonable rates for utility companies. In utility rate cases, rates are decided by the revenue requirement determined by the Commission. The revenue requirement is calculated by multiplying rate base by allowed ROR. The allowed ROR is the weighted average cost of capital, which includes authorized ROE and cost of debt. Rate base is calculated based on the book value of the utility's regulatory assets. Book value of equity is calculated by subtracting a company's total liabilities from its total assets. Clearly, the two concepts are different; therefore, there is no reason COE and authorized ROE should be the same.

[46] On page 378, CFA Program Curriculum, 2020, Level I, Volume 4.
[47] On page 379, Ibid.

Q. How do investors consider the Commission's authorized ROE differently from the market value COE?

A. The book value of common equity is not as volatile as stock prices. Since COE is associated with the market value of common stock, which can be a volatile value, that means that if COE is directly used to set authorized ROE values and to calculate revenue requirement, authorized ROE would be as volatile as the stock market. With authorized ROE as volatile as the stock market, it means overall revenue requirement would be as volatile. Investors of utility common stock expect and require a reliable revenue stream based on just and reasonable utility rates because investors know that higher or lower than just and reasonable utility rates are unsustainable and harmful to both ratepayers and investors, eventually. Therefore, for ratemaking purposes, a reliable and stable earning multiplier associated with the rate base, based on utility book value, needs to be produced. To properly meet the expectations and requirements of investors when they choose to invest or lend their money in Spire Missouri rather than in some other investment opportunity requires just and reasonable rates.

Q. Does it mean that COE estimation procedures are useless in the ratemaking process?

A. No, it does not. COE estimates provide valuable equity financial market information including investors' expected minimum rate of return based on the market value of stock. Specifically, the comparison between COE estimates for two different rate cases provides important information to calculate a just and reasonable authorized ROE. In many rate cases, Staff found that the changes in the COE over time, say between rate case periods, provide essential information on whether to increase or decrease authorized ROE recommendations, considering financial market changes. However, simply equating COE estimates with recommended ROE is often not appropriate.

Q. Why does a simple calculation of COE estimates not produce a just and reasonable authorized ROE?

A. In the Amended Report and Order of Spire Missouri rate case, Case Nos. GR-2017-0215 and GR-2017-0216, the Commission stated:

> To determine a return on equity, the Commission must consider the expectations and requirements of investors when they choose to invest their money in Spire Missouri rather than in some other investment opportunity. As a result, the Commission cannot simply find a rate of return on equity that is unassailably scientifically, mathematically, or legally correct. Such a "correct" rate does not exist. Instead, the Commission must use its judgment to establish a rate of return on equity attractive enough to investors to allow the utility to fairly compete for the investors' dollar in the capital market without permitting an excessive rate of return on equity that would drive up rates for Spire's ratepayers.[48]

As the Commission explained above, setting authorized ROEs is not a purely mathematical exercise where the results of COE estimation models are simply accepted from the outputs of mathematical formula. Setting fair and reasonable ROEs involves judgement, which means that in some cases the results of mere COE estimates are adjusted to account for what is considered just and fair. As explained above, the COE and the authorized ROE are developed in different financial contexts. If COE estimates determined by market value-based methods such as DCF and CAPM are simply quoted for authorized ROE, the result would be neither just nor reasonable to investors or ratepayers.

More importantly, finding a just and reasonable authorized ROE in utility rate regulation is a long-term iteration procedure. After a utility rate case, based on an authorized ROE determined by the Commission, a set of new utility rates go into effect. Under the new rates, the utility company will soon have its performance result. If given rates are overpriced, ratepayers will

[48] On page 28, Amended Report and Order, Case No. GR-2017-0215.

overpay and the company and its stock price will outperform, generally. If given rates are underpriced, the company will have a lower net income than what the market expected. Because of the disappointing earnings report, investors would not be attracted to the company's stock and its stock price will underperform the total stock market. Therefore, the company may file its next rate case sooner or later than originally expected based upon the performance results for the current set of rates.

Q. Do you think that Spire's authorized ROE determined in 2017 rate case is just and reasonable considering the long-term iteration procedure described above?

A. In Spire Missouri's case, it filed its last rate case in 2017 and came back for the current rate case in 2020. A three-year term between rate cases is currently not considered unusual, when taking into account rate base changes due to new investment of utility assets. Furthermore, there are no signs of Spire Missouri's operational underperformance or Spire's stock is in the market since 2017 rate case. Actually, both performances are quite good. Table 3 shows that both net income and earnings before taxes ("EBIT") of Spire Inc. and Spire Missouri have been positive over time. Based upon this information, Spire Missouri's current rates do not appear to have been unfair to Spire Missouri:

Table 3. Net Income and EBIT ($000)

	Spire Inc.		Spire Missouri	
Year	Net Income	EBIT	Net Income	EBIT
2017	161,600	328,300	113,000	199,600
2018	214,200	286,100	129,300	143,100
2019	184,600	323,500	115,000	177,500
2020	88,600	206,500	130,200	196,900

Q. Does Staff agree with Mr. D'Ascendis that allowed returns and investor-required returns are equal based on the view of the legal standards and treatises on regulation likening regulation of utilities and the competitive market?

A. No, Staff does not agree. To justify his argument that COE equals authorized ROE, Mr. D'Ascendis referenced three sources. However, these three well-known authorities only explained the fundamental principle of regulatory economics that utility regulation is a substitution for competition. Therefore, none of Mr. D'Ascendis' references support his position that COE equals authorized ROE. Staff agrees with the concept of utility regulation as a substitute for market competition for a just and reasonable rate. However, Staff disagrees with Mr. D'Ascendis' argument that the principle implies that COE equals authorized ROE. As explained above, investors make their financial decisions based on expected return and comparable risk. And the book value-based authorized ROEs of utility companies is one of several factors for investment decisions. But COE is calculated based on volatile stock market variables such as stock prices, dividends, and growth rates. Fundamentally, Mr. D'Ascendis seems to be confused about two concepts of competition; one is competition of providing services to customers and the other is competition of attracting capital from investors. More interestingly, Mr. D'Ascendis' three references support Staff's positions and not his positions.

Q. Please explain.

A. First, as Staff insisted, stock market information by itself is not sufficient to decide a just and reasonable authorized ROE. The authorized ROE should produce a fair rate as if there is business competition on utility service. Mr. D'Ascendis' first source, the Cost of Capital Manual, which is the training manual for the Society of Utility and Regulatory Financial Analysts, takes the position that the competitive mechanism **alone cannot** be relied upon to protect the public

interest. In other words, the authorized ROE should not just rely on volatile stock market conditions. Mr. David C. Parcell, the author of the *Cost of Capital Manual*, stated that the primary objective of regulation is to produce market results (i.e., price and quantity supplied) in the utility sectors.[49] So the main issue with authorized ROE in not whether it is only determined by using financial market information but whether it will produce market results which would be obtained if utility rates and services were determined competitively.

Second, just simply using market information cannot achieve a fair customer rate like competitive business in monopoly utility regulation. In the second source, the *Principles of Public Utility Rates*, James C. Bonbright, the author, stated that the very nature of a monopolistic public utility is such as to preclude an attempt to make the emulation of competition very close so that theories of pure competition leave no room for rate discrimination.[50] Therefore, the real challenge to determine an authorized ROE is not the utilization of competitive financial market information but to provide a proper signal to investors for just and reasonable utility rates.

Finally, in The Regulation of Public Utilities, Charles F. Phillips, the author, stated that regulation should attempt to put the utility sector under the same restraints competition places on the industrial sector.[51] If non-price regulated companies are comparable to public utilities as Mr. D'Ascendis insisted, why does Philips use a normative statement, "should attempt", in his arguments? The answer is the utility sector does not operate under the same restraints that competition places on the non-price regulated sector. The difference between the utility sector and the NPR sector is also illustrated by the fact that financial information service providers report the

[49] On page 25, lines 16-19, D'Ascendis' Rebuttal Testimony. Original Source: David C. Parcell, Cost of Capital Manual, Society of Utility and Regulatory Financial Analysts, 2010 Edition, at 3-4.
[50] On page 26, lines 14-15, D'Ascendis' Rebuttal Testimony. Original Source: James C. Bonbright, Principles of Public Utility Rates, Columbia University Press, 1961, at 106-107.
[51] On page 26, lines 14-15, D'Ascendis' Rebuttal Testimony. Original Source: Charles F. Phillips, The Regulation of Public Utilities, Public Utility Reports, Inc., 1993, at 173.

public utility sector separately from the NPR sector.[52] Another example is that the public utility sector is differentiated from the NPR sector for portfolio construction by fund managers.[53] Furthermore, if Mr. D'Ascendis wants to find a proper reference for cost of capital, one source would be recent authorized ROE determinations by the Commission or other state public utility commissions. In 2020, the average fully litigated authorized ROE was 9.44%. That is 51 basis points lower than Mr. D'Ascendis' recommended ROE of 9.95% and is 309 basis points lower than the COE estimate of 12.53% from market models applied to NPR companies of comparable risk. Therefore, Mr. D'Ascendis' NPR proxy group COE estimate should be excluded in determining authorized ROE.

Q. What are Staff's concerns with Mr. D'Ascendis' inappropriate application of his three references to justify his flawed argument that COE equals authorized ROE?

A. Mr. D'Ascendis argument, with references from three sources, fails to appreciate the totality of the arguments made in the referenced sources due to his misunderstanding of the two concepts of competition in regulatory economics. One is related to business competition as a service provider. Because a utility service is a regional monopoly, regulators should set a rate as if there is competition in the utility service market. Mr. D'Ascendis' three references explained about this business competition. Therefore, this concept of competition is related to a just and reasonable rate that the authorized ROE should achieve. In contrast, the other concept of competition between utilities is for attracting capital in the financial market. The concept of competition in *Bluefield* and *Hope* principles is that authorized ROE should allow a fair opportunity to compete with others in the financial market. Therefore, the two concepts of

[52] Essential Utilities, Inc. | Reports | Moody's (moodys.com).
[53] S&P Corporate Research Template (spglobal.com) .

competition have different contexts in regulatory economics. The authorized ROE should provide a fair opportunity to the utility to be able to provide a reliable utility service to the rate payers.

3. The Discounted Cash Flow Model

Q. Do you agree with Mr. D'Ascendis that Staff should not use the dividend per share ("DPS") growth rate but should use the earnings per share ("EPS") growth rate within its DCF calculations?

A. No, I do not. EPS and DPS are both acceptable measures of growth rate.[54] Analysts occasionally use either or both measures of growth rates in the DCF model. Staff has considered EPS growth rate for calculating the perpetual growth rate for the DCF model in past rate cases. However, for the current rate case, EPS growth rates are not reliable to use for calculating the perpetual growth rate for the DCF model. According to Value Line, in the past five years, three out of eight companies in Mr. D'Ascendis' original natural gas proxy group show negative EPS growth rates. Northwest Natural Holding Company (Ticker "NWN"), NiSource Inc. (Ticker "NI"), and South Jersey Industries, Inc. (Ticker "SJI") reported negative EPS growth rates of 17.0%, 8.0% and 2.5%, respectively.[55] The DCF model is not valid with a negative growth rate. Therefore, Staff cannot rely on analysts' projected EPS growth rates used by Mr. D'Ascendis. However, Staff's natural gas proxy group shows positive DPS growth rate over the 10 years and also anticipated positive projected DPS growth rates. Staff agrees with Dr. Morin's statement that investors rely on analysts' forecasts to a greater extent than on historic data only.[56] So, Staff used projected DPS growth rates in its DCF calculations.

[54] On page 139, David C. Parcell, Cost of Capital Manual, Society of Utility and Regulatory Financial Analysts, 2010 Edition.
[55] The Value Line Investment Survey.
[56] On page 28, lines 30-31, D'Ascendis' Rebuttal Testimony. Original Source: Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, page 298.

Q. Do you agree with Mr. D'Ascendis that there are no financial literature publications that support the use of projected DPS growth rates for use in a DCF model?

A. No, I do not. There are many publications that support the use of projected DPS growth rates for use in a DCF model. First, Howe and Rasmussen stated that the three most commonly-used financial indicators of growth are DPS, EPS, and book value per share ("BVPS").[57] Second, when Parcell introduced the DCF model in his Cost of Capital Manual, which is the training manual for the Society of Utility and Regulatory Financial Analysts, he clearly, multiple times, indicated that the growth rate for DCF models use "constant growth rate in DPS in future".[58] There are many more but the most important point is that using the DPS growth rate in DCF is an acceptable method.

Q. Do you agree with Mr. D'Ascendis that Staff should not apply a multi-stage DCF model?

A. No, I do not. First of all, even though Staff used a growth rate derived from combining short-term and long-term growth rates, Staff did not use a multi-stage DCF model. Staff's constant-growth DCF model reflects the long-term investment horizon assumption implied in the constant-growth DCF model. According to the Federal Energy Regulatory Commission ("FERC"), exclusive use of short-term analysts' growth rates in the constant-growth DCF is inappropriate.[59] Like FERC, Staff incorporates long-term GDP growth rates in the constant-growth DCF by combining analysts' short-term growth rate estimates with long-term projected GDP growth rates, weighted using two-thirds of the short-term growth rates plus one-third of the

[57] Howe, Keith M. and Eugene F. Rasmussen. Public Utility Economics and Finance, Prentice Hall, Inc., Englewood Cliffs, New Jersey, 1982.
[58] On pages 130-134, David C. Parcell, Cost of Capital Manual, Society of Utility and Regulatory Financial Analysts, 2010 Edition.
[59] *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.,* Opinion No. 569, 169 FERC ¶ 61,129 (2019).

long-term GDP growth rates.[60] FERC uses this practical model to set the ROE for inter-state natural gas pipelines.[61]

Analysts are of the consensus that long-term growth rates for utilities will eventually converge to the level of long-term gross domestic product ("GDP").[62] Mr. D'Ascendis makes an unreasonable assumption that natural gas utilities will grow at these often high and precarious short-term growth rates, in perpetuity.[63] Mr. D'Ascendis employed the business life cycle theory to justify his exclusive use of projected short-term earnings growth rate as a perpetual growth rate.[64] However, as explained in my rebuttal testimony, the authentic business life cycle theory does not support Mr. D'Ascendis' idea that a short term growth rate will be everlasting.[65]

4. The Capital Asset Pricing Model and Empirical CAPM

Q. Do you agree with Mr. D'Ascendis that Staff did not use Beta coefficients published by a widely available source like Value Line for use in its CAPM calculations?

A. No, I do not. As Staff explained in the Staff COS report, the Beta coefficient published by Value Line and the Beta coefficient used by Staff's CAPM analysis are calculated in exactly the same manner.[66] Consistent with Value Line's approach to calculating Beta, Staff used 5-years of historical weekly returns of the subject company and the New York Stock Exchange ("NYSE") index.[67] The covariance of the weekly returns on the NYSE index and the weekly returns on the subject company is divided by the variance of the weekly returns on the NYSE index

[60] On page 16, Staff COS Report.
[61] On page 151, David C. Parcell, Cost of Capital Manual, Society of Utility and Regulatory Financial Analysts, 2010 Edition.
[62] Morin, R. A. (2006). New Regulatory Finance. Public Utilities Reports, page 302.
[63] 3.1 DCF Summary, Staff's Data Request No. 0237.
[64] On page 15, D'Ascendis' Direct Testimony.
[65] On pages 12-14, Won's Rebuttal Testimony.
[66] On page 18, Staff COS Report.
[67] Using Beta, Andrew J. Cueter, October 02, 2012, Value Line. (How To Use Beta (valueline.com)).

to determine raw beta (unadjusted beta).[68] Staff then adjusted the raw beta using the Blume adjustment formula as used by Value Line:

$$\text{Adjusted Beta} = (1/3) + (2/3)\ (\text{Unadjusted Beta})$$

The only reason Staff does not directly use the Beta coefficient published by Value Line is that Value Line' printed version of Beta for natural gas utility sector are only produced twice a year. Mr. D'Ascendis used the Beta coefficient published in August 2020 and the next one was published in February 2021. Staff's research time period was three months ending on March 2021 so the consistent time period version of the Beta coefficient published by Value Line was not available. It is important to use current Betas; otherwise, the results of CAPM would have a component of risk that is inconsistent with current market conditions. For example, Mr. D'Ascendis used the Beta coefficients published in August 2020, right in the middle of the pandemic and before the vaccine was introduced. The Betas show significant risk consistent with the high volatility and fear around the peak time of the pandemic. Table 4 shows the Beta coefficient changes over the time in natural gas proxy group:

Table 4. The Beta Coefficients of Natural Gas Proxy Group

Company Name	Ticker	Aug-20	Feb-21	Mar-21	May-21
Atmos Energy Corporation	ATO	0.80	0.80	0.65	0.61
New Jersey Resources Corporation	NJR	0.90	0.95	0.93	0.86
Northwest Natural Holding Company	NWN	0.85	0.80	0.73	0.63
ONE Gas, Inc.	OGS	0.80	0.80	0.75	0.67
South Jersey Industries, Inc.	SJI	1.00	1.05	0.83	0.77
Southwest Gas Holdings, Inc.	SWX	0.90	0.95	0.89	0.75
Spire Inc.	SR	0.80	0.85	0.71	0.63

[68] Pinto, J. E., Henry, E., Robinson, T. R., Stowe, J. D., & Cohen, A. (2010). Equity Asset Valuation, CFA Investment Series.

As shown in Table 4, the Beta coefficients show a decreasing trend from August 2020 to current time period. Using the outdated Betas from August 2020 resulted in an upward bias for Mr. D'Ascendis' CAPM COE.

Q. On page 35, lines 5-8, using the concept of Efficient Market Hypothesis ("EMH"), Mr. D'Ascendis stated that:

> The semi-strong form of the EMH assumes that all relevant information is available to the investor, which means the Beta coefficients from Value Line would be considered by investors when making investment decisions and, therefore, should be included in Dr. Won's CAPM analysis.

What is your response to the statement?

A. As explained in above question, Staff's Beta coefficient is produced by Value Line methodology, which means that the Betas Staff used are acceptable for use in CAPM analysis. Staff has concerns with Mr. D'Ascendis' understanding of Value Line Beta methodology. Mr. D'Ascendis insisted that the reason to use the Beta coefficient from Value Line is that he assumed that investors consider only the printed version of Beta from Value Line when making investment decision. However, what Staff used for producing Beta is provided by platforms that are widely used by the financial investment sector.[69] As explained above, widely available Beta calculation platforms, such as Zacks' Beta online calculator and SNL financial, allow Staff to calculate current Betas.[70] Therefore, Staff's approach on Beta does not contradict with Eugene F. Fama's Efficient Market Hypothesis.[71]

Q. Do you agree with Mr. D'Ascendis that Staff has incorrectly relied on a historical 30-year Treasury bond yield as his risk-free rate?

[69] SNL Financial | S&P Global Market Intelligence (spglobal.com).
[70] Spire Inc. (SR) Beta - Zacks.com.
[71] Eugene F. Fama, Efficient Capital Markets: A Review of Theory and Empirical Work, The Journal of Finance, Vol. 25, No. 2. (May 1970), at 383-417.

A. No, I do not. In CAPM applications, 30-year Treasury security yields are universally recognized as appropriate for use as the risk-free rate.[72] Dr. Morin stated the yield on very long-term government bonds such as the yield on 30-year Treasury bonds, is the best measure of the risk-free rate for use in the CAPM.[73]

Interestingly, at page 52 of his rebuttal testimony Mr. D'Ascendis quoted Dr. Morin's statement that yields on 30-year Treasury bonds are the best measure of the risk-free rate.[74] Supporters (Brigham & Gapenski, 1988, 225; Morningstar, 2009, 114) of using long-term Treasury bonds as a risk-free rate frequently cite the following advantages: (1) Long-term rates reflect long-term inflation expectations and are less volatile than short-term rates; (2) Common stocks are long-term investments, so the proper comparison is long-term rates; and, (3) Long-term rates are subject to less random disturbances than short-term rates.[75]

Q. Do you agree with Mr. D'Ascendis that Staff incorrectly calculated the market risk premium ("MRP")?

A. No, I do not. Mr. D'Ascendis insisted that the correct way of calculating MRP is the difference between the arithmetic mean total return on large company common stocks, from 1926 to 2020, of 12.20%, and the arithmetic mean income return on long-term government bonds of 4.90%; which results in an MRP of 7.30%. However, the comparison of total return and income return values is a classic case of apples to oranges comparison. Total returns on government bonds should be subtracted from total returns on large cap stocks for an accurate estimate of MRP.

[72] On page 107, David C. Parcell, Cost of Capital Manual, Society of Utility and Regulatory Financial Analysts, 2010 Edition.
[73] Morin, R. A. (2006). New Regulatory Finance. Public Utilities Reports, page 151.
[74] On page 52, line 18, D'Ascendis Rebuttal Testimony. Original Source: Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, page 151.
[75] Morningstar, Inc., Ibbotson 2010 Classic Yearbook; and Brigham, Eugene F., Dana Aberwald, page 114, and Louis C. Gapenski, "Common Equity Flotation Costs and Rate Making," Public Utilities Fortnightly, May 2, 1985, 28-36.

This kind of basic mistake should not be considered as producing a reasonable MRP estimation in this proceeding.

Q. Do you agree with Mr. D'Ascendis that Staff should have incorporated an empirical CAPM ("ECAPM") analysis into its overall COE analysis?

A. No, I do not. The reason Staff does not utilize the ECAPM is because currently there is no known reliable adjustment factor for MRP. Mr. D'Ascendis multiplied 75% of his MRPs by the Beta coefficient and added the remaining 25% MRPs, unadjusted.[76] This adjustment is consistent with Dr. Roger Morin's formula.[77] Dr. Morin's formula was based on his finding, with data between 1926 and 1984, that regular CAPM underestimated returns by about 2.00%. However, there is no evidence Dr. Morin's finding on the need for an adjustment factor of 25% would hold with data after 1984.[78] Furthermore, Dr. Morin also cited other studies that found that CAPM produced returns between - 9.61% and 13.56%, meaning that CAPM actually can produce overestimated COE in some instances.[79] Such variations in findings do not lend credibility to Mr. D'Ascendis' use of the ECAPM.

[76] Original CAPM COE estimate equals Risk-Free Rate + Beta × MRP but ECAMP COE estimate equals Risk-Free Rate + 0.25 × MRP + 0.75 × Beta × MRP or Risk-Free Rate + Alpha + Beta × (MRP – Alpha) where Alpha = 0.25 × MRP.
[77] Morin, R. A. (2006). New Regulatory Finance. Public Utilities Reports, page 190.
[78] Staff's Data Request No. 0302. Figure 2 on page 32 of Mr. D'Ascendis' direct testimony was excerpted from Fama and French's academic article in the Journal of Economic Perspectives, The Capital Asset Pricing Model: Theory and Evidence, which was published in Summer, 2004. The premise of Fama and French's article was reiterated by Morin in 2006 in his book, New Regulatory Finance. Mr. D'Ascendis is not aware of any evidence or peer reviewed published papers that rebut the findings of Morin in his textbook or Fama and French's academic article. However, these references did not show that the adjustment factor of 25% is still correct. Actually, Dr. Morin introduced other researches using different adjustment factors in his book.
[79] Morin, R. A. (2006). New Regulatory Finance. Public Utilities Reports, page 190.

5. The Rule of Thumb Test using Risk Premium Model

Q. Do you agree with Mr. D'Ascendis that the values of equity risk premium ("ERP") have consistently exceeded the 5% threshold since 2010?[80]

A. No, I do not. Some high risk company's ERP could be greater than 5% because of a higher risk premium as explained by Dr. Morin.[81] However, the ERP range of 3% to 5% is reasonable considering the corporate credit ratings assigned to Spire Missouri by Moody's and S&P are 'A1' and 'A–', respectively.[82] Actually, the general ERP range of 3% to 5% is supported by the Chartered Financial Analyst ("CFA") program.[83] Interestingly, all of the ERPs presented in Chart 7 of Mr. D'Ascendis' rebuttal testimony sourced from Regulatory Research Associates, Bloomberg Professional are less than 8%.[84] However, four updated ERPs calculated by Mr. D'Ascendis in his rebuttal testimony are greater than 8% and one of them is 12.78%.[85] Table 5 presents the comparison of Mr. D'Ascendis' six ERPs based on Ibbotson's historical data in his direct and rebuttal workpapers:

Table 5. The Comparison of D'Ascendis' Ibbotson-Based ERPs

	Equity Risk Premium Measure	Direct (%)	Rebuttal (%)
[1]	Ibbotson Equity Risk Premium	5.78	5.92
[2]	Regression on Ibbotson Risk Premium Data	9.42	8.69
[3]	Ibbotson Equity Risk Premium based on PRPM	9.54	9.87
[4]	Equity Risk Premium Based on Value Line Summary and Index	10.94	4.60
[5]	Equity Risk Premium Based on Value Line S&P 500 Companies	11.02	10.76
[6]	Equity Risk Premium Based on Bloomberg S&P 500 Companies	10.34	12.78
	Average	9.51	8.77

[80] On page 43, lines 4-5, D'Ascendis Rebuttal Testimony.
[81] Morin, R. A. (2006). New Regulatory Finance. Public Utilities Reports, page 129.
[82] S&P Global Market Intelligence, retrieved March 19, 2021. (https://platform.marketintelligence.spglobal.com).
[83] CFA® Program Curriculum, 2020, Level I, Volume 4, p. 93, CFA Institute, retrieved on March 18, 2021. (https://www.cfainstitute.org/en/programs/cfa/policies).
[84] On page 43, D'Ascendis' Rebuttal Testimony.
[85] R-1.33 CEM Beta Adjusted RP, D'Ascendis' Rebuttal Workpaper.

6. Comparison of Authorized ROEs

Q. Do you agree with Mr. D'Ascendis that historical authorized returns understate the investor-required returns because authorized ROEs are a lagging indicator of investor-required returns?[86]

A. No, I do not. First, Mr. D'Ascendis' assumption that authorized ROEs are a lagging indicator of investor-required returns means the future authorized ROE will follow the current investors' required return. Second, Mr. D'Ascendis' insists that, because of his first assumption, historical authorized returns understate the investor-required return. It means that the past authorized ROEs understated current investors' required return. If both statements are simultaneously true, the authorized ROE and investors' required return will produce a downward spiral.

Q. Do you agree with Mr. Woodard that if natural gas utilities have more business risk than water utilities, then the ROE for gas utilities should be higher than the lower risk water utilities?[87]

A. Not necessarily. First, authorized ROEs are not only determined by the risk profiles of individual sectors or companies. There are many other financial factors, such as competitive financial market conditions for each utility sector that determine authorized ROE. Because market conditions change over time, risk free rates and growth rates of the economy and utilities need to be considered to determine an appropriate return on equity for a utility. Therefore, Mr. Woodard's claim that natural gas utilities' return on equity should be higher than water utilities based only on risk differential is not acceptable in rate of return regulation procedure.

[86] On page 44, lines 14-15, D'Ascendis' Rebuttal Testimony.
[87] On page 11, lines 12-14, Woodard Rebuttal Testimony.

Second, when the utility credit rating is calculated, a financial analyst should consider both business risk profile and financial risk profile for each utility company, not just the business risk of the sector.[88] Therefore, Mr. Woodard's assertion that Spire Missouri should have a higher authorized ROE than Missouri-American Water's because natural gas utilities have more business risk than water utilities is not reasonable.

Third, Spire Missouri is currently independently rated by Moody's and Standard & Poor's ("S&P"), while Missouri-American Water is not independently rated by any major credit agencies. The corporate credit ratings assigned to Spire Missouri by Moody's is 'A1' compared to the American Water Works Company's, the parent company of Missouri American-Water, 'Baa1' rating by Moody's. That means that Moody's considers that Spire Missouri has a lower financial risk than Missouri-American Water's parent company. Therefore, Mr. Woodard's simple business risk comparison between water utility sector and gas utility sector does not provide proper information to determine a just and reasonable authorized ROE for Spire Missouri.

7. Conclusions of Staff's Responses to Spire Missouri Witnesses

Q. On page 45, lines 5-7, as his conclusion regarding Staff's ROE analysis in his rebuttal testimony, Mr. D'Ascendis stated that:

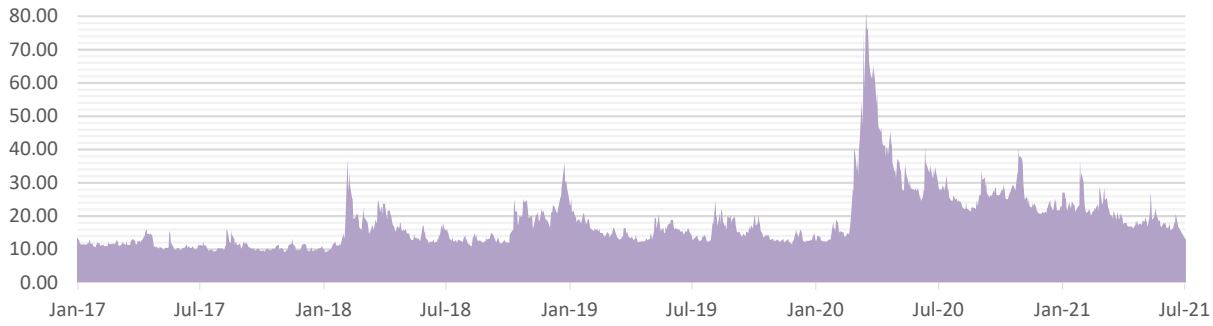
> Dr. Won's models indicate an increase in the indicated ROE since Spire's last rate case, not a decrease like Dr. Won contends. As shown in Table 6, below, those increases result in an average increase of 74 basis points [Footnote Omitted] to Spire's previously authorized ROE.

Mr. D'Ascendis then presented Table 6 with the title that "Dr. Won Updated Model Results and Comparative Risk Measures: Case No. GR-2017-0216 and Present Docket." Do you agree with D'Ascendis' conclusion and Table 6?

[88] U.S. Utilities Ratings Analysis Now Portrayed In the S&P Corporate Ratings Matrix.

A. No, I do not. Mr. D'Ascendis' conclusion is based on his misunderstanding of how capital market variables interact with each other to impact COE. Mr. D'Ascendis focuses only on two variables, Volatility and Beta, to the exclusion of other variables. The Volatility and Beta indicate the level of risk, meaning that the higher the Volatility and Beta, the higher the risk and, ultimately, higher COE if all other thing being equal. However, there are multiple variables that can impact COE, like the level of interest rates, stock prices, expected earnings, growth rates etc. The ultimate level of COE is determined by the interaction of all the variables. Staff's DCF model and CAPM captured the interaction of all the variables and the result, as Staff already pointed out, is that COE decreased. Mr. D'Ascendis argued that the Chicago Board Options Exchange Volatility Index ("VIX") rose, and therefore it means COE rose. For instance, in his Table 6 in his rebuttal testimony, Mr. D'Ascendis compared VIX index of 11.71% for GR-2017-0216 and 21.53% for GR-2021-0108. However, looking closely in Figure 2, the VIX has been falling and stabilizing from the high of 21.53 quoted by Mr. D'Ascendis. On July 2, 2021, VIX closed at 15.07, the lowest it has been since February 2020:[89]

Figure 2. The Chicago Board Options Exchange Volatility Index



[89] CBOE Volatility Index: VIX (VIXCLS) | FRED | St. Louis Fed (stlouisfed.org) Retrieved in July 2, 2021, (https://fred.stlouisfed.org/series/VIXCLS).

Q. What are Staff's conclusions regarding Spire Missouri Witnesses' rebuttal testimony?

A. Like his direct testimony, Mr. D'Ascendis presented his analysis in his rebuttal testimony based upon invalid and incorrect assumptions. Also, Mr. D'Ascendis' analysis approach focusing on only each variable's isolated effect on COE would hinder the Commission from understanding the actual capital market variables interactive effect. Therefore, Mr. D'Ascendis' recalculated biased COE estimates should not be considered as the basis for a just and reasonable authorized ROE recommendation.[90]

III. RESPONSE TO THE TESTIMONY OF OPC WITNESS, MURRAY

Q. What is Mr. Murray's recommended ROE for use in this proceeding?

A. Mr. Murray maintained his Direct Testimony recommendation that the Commission set Spire Missouri's authorized ROE at 9.25%, in a range of 8.50% to 9.50%, based on his COE estimates range of 6.5% to 7.5%.[91]

Q. Do you have any concerns with the ROE issues that Mr. Murray addressed in his rebuttal testimony?

A. Staff does not have any major concerns with Mr. Murray's ROE recommendation or his rebuttal testimony about ROE related issues. Mr. Murray's recommended ROE of 9.25% is 12 basis points lower than Staff's 9.37%, and within Staff's reasonable range of 9.12% to 9.62%. Mr. Murray did not address any specific issues regarding Staff's ROE recommendation.[92] Staff agrees with most of Mr. Murray's arguments regarding Mr. D'Ascendis' recommended ROE.

Q. What is Mr. Murray's recommended capital structure for use in this proceeding?

[90] On page 45, D'Ascendis' Rebuttal Testimony.
[91] On page 3, lines 3-6, Murray's Direct Testimony.
[92] On page 2, lines 2-4, Murray's Rebuttal Testimony.

A. Mr. Murray maintained his Direct Testimony recommendation that Spire Inc.'s capital structure consisting of approximately 47.36 percent common equity, 45.35 percent long-term debt, and 7.28 percent short-term debt is the appropriate capital structure for use in setting Spire Missouri's ROR.[93]

Q. What is Staff's concern with Mr. Murray's capital structure recommendation?

A. Staff maintains its concern with Mr. Murray's choice to base his capital structure recommendation on Spire Inc.'s consolidated capital structure, instead of Spire Missouri's. Mr. Murray argued that because Spire Inc., the parent company of Spire Missouri, manages Spire Missouri for purposes of taking advantage of debt capacity afforded by Spire Inc.'s low-risk regulated utility subsidiaries, the appropriate capital structure for Spire Missouri ratemaking should be Spire Inc.'s. Mr. Murray' argument is based on the assumption that Spire Inc.'s capital structure is more cost efficient for purposes of determining a fair and reasonable ROR to charge Missouri ratepayers. However, Mr. Murray' cost efficient approach ignores fairness. Ignoring fairness can cause both ratepayers and Spire Missouri to be worse off.

Q. Do you agree with Mr. Murray that the Commission should use a 'more cost efficient capital structure standard' first in rate making?[94]

A. No, I do not. Before considering cost efficiency, the Commission should first consider the fairness and reasonableness standard. Ignoring fairness at the expense of cost efficiency may only be beneficial to ratepayers in the short-term. In the long-term, a utility may be unable to deliver reliable service if the rates are unfairly low, and the ratepayers will eventually suffer. Staff understands that Mr. Murray's role is to speak for Spire Missouri's ratepayers.

[93] On page 3, Murray's Direct Testimony.
[94] On page 3, lines 8-13, Murray's Rebuttal Testimony.

However, the objective of utility regulation is the provision of adequate service and the establishment of rates sufficient to provide a utility with the opportunity to cover all reasonable costs including a fair return on the capital.[95] Therefore, a more cost efficient capital structure alone would not achieve the just and reasonable standard of ratemaking.

Q. Do you agree with Mr. Murray that Spire Missouri's customers benefit from Spire Inc.'s less costly capital structure as compared to Spire Missouri's capital structure? [96]

A. No, I do not. The actual result of Mr. Murray's less costly capital structure is a higher debt ratio capital structure. It is true that S&P recognizes this directly by assigning Spire Missouri a credit rating that is two notches lower ('A-') than its hypothetical stand-alone credit profile of ('A+').[97] However, Spire Missouri's stand-alone capital structure supports its own credit rating.[98] The corporate credit ratings assigned to Spire Missouri by Moody's is 'A1' while Spire is rated 'Baa2', that is two notches lower.[99] It is financial common sense that a higher debt ratio means a higher financial risk, meaning that the higher the debt ratio, the higher the cost of debt, all other conditions being equal. Therefore, increasing Spire Missouri's debt ratio does not guarantee that Spire Missouri's ratepayers will be better off.[100]

Q. Do you agree with Mr. Murray that the Commission was wrong in the Spire Missouri rate case in 2017 to conclude that Spire Missouri has an "independently determined capital structure."?[101]

[95] On page 5, David C. Parcell, Cost of Capital Manual, Society of Utility and Regulatory Financial Analysts, 2010 Edition.
[96] On page 4, lines 1-7, Murray's Rebuttal Testimony.
[97] S&P Global Market Intelligence, retrieved March 19, 2021 (https://platform.marketintelligence.spglobal.com).
[98] Staff's Data Request No. 0058.
[99] Credit Opinion (April 1, 2021), Moody's Investors Service.
[100] S&P Global Market Intelligence, retrieved March 19, 2021 (https://platform.marketintelligence.spglobal.com).
[101] On page 5, lines 5-6, Murray's Rebuttal Testimony.

A. No, I do not. Staff agrees with the Commission's finding in 2017 Spire rate case about Spire Missouri's capital structure. Mr. Murray argued that Spire Inc.'s goal has been to gradually reduce the amount of holding company debt to deleverage its consolidated capital structure; therefore, it is clear to him that Spire Missouri's debt capacity has not been managed for its own best interest or the best interest of its customers.[102] Staff does not think Mr. Murray's statement is based on factual evidence. Staff understands Mr. Murray's opinion that Spire Inc. is working for its own interest but Staff cannot find anything fundamentally wrong in the financial relationship between Spire Missouri and Spire Inc. that can be considered unusual in a parent-subsidiary relationship. Spire Missouri operates as an independent entity, considering that Spire Missouri's raises its own financing. Spire Inc. has not been the primary source of long-term and short-term debt financing for Spire Missouri and this appears to continue to be the case. Since January 2018, Spire Missouri has not received long-term financing from Spire, Inc. or other Spire subsidiaries.[103]

Q. Do you agree with Mr. Murray that it is inaccurate to make a blanket statement that Spire Missouri's capital structure supports its own bond rating?[104]

A. No, I do not. It is true that Spire Missouri is assigned a credit rating that is two notches lower than that which is supported by its own capital structure, and Moody's also recognizes the constraint placed on Spire Missouri's credit rating due to its affiliation with Spire Inc.'s more leveraged capital structure. However, whatever the nuances Mr. Murray recognized, it does not change the fact that Spire Missouri's capital structure supports its own bond rating.

[102] On page 5, lines 11-14, Murray's Rebuttal Testimony.
[103] Staff's Data Request No. 0112.
[104] On page 6, lines 18-19, Murray's Rebuttal Testimony.

Q. What is Staff's opinion on Mr. Murray's rebuttal testimony concerning other capital structure related issues such as goodwill, mandatory convertible equity units, and efficient frontier for financing?

A. Although those issues would relate to Spire Missouri's ratemaking capital structure to some extent, those issues do not have a material impact on Staff's ratemaking capital structure recommendation for Spire Missouri. What Mr. Murray addressed in his rebuttal testimony regarding those issues is unclear in terms of how those issues impact the decision on appropriate capital structure for Spire Missouri's ratemaking in this proceeding.

Q. What is Staff's overall opinion about Mr. Murray's rebuttal testimony concerning Staff's capital structure?

A. At this time, Staff finds no reason to disagree with the Commission's last decision that Spire Missouri's standalone capital structure be used for ratemaking purposes. Mr. Murray's recommendation is not compatible with typical regulatory practices on when to use a parent company's capital structure instead of a subsidiary's own capital structure for the subsidiary's ratemaking.[105] In addition, it should be noted that, as a test of reasonableness, Spire Missouri's own capital structure is consistent with the capital structure ratios maintained by, or authorized for, other natural gas utilities.

Mr. Murray's recommended common equity ratio of 47.36 percent is much lower than the average of his natural gas proxy group's common equity ratio of approximately 51 percent.[106] Therefore, Staff will maintain the recommendation in this case that Spire Missouri's stand-alone

[105] On pages 40-42, Won's Rebuttal Testimony.
[106] Won's Rebuttal Workpaper.

capital structure represents the actual capital structure used to finance Spire Missouri's respective jurisdictional rate base.

IV. SUMMARY AND CONCLUSIONS

Q. Please summarize the conclusions of your surrebuttal testimony.

A. Mr. D'Ascendis' recommended ROE of 9.95% for Spire Missouri remains unfair and unreasonable despite his changes to his natural gas utility proxy group, and his updating other input values, because of his use of inappropriate procedures and unreasonable input variables to his COE estimation models. Mr. D'Ascendis' misunderstanding of the relationship between authorized ROE and COE values and other erroneous assumptions result in his presenting many inaccurate characterizations in his rebuttal testimony about the rate of return analysis in Staff's COS Report. Staff maintains its recommendation that the reasonable authorized ROE to use in this proceeding is 9.37%, in a reasonable range of 9.12% to 9.62%. Staff is still investigating Spire Missouri's and Spire Inc.'s true-up data to determine if any changes to capital structure and debt cost recommendations through May 31, 2021 are appropriate. Until that time, Staff maintains its recommendation that the appropriate capital structure to use to set Spire Missouri's allowed ROR in this proceeding is Spire Missouri's capital structure consisting of 45.75 percent long-term debt and 54.25 percent common equity, and a 9.37% ROE and 4.00% cost of debt.

Q. Does this conclude your surrebuttal testimony?

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Spire Missouri Inc.'s d/b/a Spire Request for Authority to Implement a General Rate Increase for Natural Gas Service Provided in the Company's Missouri Service Areas	)))))	Case No. GR-2021-0108

AFFIDAVIT OF SEOUNG JOUN WON, PhD

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW SEOUNG JOUN WON, PhD and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Surrebuttal Testimony of Seoung Joun Won, PhD*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

SEOUNG JOUN WON, PhD

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 12th day of July 2021.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: April 04, 2025
Commission Number: 12412070

Notary Public