

INNOVATION AND REWARD:

How cost of capital regulation fails to deliver benchmark returns

Price regulated industries are commonly allowed to recover a benchmark return on invested capital. Over time, these regulated returns may be changed to remain in line with a benchmark opportunity cost of capital. This introduces a disconnect between the returns observed for a regulated entity and non-regulated companies of similar risk.

The reason is that non-regulated companies are expected to generate returns on their market value (which is affected by the cost of capital) whereas a regulated company is allowed a return on its book value (which is not affected by the cost of capital). This denies regulated entities the value of the capital gains otherwise associated with falling costs of capital, such as after the resolution of initial uncertainty associated with market entry or innovation.

In this article, Lau Nilausen, Senior Director at FTI, discusses how regulated companies may be consistently under-rewarded for taking on risks associated with market entry or innovation.

Exploring the disconnect

Investors can choose between different assets with different levels of risk. To attract or justify reinvesting capital, companies must therefore offer competitive returns to investors. On this basis, companies face a cost of capital equal to their investors' expected alternative return (or opportunity cost).

This principle is generally accepted in finance theory whereby the value of uncertain future cash flows can be determined by discounting these with their cost of capital.¹ It is also reflected in regulated prices through the inclusion of the cost of capital in the cost base that regulated entities are allowed to recover.²

¹ Copeland/Weston, Financial Theory and Corporate Policy, Third Edition, May 1992, page 22.

² See e.g. Directive 2002/19/EC of 7 March 2002, Article 13(1).

Whereas the principle is the same, the practical application of this principle is different in these two contexts. The implications of these differences are explored as follows:

- first, the way in which the cost of capital affects the valuation of financial assets is summarised;
- second, the way in which the cost of capital is accounted for in regulated industries is summarised;
- third, the disconnect between the cost of capital and market returns for regulated versus non-regulated entities is illustrated;
- fourth, the source of the disconnect between market return and cost of capital is discussed;
- fifth, the implications for investing in regulated companies are discussed; and
- finally, implications for regulation are discussed.

A very simple example is used to illustrate the issue. This example is based on a number of simplifying assumptions.³ These simplifications are made to isolate the effect of this specific issue related to the cost of capital. Relaxing these assumptions would not change the conclusion.



A regulated asset and a financial asset with similar risk may not provide similar returns.



1. Cost of capital in the valuation of financial assets

By buying an asset or a share of an asset, investors exchange a cash outflow at the time of the purchase for the expected future cash flows that the asset may generate through dividends or a future sale. The cost of capital determines the current market value of these future cash flows. In its simplest form, this is captured in the Gordon growth model as follows:⁴

$$S = \text{Div}/(k-g)$$

Where:

- S is the share price;
- Div is the expected dividend one year into the future;
- k is the opportunity cost of capital; and
- g is the expected annual dividend growth.

In a simple example, an investor will be willing to pay a maximum of 100 for an investment expected to pay out a dividend of 10 every year in perpetuity (i.e. zero growth) with a cost of capital of 10%.

For a given expected future cash flow, the cost of capital hence determines the value of the asset.

2. Regulated recovery of the cost of capital

In the case of price regulation, the value of the return on capital is typically calculated as follows:

$$C = \text{RAV} \cdot k$$

Where:

- C is the monetary cost of capital;
- RAV is the regulatory asset value; and
- k is the opportunity cost of capital, as above.

A company investing 100 and with a cost of capital of 10% will hence be allowed earn 10 to reward its capital.

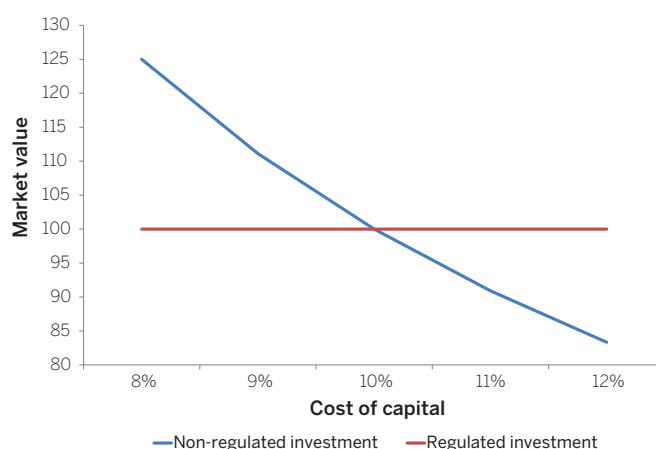
For a given level of investment, the cost of capital hence determines the expected cash flow.

Whereas investors in a non-regulated entity expect to receive the cost of capital on the market value of the asset, investors in a regulated company expect a similar return but on the book value of the asset.

Reassuringly, the two examples together illustrate that an investment of 100 would be allowed a return sufficient to result in a market value of 100 for that investment. However, this assumes a constant cost of capital. This assumption is relaxed below.

3. The cost of capital and market returns disconnect

Over time, the opportunity cost of capital may change and regulated returns updated accordingly. Based on the examples above, the figure below illustrates how the market value of a non-regulated investment and a regulated investment with similar risk would respond to changes in the cost of capital.



³ Simplifying assumptions include zero company growth, reinvestments equal to depreciation, the cost of capital is accurately measured, the regulatory asset base is measured at depreciated historical cost, the company has no debt, and regulated tariffs are re-set continuously in response to changes in the cost of capital.

⁴ Copeland/Weston, Financial Theory and Corporate Policy, Third Edition, May 1992, page 21.

The market value of the investment in the regulated asset is not sensitive to changes in the cost of capital because such changes will be reflected in future regulated cash flows. However, for the unregulated company there is no such direct link between cash flows and cost of capital. A reduction in the cost of capital therefore leads to capital gains.

The example illustrates that even if the cost of capital is correctly determined at the time of investment, investors should be aware that a regulated asset and a financial asset with similar risk may not provide similar returns. During periods of falling costs of capital, an investor will be better off investing in a non-regulated asset to reap the associated capital gains. Similarly, a regulated company would create better value for its shareholders by paying out dividends (that shareholders then can invest elsewhere) rather than reinvesting in the company during such periods. The opposite applies during periods of increasing costs of capital.



There is significant scope for regulated investments to either over or underperform otherwise similar non-regulated investments.



4. The source of the disconnect

The divergence between book value and market value illustrated above derives from the assumption that the cash flow from a non-regulated company is less affected by the cost of capital than is the case for a regulated company. One may challenge this assumption on the basis that this implies that companies would be expected to consistently exceed or fail to recover their cost of capital. This should either attract entry that would compete away excess returns or induce exit until profitability has been restored, respectively.

Such a challenge would at most limit rather than eliminate the effect described above. Regulated industries typically operate significant sunk investments with long time horizons. This should therefore also apply to the benchmark used to determine the cost of capital.

If returns exceed the cost of capital, such companies are not exposed to hit-and-run entry.⁵ If returns on historical investments are below the cost of capital, such companies can stay cash flow positive and may therefore not exit for long periods. Returns would therefore need to deviate from the cost of capital to a non-trivial degree for an extended period of time before resulting in entry or exit. However, even minor

changes in the cost of capital can significantly impact the value of an existing company operating with a long time horizon. This suggests that there is significant scope for regulated investments to either over or underperform otherwise similar non-regulated investments.



This will leave companies subject to regulation consistently under-rewarded for market entry and innovation.



5. Implications for investing in regulated companies

As illustrated above, regulated companies can create value for their shareholders by reducing or delaying investments to free up cash for dividends when anticipating a lower future cost of capital. In theory, providing a market benchmark return on investments will therefore not be sufficient to incentivize the regulated company to keep investing under such circumstances. To understand the potential implications of this, it is helpful to distinguish between 1) general changes in the cost of capital, and 2) changes related to the specific investment.

General changes in the cost of capital may happen as a consequence of changes in the risk free rate. However, forecasting the timing and extent of such changes inherently involves a degree of speculation. The associated uncertainty likely reduces the extent to which such changes actually affect company investment decisions. The exception may be periods of either historically high or low interest rates. For example, the currently low interest rates leave more scope for future rate increases than decreases. That may make investments in regulated assets more attractive due to the implied protection against the impact of potential future increases in the cost of capital discussed above.

Investment specific cost of capital changes represent different challenges. For example, in scenarios of market entry (whether into existing market or with a previously unknown type of product) companies face predictably falling costs of capital as initial uncertainty about whether the initiative will be successful ultimately is resolved. This will leave companies subject to regulation consistently under-rewarded for market entry and innovation, such as in fibre broadband in telecommunication markets. A failure by regulators to take this into account may therefore discourage regulated companies from innovating or undertaking risky investments.

⁵ The associated capital investments cannot be implemented quickly at entry. Moreover, the long life of the assets implies that entrants either are long term committed to the market or face the risk of having to recover the residual book value of the assets upon exit.

6. Implications for regulation

To understand the potential implications of this for regulators, it is again helpful to distinguish between 1) general changes in the cost of capital, and 2) changes related to the specific investment.

As noted above, forecasting the timing and extent of future general changes in the cost of capital inherently involves a degree of speculation. This would leave any regulatory decision based on such forecasts susceptible to error and difficult to defend if challenged. Moreover, regulation based on such speculation would have no obvious justification if cost of capital forecasts are so uncertain that the regulated entity is unlikely to be able to actually act on these. The situation is different for investment specific cost of capital changes. A regulator could address these by:

- pre-committing to allowing a range of future returns consistent commercial risk and reward incentives. The UK “cap and floor” regulation for electricity interconnectors represents an example of this;⁶ or

- regulating wholesale prices to ensure a sufficient downstream margin for competitors rather than by reference to wholesale costs. This approach has support in the European Commission’s recommendation on regulation for fibre broadband wholesale access prices.⁷

Regulators hence have tools available to provide investment returns that more closely replicate purely commercial market incentives than traditional cost of capital based regulation. However, these tools are currently applied in limited contexts, in part because of regulators’ preference for traditional cost of capital based regulation.⁸ For the reasons set out above, such regulatory preferences may be detrimental to investment incentives.

⁶ Ofgem, Decision to roll out a cap and floor regime to near-term electricity interconnectors, 6 August 2014.

⁷ 2013/466/EU of 11 September 2013, page 19, paragraph 49 et seq.

⁸ See e.g. C(2013) 5761, 11.9.2013, page 7. “Cost recovery is a key principle in a costing methodology. It ensures that operators can cover costs that are efficiently incurred and receive an appropriate return on invested capital” and “The bottom-up long-run incremental costs plus (BU LRIC+) costing methodology best meets these objectives for setting prices of the regulated wholesale access services”.

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