# Allowed ROEs During Economic Crisis Often Fail The Equal Return For Equivalent Risk Standard

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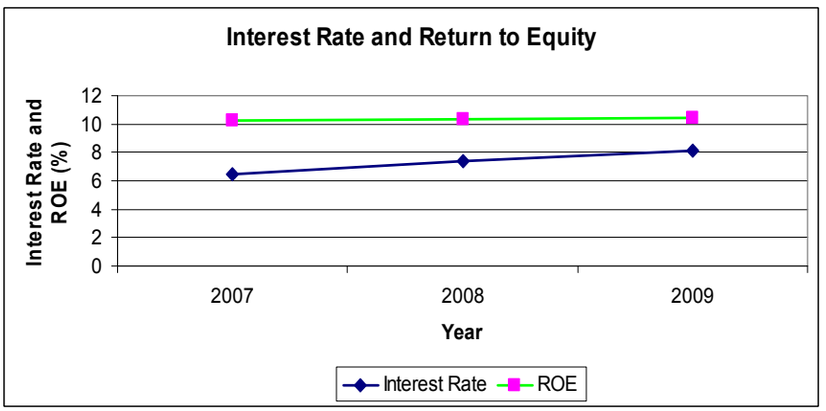
**Introduction**

Responding to the financial crisis and the recession, the Federal Reserve Board has driven short-term interest rates to historically low levels, but, at the same time , corporate bond rates have been increasing. However, as shown in the graph, over the period from 2007 into 2009 simple observation shows little change in the average allowed returns on common equity (ROE) for gas and electric utilities.[1] In fact, during this period, the Baa corporate bond rate increased 1.65% while the average allowed return increased only 0.16%. On its face, this comparison reveals that many recent allowed ROEs may not meet the standard of setting allowed returns equal to returns on investments in securities of equivalent risks; this is the familiar *Hope* and *Bluefield* standard often cited as the principle for setting allowed returns in utility regulation.[2]

The adjacent comparison shows that allowed returns have not kept pace with the competitive long-term bond market rates during the financial and economic crisis, plus this is one part of the *Hope-Bluefield* standard. The other component of the *Hope-Bluefield* standard is adjusting returns for equivalent risk. The relationships between allowed return levels and measures of risk to equity investors will reveal whether risks are prevalent determinants of allowed ROEs.




**Allowed ROEs and Equivalent Risk**

To the extent that we can identify quantitative measures of risk, we can test empirically if and how they are linked to the allowed ROEs. For example, we were able to identify some specific, recognized measures of risk and test statistically whether they were linked to the levels of electric and gas allowed ROEs during the financial crisis and the recession study period. Specifically, we identified quantitative measures of financial risk, business risk and regulatory risk, and we estimated their statistical relationship to the allowed ROEs.

*Financial Risk* to a common stock investor is the uncertainty whether sufficient funds will be available to achieve expected dividends and capital gains after payment of interest on debt and preferred stock dividends. A lower common equity ratio implies that a company has greater obligations to holders of securities that have precedence to revenues; consistent with financial theory, one can expect that the lower the common equity ratio, the greater the financial risk exposure to the common stock holders. Consequently, we tested the hypothesis that during this period utilities' allowed returns were higher for utilities with lower common equity ratios.[3]

*Business Risk* is the exposure of investors' returns to the uncertainties of a company's day-to-day business activities. For electric and gas utility equity investors untimely and uncertain recovery of operating costs are business risks. For example, potential failure to recover fixed costs through volumetric rates is a risk to utility investors. Also, delayed recovery of storm damage costs is a business risk to electric utilities. Because a firm's beta shows its relative market price volatility, we hypothesized that it should be positively related to allowed returns, and at least a partial surrogate measure for business risk.[4]

Larger electric and gas utilities are likely to have broader customer markets as well as more diverse supplier and transportation sources. In addition, larger firms are likely to have a stronger presence in the financial markets and may have a wider recognition and access to the capital markets. This diversity might mitigate business risks, and one could expect that small utilities may receive higher allowed ROEs than large ones to compensate for this risk.[5] Consequently, we tested the hypothesis that on the average smaller utilities received higher al-

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See footnotes at end of text.

lowed ROEs than larger utilities.

*Regulatory Risk* is the uncertainty regarding regulatory decisions that exposes investors to potential failure to achieve anticipated returns. One form of regulatory risk is regulatory lag, or the risk of delay of recovery of incurred costs. This may be nothing more than the elapsed time of a regulatory proceeding. For example, when a utility has the information necessary to support a filing and files a rate case, the elapsed time before approval and the authorization to collect additional revenues is a form of regulatory lag. We used the elapsed time between the filing and order dates as an approximation of regulatory lag.[6] If regulators compensate for the risk of delay, the allowed ROEs will be higher, on the average, the longer the delay.

**The Risk Regressions**

To measure the impact of the risk variables on the allowed ROEs, we estimated the following regression equation:

$$ROE_i = a_0 + a_1 ER_i + a_2 Beta_i + a_3 Cap_i + a_4 Elect_i + a_5 DL_i + e_i \quad (1)$$

where ROE is the allowed rate of return on common equity, ER is a utility's equity ratio, Beta is the *Value Line* beta for a utility, Cap is a utility's market capitalizations, Elect is a dummy variable, taking the value of 1 for elected regulatory authorities and 0 for appointed authorities, and DL is regulatory lag, as measured by the elapsed time from filing to decision. We estimated separate regressions for the gas and electric allowed return decisions during the period of 2007 to early 2009.[7]

| Variables | Electric | Gas |
|---|---|---|
| Constant | 7.935*** | 8.869*** |
| | (18.72) | (16.80) |
| *Financial Risk* | | |
| Equity Ratio | 0.0375*** | 0.0269*** |
| | (4.956) | (3.05) |
| *Regulatory Risk* | | |
| Dec Lag | 0.015** | 0.0046 |
| | (1.97) | (0.26) |
| Elected | -0.113 | -0.1927 |
| | (-1.127) | (-1.61) |
| *Business Risk* | | |
| Beta | 0.489*** | 0.085 |
| | (2.955) | (0.23) |
| Capitalization | 0.0115* | 0.0216 |
| | (1.737) | (1.41) |
| Number of Observations | 101 | 85 |
| Adjusted R Squared | 0.137 | 0.134 |

Note: t-values are in parentheses. ***, **, * denote significance at 1%, 5% and 10% levels, respectively.

*Table 1. Risks and Allowed ROEs: A Regression Analysis*

Significantly, as shown in Table 1, for the gas distribution utilities allowed ROE decisions, none of the financial,[8] business or regulatory[9] risk variables that we measure was statistically significant with the hypothesized sign. This means that we could not statistically link any of these risk variables to the allowed ROEs set in the local gas distribution decisions during this recent market crisis and recession period. These measureable risk variables did not account for the differentials in allowed ROEs among gas distribution utilities, which one would expect according to the *Hope-Bluefield* standard.

In the case of the electric utility regression, as shown in the Table, we were able to determine only a limited link statistically, as hypothesized, between the differentials in allowed returns and the quantified measures of risk. Again, the financial risk variable did not have the hypothesized sign. The electric utilities with low common equity ratios generally did not receive higher allowed ROEs. As in the case of the gas distribution utilities, the allowed ROEs generally did not recognize any added business risk of small electric utilities. Contrary to the gas distribution regression, we did determine, however, that the level of allowed ROEs was statistically linked to the utilities' market betas, here representing a measure of business risk.[10] As to the regulatory variables, similar to the gas distribution utilities case, whether the regulators were elected or appointed did not influence the level of allowed ROEs during this period. However, the regulators did appear to compensate the electric utilities somewhat for risks associated with the regulatory lag of a rate proceeding.[11]

**Conclusions**

In this analysis, we found that, in seeming conflict with the frequently cited *Hope-Bluefield* objectives, the recent allowed ROEs have not increased as long-term market interest rates increased during the period of the financial crisis and economic recession of 2007-09. We also determined statistically, in apparent conflict with financial theory in some instances, that measureable variations in risk variables

did not account for the differentials in allowed ROEs in the gas distribution rate decisions. Although we determined some links between the ROE differentials in the electric utility decisions and measureable risk variables, they were relatively weak. Over all, the empirical evidence is quite strong that the allowed ROEs during the period of the financial crisis and the economic recession in many instances have deviated from the principles of the often cited *Hope-Bluefield* standard.

***Footnotes***

[1] For this comparison we identified and studied the allowed returns in 101 electric utility and 85 local gas distribution utility rate cases as reported by the Regulatory Research Associates over the period from 2007 and 2009.

[2] The frequently cited sources of this equivalent risk standard are two decisions by the United States Supreme Court: *Bluefield Water Works and Improvement Company vs. Public Service Commission, 262 U.S. 679 (1923) ("Bluefield")*, and the *Federal Power Commission vs. Hope Natural Gas Company, 320 U.S. 591 (1944) ("Hope").*

[3] Although bond rating agencies describe other factors that influence their ratings in addition to the common equity ratio, Murry, Zhu and Knapp (2008) found bond ratings and equity ratios to be substitute predictors of allowed returns for gas and electric utilities.

[4] Regulatory authorities commonly accept the beta as a measure of risk when they adopt the Capital Asset Pricing Model as a method to measure the cost of common equity:

$ROE_i = R^f + b_i(R^m - R^f) + e$, where $b_i$ is the beta of firm i, $R^f$ is the risk-free rate, and $R^m$ is the market return. For most utilities, beta is positive and less than 1; therefore, the higher the beta, the higher the estimated return.

[5] See Ibbotson (2008): "One of the most remarkable discoveries of modern finance is that of a relationship between firm size and return. The relationship cuts across the entire size spectrum but is most evident among smaller companies, which have higher returns on average than large ones."

[6] Investor uncertainties associated with regulatory treatments of such factors as fuel and gas cost recovery, depreciation of invested capital, revenue decoupling and rate design are surely important, but they do not lend themselves readily to cross-sectional empirical measurement.

[7] We corrected for heteroscadasticity by using the ROBUSTERROR option in the RATS statistical package.

[8] Our findings in this study showing that recent allowed returns were not higher from utilities with lower common equity ratio differs from the findings in some earlier studies of allowed ROEs and financial risk. Those studies determined that allowed returns were generally consistent with financial theory. See, for example, Joskow (1972) and Hagerman and Ratchford (1978), Studies in recent years, similar to the present study, failed to find a link between allowed ROEs and financial risk. See Fan and Cowing (1994) and Murry, Zhu and Knapp (2008)

[9] For related studies of the effects of regulatory procedures on allowed ROEs see Fitzpatrick, Dennis B., John W. Settle, and Glenn H. Petry. (1988) and Quest, Troy, (2007).

[10] The beta variable in the electric utility regression had the hypothesized positive sign and was statistically significant at the .01 level.

[11] The regulatory lag variable in the electric utility regression ha)d the hypothesized positive sign and was statistically significant at the .05 level.

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