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# Economic perspectives

## Fundamental flaws in the current cost regulatory capital value method of utility pricing

Jo Armstrong

### Introduction

Jim Cuthbert and Margaret Cuthbert's most recent analysis of the UK's utility businesses (see QEC Vol 31 No 3) seeks to challenge the fundamental price setting methodology adopted by utility regulators. The basis of the challenge arises from an estimate of the size of the apparent super normal profits being made by utility companies. From this they conclude that the resultant equity return is too high and so leaves customers paying prices that are too high for the services provided<sup>1</sup>.

The theoretical underpinnings of their analysis cannot be faulted in general terms; the net present value (NPV) criterion for any investment is satisfied if revenues received are greater or equal to the interest cost on a company's outstanding debt plus historic depreciation (assuming the company is funded 100% from debt). The Cuthberts argue that super normal profits are being generated because an element of revenue is based on an inflated depreciation charge rather than on historic cost depreciation, with the latter being sufficient to meet the simple NPV investment test.

In this response I outline a number of reasons to challenge the notion that super normal profits are actually being generated within the UK water sector and so disagree that there is a need for fundamental change to the current price setting approach.

### 1. Investment cycle

The Cuthberts' analysis is based on the assumption that utilities undertake annual investment programmes that are constant in real terms, so operating at some form of steady-state. It is hard to argue firms in the UK water sector are close to a steady state investment position given the size of the investment programmes currently facing them. For example, in the next 4 years Scottish Water is forecast to spend £2.45 billion (outturn prices)<sup>2</sup> on capital investment, averaging over £610 million pa. This compares to a total investment for the 4 years 2002-06 of £1.8 billion (outturn prices) or just over £450 million pa<sup>3</sup>. Rather than facing an investment challenge that has now reached a steady-state, Scottish Water faces a large and growing investment commitment.

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Should it be argued that this high level of investment is actually the norm and will therefore be a “steady-state” for the foreseeable future, the Cuthberts’ simple model rule is still open to challenge. A large investment commitment brings with it considerable delivery risk. For example, should the cost of the investment programme rise by only 10%, Scottish Water would need to raise an additional £245 million to fund its programme, as it would have no reserves to draw on under the Cuthberts’ proposed approach. To put this into context, an additional £245 million equates to 1.4 times the current annual debt support that is available from the Scottish Executive. It is not clear that the Cuthberts’ simple model allows for a risk premium to cover a wide variety of risks such as delivery risk. If, however, their model assumptions were relaxed to allow for a risk premium then this reduces or even eliminates the estimate of potential super normal profits.

**2. Ability to fund the investment programme** The current price capping mechanism, developed by the economic regulators, sets prices that reflect both the depreciation cost of the non-infrastructure asset base as well as the cost of additions to the infrastructure. Whilst this approach ensures total revenues will be adequate over the life of an asset, it does not necessarily ensure cash required in any one year to procure new equipment is equal to the revenues accruing in that year. Scottish Water’s investment programme between 2006-10 is forecast to be around £2.45 billion (outturn prices). The Scottish economic regulator’s (the Water Industry Commission for Scotland or the WICS) allowance for depreciation and infrastructure renewals over the same period amounts to around £1.25 billion<sup>4</sup> (outturn prices). This leaves Scottish Water with a cash shortfall of £1.2 billion in this 4-year period, ie, its forecast revenues will not be sufficient to cover its capital investment programme. A pricing mechanism that does not permit the generation of a cash buffer leaves Scottish Water facing the need to raise more debt (which is limited to whatever the Scottish Executive is prepared or able to lend), increase charges (thus breaching Ministerial targets), or delay investment (which would have a detrimental impact on the efficiency of the Scottish economy).

A price-capping mechanism that passes the Cutberts’ simple NPV test is therefore a necessary but not sufficient condition to ensure investment opportunities are fundable. Any price capping methodology must be sufficiently flexible to ensure a large investment programme undertaken over many years can be funded and that there is no cashflow mismatch, assuming management is operating efficiently.

### 3. Likelihood of undertaking inappropriate investment

The Cuthberts argue that the current price setting mechanism provides incentives for management to enter into perverse investment decisions leaving customers paying more than is necessary for their water services.

Prices will increase once capital investment is completed via an increase in the return to equity. The risks the Cuthberts see is that with such an outcome management will be encouraged to undertake unnecessary investment knowing prices will rise to pay for it. Whilst it is possible to imagine some investment could be undertaken simply to boost overall returns, there are substantial checks within the system that would suggest the likelihood of such action is low or nil.

The WICS and OFWAT (the economic regulator for English and Welsh water companies) set tough output targets for the water utilities in the UK. Any attempt to undertake investment that simply targets a higher return on capital with no link to achieving output targets would seem counterproductive. Inefficiencies will ultimately show up in annual returns damaging reputational risk and leaving the guilty company open to financial penalties.

Failing this sanction, the regulator could limit the amount of the investment that is to be added to the asset base. Indeed, in its recent price review in Scotland the WICS made it clear they would only permit efficient investment to be added.

*“Providing capital expenditure has been justifiably incurred in order to provide services to customers, then it is reasonable that customers should remunerate this investment in the RCV [regulatory capital value]. ..... In the Strategic Review of Charges we have set the level of efficient new investment and the appropriate depreciation charge. We would adjust the RCV before the next regulatory control period to reflect any extra or inefficient investment.”<sup>5</sup>*

If the RCV is not increased regulated businesses face longer-term problems. They would have insufficient revenues to carryout their investment obligations leaving them with the problem of needing additional equity or increases in borrowings. On either account this would most likely lead to an increase in their debt costs and/or a reduction in the return on equity.

Whilst this system of checks and balances may not stop maverick management in the short term, the long-term nature of the regulatory and funding arrangements that characterises the industry will limit any serious or long-term tendencies to support inefficient investment. Critical to the success of this current system is the ability and willingness of the economic regulator to set appropriately incentivised targets combined with suitable sanctions should management operate inappropriately.

### 4. Indexation of capital base

The current price capping formula allows the RCV to be kept constant in real prices, ie, it is increased by inflation. This results in the depreciation charge in the pricing mechanism being based on a current cost value which ensures

consumer charges rise steadily with inflation over the asset life and not ratchet-up as the cost base rises following additions to capital stock.

The Cuthberts favour an alternative approach whereby the RCV is valued at its historic cost.<sup>6</sup> This means a lower depreciation charge is applied so lowering customer charges in the short-term, *ceteris paribus*. However, new equipment ultimately replaces broken or fully depreciated assets and the RCV base will then be re-valued on a current price base. Under an historic cost basis consumers face the possibility of substantial increases in prices should the cost base rise substantially. It is not self evident that the Cuthberts' approach is necessarily fairer to the consumer as some may prefer price certainty which gradual upward movement offers compared to irregular increases reflecting an erratically revalued cost base.

The Cuthberts' approach would have the potential to limit dividend distributions<sup>7</sup>, though even that cannot be guaranteed. A potentially more effective way of limiting the distribution of dividends is through the need for management to meet strict financial ratios set by funders (or by the regulator in the case of Scottish Water). These ratios would be set relative to whether the depreciation charge was on an historic or current cost basis. Before a dividend could be paid out management would have to reach a higher minimum level for all financial ratios if the forecast revenue stream is based on a current and not an historic cost basis.

## 5. Sufficient returns to equity

Prices are also a function of the returns required by equity as the price cap mechanism allows investors to be rewarded for their capital at risk. The Cuthberts argue strongly that the rate of return received by water companies is too high and that consumers are not being adequately compensated for their "hidden" contribution namely the cash buffer. Far from being "hidden", the cash buffer generated by the current pricing approach will have been explicitly taken into account by those who injected equity to help them decide how much was sensible to invest given the forecast level of return. To see the cash buffer as not being part of the equity calculation could lead to insufficient third party equity being made available with the knock-on effect of limiting the amount of capital investment that might be possible.

It would be hard to defend the dividend distribution policy of many in the industry in the years immediately after privatisation. With little or no precedence in how to launch and regulate a new sector of business and one that was (and continues to be) extremely capital hungry, it was always likely that equity was going to be well rewarded. However, in its draft determination for its 2000-05 review OFWAT illustrates how post tax rates of return have fallen steadily since the early 1990s, and then set price caps

aimed at allowing even lower equity returns for the sector for the period to 2005. Whilst some of the reduction in returns to equity reflects the lowering of real interest rates over the period, it also reflects the markets' growing confidence in the sector both as a lender as well as an owner of its equity.

Regulators continue to question what is an acceptable rate of return for this type of business. For Scottish Water in particular, the acceptable rate needs to reflect the reality that it is operating without a cash buffer, is implementing a capital programme unprecedented in recent times which carries severe cost over-run risk or, more likely, the risk of having to pay penalties for under-delivery of environmental improvements along with an ever present risk of asset and systems failure.

## Conclusion

The regulator's periodic review of prices in Scotland's water and sewerage sector is now underway, setting price caps for the industry to 2014. Such a review is essential where a competitive market price cannot be determined and must be rigorous enough to guard against the generation of monopoly profits. Whilst offering no solution to the perceived problem, the Cuthberts accept that moving totally to a historic cost price capping mechanism would be a step too far. The above analysis suggests that substantial changes would be unwarranted and, at this stage in its development, the current framework for reviewing price caps remains fit-for-purpose.

Jo Armstrong  
May 2007

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## References

- <sup>1</sup> The Cuthberts highlight how the regulatory capital value (RCV) approach to price setting is the adopted methodology for many regulated utilities in the UK and beyond. However, their analysis, and so this paper, is particularly concerned with the implications of this approach as it is applied to the regulation of Scotland's water industry.
- <sup>2</sup> Water Industry Commission for Scotland, November 2005, "Final determination for water and sewerage charges 2006-10", Table 34.6.
- <sup>3</sup> Water Industry Commission for Scotland, October 2006, "Investment and asset management report 2003-06", p5.
- <sup>4</sup> Water Industry Commission for Scotland, November 2005.
- <sup>5</sup> Water Industry Commission for Scotland, June 2005, "The Strategic Review of Charges 2006-10: The draft determination", Volume 3, p40.
- <sup>6</sup> The Cuthberts' analysis does not make it clear whether a switch to an historic cost base would mean they would also seek to use a nominal and not real rate of return to calculate the allowed equity return. If this were to happen then again the apparent super normal profit would be reduced.
- <sup>7</sup> Even under public ownership Scottish Ministers could seek

a dividend payment.