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Our Reference NG/LAD

Dear RPI-X@20,

**Concerning "Fundamental Flaws in the Current Cost Regulatory Capital Value Method of Utility Pricing" by Dr and Mrs Cuthbert**

This paper submitted to the RPI-X@20 review suggests that there are some very substantial excess revenues being allowed to regulated companies as a result of fundamental flaws in the current cost regulatory capital value (regulatory asset value) method used by regulators like Ofgem to set price controls. Given the size of calculated overcharges and the potential for serious distortions in the behaviour of licensees, the authors have taken pains to set out their analysis to support their call for radical changes to protect customers. However, as such excess revenues have not been apparent to National Grid and, to the contrary, we have concerns that the current cost approach may heighten financing issues during a period when increased investment is needed, we have reviewed the analysis in the paper and identified issues with the derived formulae and also the appropriateness of examining only the steady state[1] condition to support the authors' conclusion. In summary, we find the difference between financing allowances derived from the current cost and historic cost approaches for the steady state condition to be much smaller than reported in the paper and find that the present value of this difference over the life of each asset is zero so no excess revenues exist in total.

Formulae for steady state financing costs

In equation (iv) of annex 1 of the paper, the capital charge is calculated by multiplying the steady state current cost RAV (expressed in the paper in nominal terms) by the nominal interest rate (allowed return) $i$. By using the nominal rather than real interest rate this equation departs from how regulators calculate price controls using the current cost approach. They calculate a real capital charge using a cost of capital expressed in real terms and then convert this amount to money of the day. The real return can be derived using $(1+i)/(1+r)-1 = (i - r)/(1+r)$.

[1] i.e. a condition in which a company has undertaken constant real capex for a sufficient period of time such that financing costs have reached a constant amount in real terms.

In equation (iii) and (iv) of the paper, the current cost return and depreciation are calculated in prices consistent with the beginning of year t. However, in the subsequent construction of equation (1) in the paper, prices at the end of year t are assumed. This means that equation (1) omits a years allowance for inflation that regulators would include in the setting of price controls using the current cost approach.

The net effect of these changes are illustrated by the following table which recalculates Table 1a in the paper (i.e. with nominal interest at 5%).

Table 1.a recalculated

| Inflation | 10 | 20 | 30 | 40 | Asset life |
|---|---|---|---|---|---|
| 0.5% | 0.4% | 1.4% | 3.2% | 5.7% | |
| 1.0% | 0.6% | 2.5% | 5.5% | 9.5% | |
| 1.5% | 0.8% | 3.2% | 6.9% | 11.9% | |
| 2.0% | 0.9% | 3.5% | 7.6% | 12.9% | |
| 2.5% | 0.9% | 3.6% | 7.6% | 12.8% | |
| 3.0% | 0.9% | 3.3% | 7.0% | 11.7% | |
| 3.5% | 0.8% | 2.8% | 5.9% | 9.7% | |
| 4.0% | 0.6% | 2.1% | 4.3% | 7.1% | |
| 4.5% | 0.3% | 1.1% | 2.3% | 3.8% | |
| 5.0% | 0.0% | 0.0% | 0.0% | 0.0% | |

This table shows that in the case where nominal interest matches inflation (i.e. real interest rate is zero) the revenues calculated from the current cost approach for the steady state exactly match those calculated by the historic cost approach. This is as should be expected given that the current cost revenues would comprise current cost depreciation only (no real return) and, in the steady state condition, these will match real capex as will the revenues derived from the historic cost approach.

While the surpluses calculated in the above table are much smaller than those calculated in table 1a of the paper, nevertheless the revenues calculated for the steady state condition using the CCA approach exceed those required under the historic cost approach by up to 13% in real terms. The implications of this surplus are further explored below.

Implications of 'surplus'

Examining the differences between revenues derived using the current cost and historic cost approaches shows that:

a) Revenues derived using the current cost approach are smaller than those derived from the historic cost approach (i.e. a negative surplus) in periods when revenues (from either approach) are less than capex (i.e. in periods before the steady state conditions are achieved).
b) The surplus is positive in the steady state condition and any future wind down when capex reduces depreciation of past investment continues.

Our analysis shows that the present value of these deficits and surpluses over an investment lifetime exactly match (i.e. the present value of the revenue differences is zero). This is consistent with the fact that both the historic cost and current cost approaches satisfy the net present value criterion for investment.

On this basis, we conclude that it is insufficient to look only at the revenue surplus during the steady state condition because this ignores the fact that past revenues under a historic cost approach will have funded a much larger proportion of the investment (giving a smaller RAV in real terms).

Conclusions

Our analysis (which is illustrated in a spreadsheet model for arbitrary series of constant investments) shows how the revenue 'surplus' identified in the paper are overstated for the particular steady state condition identified and have a present value of zero over the period in which all revenues pertaining to an investment have been received. On this basis we can identify no fundamental flaw in current price control calculations based on the current cost approach. Our analysis demonstrates how the current cost approach provides revenues later than a historic cost approach and this may be relevant in considering the best approach to ensuring licensees can finance their authorised activities.

Yours sincerely,

[By email]

Lewis Dale

Cc: Paul Whittaker, UK Director of Regulation