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*16 RETHINKING ROE

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Rational estimates lead to reasonable valuations.

When setting returns on equity, regulators might be doing the right thing, but for the wrong reason.

The U.S. Supreme Court in 1923 established that regulators should set rates of return that sustain investor confidence in the integrity of the utility, and that enable the utility to maintain its credit standing so it can raise the funds necessary to provide service to its customers. [FN1] Regulators seem to be meeting these pragmatic requirements. The problem arises from the manner in which regulators arrive at the authorized returns.

This isn't a problem in the rate case *per se*, as the Court has also said that the end result of the process is what's important, and not the method used to set rates of return. [FN2] However, consequences of a faulty process manifest themselves elsewhere, and with critical impact. An incorrect cost of equity estimate makes it impossible to derive accurate financial valuation estimates.

Failure to understand the actual situation in this regard could cause executives and regulators to make serious valuation errors when analyzing utility resources. Those errors could cost utility investors billions of dollars.

Fallacy of Common Practice

Many rate-of-return witnesses suggest that in principle a utility's cost of equity (k) can be estimated by the following formula, or by a multi-stage variant of it:

$k = dividend\ yield + nominal\ GDP\ growth\ rate\ forecast.$

The typical utility dividend yield today is about 4.5 percent; long-range annual GDP growth forecasts currently lie in the 5 to 6 percent range. Adding the two components produces a utility cost of equity estimate of about 10 percent, and regulatory decisions match that model result quite closely; the industry's median authorized return on equity in 2010 was 10.2 percent. [FN3] Who could argue with such a straightforward process, especially since it's so widely used?

However, the fact that this is a popular procedure isn't compelling. Appeal to common practice is a logical fallacy, one that offers no support for the proposition at hand. As logic scholars teach:

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> In a sound argument, the action must be justified on its own merits, and what others are doing, and the conclusions they may have reached, are of little or no consequence. [FN4]

If one understands the true relationship between GDP growth and utility growth potential, and if one embraces the essential nature of the cost of equity concept, a 10 percent utility cost of equity estimate is too high to be reasonable. No rational investor would expect utility growth to come close to GDP growth over the long run, and therefore the commonly used model is flawed.

Furthermore, corporate finance officers suggest that the cost of equity for the typical U.S. corporation today is only about 8 percent. The finance literature provides similar results. If that's the case, again utility costs of equity can't be 10 percent.

A 10 percent figure nevertheless is likely in the range of reasonableness for the return-on-equity measure, which is the variable that matters in the rate case. Under proper regulation, one that replicates the results observed in competitive markets, the return on equity should lie above the cost of equity. The key is to note this distinction between the return on equity and the cost of equity, rather than treating them as synonymous.

GDP and the Shrinking Utility

Of the arguments in support of the link between GDP growth and utility growth, the most-puzzling rests on an ill-defined consequence—*i.e.*, if utilities don't keep pace with overall economic growth, they'll become a shrinking segment of the economy in a relative sense. As the U.S. continues to evolve from an energy-intensive manufacturing-based economy to one driven more by intellectual capital, there's no reason the utility industry couldn't become a less significant part of the economic pie. To suggest that this result couldn't occur represents wishful thinking, not economic analysis.

This argument also confuses aggregate growth with per-share growth. As an example, Southern Company's financial history demonstrates this effect. From 1995 to 2010, the utility's annual aggregate dividend payments grew at 4.2 percent per year, while nominal GDP grew at 4.6 percent per year. Yet Southern Company didn't come close to matching GDP growth in the sense that matters.

*18 Per-share growth drives investor return expectations. While the numerator of the dividend-per-share metric was increasing at 4.2 percent per year, Southern Company was issuing millions of shares of new stock, causing the denominator of that measure to increase at 1.6 percent per year. This produced dividend-per-share growth of only 2.6 percent per year, noticeably below the annual GDP growth rate over that period.

To suggest that utilities can grow at the rate of GDP expansion fails to recognize the very nature of GDP growth. The economy sets a vicious pace, one that is quite difficult for most firms to match. The typical S&P 500 company doesn't keep pace with GDP growth. If those companies can't match the GDP growth rate, the slow-growing utility industry has no chance of doing so.

The GDP growth rate isn't the long-run average growth rate of firms in the economy—instead it's the maximum growth rate for even the fastest-growing firm. Most firms won't keep up with GDP growth over the long run. This is especially true for utilities. As stated in the journal *Applied Corporate Finance*:

> In the long run, a firm cannot grow at a rate significantly greater than the growth rate of the economy ... There are no logical or mathematical limits on the downside ... Because there

is no economic basis for arguing that this cannot happen, there is no reason why we cannot use a stable growth rate much lower than the nominal growth rate in the economy. [FN5]

In the last half of the 20th century, nominal GDP grew at about 8 percent per year. Dividends per share for the S&P 500 Index grew at only 6 percent per year. Dividends per share for Moody's Electric Utility stock index grew even more slowly at less than 4 percent per year. This suggests that utilities can be expected to grow not at the GDP growth rate, but at about half that rate on an annual basis.

Much of the future growth of the economy will come from small emerging firms-most of which aren't included in stock indices. As analysts Arnott and Bernstein write in the *Financial Analysts Journal*:

> Can't shareholders expect to participate in the growth of the economy? No. Shareholders can expect to participate only in the growth of the enterprises they are investing in. An important engine for economic growth is the creation of new enterprises. The investor in today's enterprises does not own tomorrow's new enterprises. [FN6]

Many of the firms that will drive GDP growth in five, 10, or 20 years and beyond haven't yet been formed. They, not the existing firms, will be the real growth engines of the future.

GDP Growth and Investor Returns

When one considers the true relationship between GDP growth and long-run stock returns, the results are sobering. The fundamentals are set forth in a *Financial Analysts Journal* article, "Economic Growth and Equity Investing":

> The long-run performance of equity investments is fundamentally linked to growth in earnings. Earnings growth, in turn, depends on growth in real GDP. This article demonstrates that both theoretical research and empirical research in development economics suggest relatively strict limits on future growth. In particular, real GDP growth in excess of 3 percent in the long run is highly unlikely in the developed world. In light of ongoing dilution in earnings per share, this finding implies that investors should anticipate real returns on U.S. common stocks to average no more than about 4 to 5 percent in real terms. [FN7]

If inflation is expected to be about 3 percent going forward, then long-run nominal stock returns will be about 7 to 8 percent for stocks in general.

The evidence that long-run stock returns are expected to be in the single digits pervades not only the academic finance literature and corporate finance departments, but also the popular financial press. With the dividend yield on the S&P 500 today just under 2 percent, and with GDP growth forecasted to be in the 5 to 6 percent annual range, an expected long-run total stock return as high as 10 percent per year is simply out of the question for the typical firm, and especially for utilities. As economist Burton Malkiel predicts:

> The returns for both stocks and bonds will undoubtedly be lower than the returns realized in the 1980s and 1990s. The most likely estimates we can make for the stock market when dividend yields are in the vicinity of 2 percent is that the total rate of return over the longer run will be in the upper single digits. [FN8]

Reflecting realistic prospects relative to GDP growth potential would put long-run utility growth at about 2.8 percent per year—half the projected GDP growth rate—and when combined with the typical 4.5 percent dividend yield would produce an expected utility stock return of only 7.3 percent. This estimate is in keeping with not only the finance literature, but more importantly for those with a practical bent, with over *19 10,000 survey responses collected over the past decade from corporate chief financial officers (CFOs).

Current estimates from the CFOs suggest that the cost of equity for the typical firm today is about 8 percent. [FN9] Using the CFOs' cost of equity estimate allows for accurate valuations of utility stocks. Using regulators' authorized returns on equity as proxies for the utility cost of equity does not. That goes to the heart of the matter discussed.

Some rate-of-return witnesses acknowledge that while forward-looking investor returns may be lower than they have been in the past, they argue that those returns understate the utility's cost of equity. That suggestion reveals a fundamental lack of understanding of the cost-of-equity concept. As Roger Morin writes in the *New Regulatory Finance*:

> The cost of capital to the utility is synonymous with the investors' return ... Return and cost are two sides of the same coin. The return to the investor is the cost to the utility. [FN10]

If the investors' expected total return is 8 percent, then by definition the utility's cost of equity is also 8 percent. That doesn't mean, however, that the fair return on equity is 8 percent. That's where the proper distinction lies. Unfortunately, most regulators aren't making that critically important distinction.

ROE and the Cost of Equity

In contrast to the prescription that the investors' expected return and the cost of equity are one and the same, finance principles make it clear that a firm's return on equity and its cost of equity are fundamentally distinct variables. According to a 1970 article:

> Altogether distinct units are employed for measuring rate of return: 1) book rate units [return on equity] and 2) discounted cash flow units [cost of equity]. Rarely will the two produce the same result, and the use of one measure as a surrogate for the other may prove highly misleading. [FN11]

FIG. 1 AUTHORIZED ROE VS. COST OF EQUITY

TABULAR OR GRAPHIC MATERIAL SET FORTH AT THIS POINT IS NOT DISPLAYABLE

Financial researchers discovered long ago that in real markets returns on equity tend to settle in at industry averages noticeably above the cost of equity. Therefore, to value firms accurately, one must assume that the long-run return on equity will exceed the cost of equity indefinitely—*i.e.*, that the firm will earn excess returns over the long run. As economist Aswath Damodaran states in a 2001 text:

> Some analysts believe that the only assumption sustainable in stable growth is a zero excess return assumption; the return on capital is set equal to the cost of capital. Although we agree with this view in principle, it is difficult to assume in practice that all investments, including existing assets, will suddenly lose capacity to earn excess returns. Since entire industries may earn excess returns over long peri-

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ods, we believe that assuming a firm's return on capital will move toward its industry average yields a more reasonable estimate of value. [FN12]

The *Value Line Investment Survey* projects that over the next three to five years the companies that comprise the Dow Jones Industrial Average (DJIA) will produce a median return on equity of 18.8 percent. There is no evidence to suggest that these returns will decline anytime soon. Nor is there any credible evidence to suggest that the cost of equity for these firms lies anywhere near that level.

Combining the DJIA companies' current dividend yields with *Value Line's* projected three-to-five-year dividend growth rates produces a cost of equity estimate for these firms of 8.7 percent, which is close the CFOs' estimate. This is about 1,000 basis points below the return on equity those firms will likely earn over the next several years.

Regulatory Policy

In a dynamic economy, the notion that regulators should set utility returns on equity at the cost of equity lacks a solid economic foundation. [FN13] Regulators *20 who set returns in this fashion would leave utility executives in the economic doldrums, with no way of making real progress. As Berkeley Prof. Kenneth Train wrote:

> Suppose instead that the regulator sets the fair rate of return equal to the cost of capital ... [T]he firm would earn the same profit whether it increased or decreased output, used an efficient or inefficient input mix, and wasted inputs or not. In fact, the firm would make the same profit if it closed down and sold off its capital. [FN14]

Neither utility executives nor regulators should find that outcome to be appropriate. A more reasonable standard, and one that regulators appear to have adopted implicitly, is to set the return on equity (*e.g.*, 10.2 percent) above the cost of equity (*e.g.*, 7.3 percent). This parallels the qualitative relationship between rates of return and costs of equity as observed in competitive markets where the typical firm earns returns on equity noticeably in excess of that cost rate. According to Roger Morin:

> If regulation is a substitute for competition, and if the cost of capital is to play the same role in the utility industry as in unregulated industries, then the allowed rate of return should be set in excess of the cost of capital. [FN15]

This is much more than just an intellectually challenging thought. Failure to recognize this result leads to problems not in the rate case, but outside it. Using authorized utility returns on equity as proxies for the cost of equity will lead to massive valuation errors.

Cost of Equity in Valuation

If a utility is in steady-state growth mode, one can use the following formula to estimate the per-share equity value of the company. [FN16]

$$P = BVxROEx(1 - b)/k - bxROE$$

In this equation, P is the stock price; BV is the book value per share; ROE is the expected return on equity; b is the earnings retention ratio (*i.e.*, the proportion of earnings retained for reinvestment); and k is the cost of equity. Consolidated Edison serves as the example utility. This company is a good choice in this regard, as it is in a stable-growth position and its regulator, the New York Public Service Commission, follows consistent rate-making practices from year to year.

Substituting the data for this company for book value, return on equity, and earnings retention as provided in the *Value Line Investment Survey*, and using the CFO cost of equity estimate of 8 percent as a proxy for the utility's cost of equity yields the following value estimate.

$$P = \$37.93 \times 0.095 \times (1 - 0.37)/0.080 - 0.37 \times 0.095 = \$50.62$$

This result is within 4 percent of Con Ed's actual stock price of $52.56 per share (June 2011). Con Ed has 293 million shares of common stock outstanding. This estimate then suggests that the utility's equity market capitalization is $14.7 billion. This is close to its actual capitalization value of $15.2 billion.

The CFOs' cost of equity estimate leads to valuation estimates consistent with financial reality. That shouldn't be surprising, considering the CFOs' substantial knowledge of financial markets.

Rather than using the CFO cost of equity estimate of 8 percent, one could instead use the average authorized utility return on equity of 10.2 percent as the proxy for the utility's cost of equity.

$$P = \$37.93 \times 0.095 \times (1 - 0.37)/0.102 - 0.37 \times 0.095 = \$33.96$$

This valuation estimate is about 35 percent below Con Ed's actual stock price. It suggests that rather than trading at a significant premium to book value *21 as Con Ed does today, the stock should be trading at a noticeable discount to that benchmark. It also suggests that on an aggregate basis Con Ed's equity market capitalization should be only $10.0 billion, or about $5 billion short of the actual market value.

This analysis demonstrates the magnitude of the errors one could make by using the regulators' authorized return on equity as a cost-of-equity estimate. The problem isn't that those returns are too high to be reasonable returns on equity, but that they don't reflect the utilities' costs of equity, which is a different variable.

If regulators or utility executives make the mistake of using the typical authorized return on equity as a proxy for a utility's cost of equity, they will truly make billion-dollar valuation errors. This sort of error will carry over to valuations of individual resources as well. Those who don't have a solid grasp of the cost of equity concept will be at the economic mercy of those who understand its true nature and its likely numeric value.

Setting ROE

The focus in this analysis has been on proper estimates of the cost of equity, and the implications of using improper estimates of that cost rate. It also stresses that the authorized return on equity should lie above the cost of equity.

But how does one estimate the return on equity? Economic theory provides little guidance here. The directive is more pragmatic. Regulators should look for guidance from the courts, not financial economics. They should set the return on equity in such a way that it enables the utility to provide reliable service at reasonable

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rates. The adjectives "reliable" and "reasonable" are subjective terms. So is "fair." Regulators must set fair returns. The cost of equity estimate provides the lower bound. Selecting the fair return on equity is a judgment call, not a modeling exercise.

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