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Economic perspectives

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Did flaws in the application of resource accounting and budgeting distort the Strategic Review of Water Charges in Scotland?

by Jim Cuthbert and Margaret Cuthbert, Analytical Consulting Ltd.

Introduction

In August 2001, the Water Commissioner was tasked by the Scottish Executive to carry out a strategic review of water charges covering the years 2002-06. Based on revenue calculations made by the Water Commissioner in his review, Scottish Water issued its water charges for 2003-04. Since then there have been repeated arguments and complaints, particularly from businesses, that the prices charged are too high and are crippling business. For example, Peter Jones, writing in the Economist 29th May 2003, cited the example of the BP refinery at Grangemouth, where the annual water bill is now £12.7 million, as against £7 million for a similar establishment in England.

This article examines the impact which the then newly introduced system of expenditure control based on Resource Accounting and Budgeting, (RAB), had on the Strategic Review. We conclude that there appear to have been mistakes in the application of the RAB system at the time of the Strategic Review, which mean that the review took an unduly pessimistic view of the water industry's financial position. This implies that the charges set as a result of the review were potentially too high by a significant amount. There is a requirement to re-open key aspects of the arithmetic of the Strategic Review: in particular, on how the Scottish Executive set the original RAB limits and how these were then translated into the Commissioner's advice.

The structure of the paper is as follows. Section 2 briefly sets the background. The main content of the paper is in section 3, where we examine how the Water Commissioner used the information given by the Scottish Executive with regard to RAB to determine how much Scottish Water could borrow, and we compare this with the figures the Scottish Executive itself produced for net borrowing. There is clear evidence of inconsistency between the Commissioner and the Scottish Executive, with the Commissioner producing in his calculations a much more pessimistic view than the Scottish Executive of the amount of net borrowing consistent with a given RAB control limit. The implications of this for the charging decisions taking during the review are potentially profound and may amount to more than £100 million per annum.

We cannot establish categorically, on the basis of the available evidence, how this inconsistency arose: but it appears to relate either to revised estimates of depreciation which the Commissioner calculated during his review, or more probably, to the possibility that there is a mistake in the terms of the letter from the Scottish Executive commissioning the review of charges which has meant that a substantial element of investment has effectively been double counted.

Section 4 identifies, and discusses briefly, a number of other issues which are relevant to the determination of water charges. The section concludes with the recommendations that (a) the arithmetic on the setting of existing charges should be re-opened, and (b), that there should be a more wide ranging review of charging policy.

Background

Up until 1996, the water industry in Scotland was the responsibility of the Regional and Islands' councils, with pricing policy being a matter for each Council within government policies on service, investment and borrowing. From 1996 until 2002, the industry was run by North, East and West water authorities: these authorities were merged in April 2002 on the formation of Scottish Water.

Since 1999, a fundamental role in determining charging policy for water has been played by the Water Commissioner for Scotland. Acting within parameters set by Scottish Ministers, the Commissioner conducts periodic reviews, to produce advice for Ministers on the charging policies which the industry should adopt. The most recent such review was commissioned by Ministers in August 2001, (reference Commissioning letter 21st August 2001), and related to charging schemes for the period 2002-03 to 2005-06. Among matters which the Minister asked the Commissioner to take into account in his review were

- a. the implications of the planned merger of the three water boards;
- b. the required environmental and water quality targets;
- c. the intention to completely harmonise charges for domestic water users across the whole of Scotland by 2005-06;
- d. the implications of a new system of public expenditure control on the water industry, based on RAB, which had come into effect in April 2001.

The Commissioner conducted his review in Autumn 2001 and published his conclusions in November 2001. (Strategic Review of Charges). As well as the harmonisation of domestic water charges, the Commissioner also advised that non-domestic charges should be harmonised across Scotland. The Commissioner's advice was accepted by Ministers and underlay the new charges which were introduced from 2002-03.

The implications of the introduction of resource accounting and budgeting

Up to and including the year 2000-01, the government's main financial control on the water industry was through setting a cash limit on annual new borrowing. The industry's only sources of finance to cover its expenditures are revenue and new borrowing: thus, the amount the industry has to borrow is the difference between what the industry spends and what it gets in as new revenue. In any given year, the industry spends money on operating expenditure, (that is, current expenditures in running the service, including any PFI charges); investment, (in other words, all expenditure on creating fixed assets, that is, gross investment); and payment of interest on outstanding debt. Net borrowing is then essentially given by the formula:

Table 1: Financial limits: £ million, cash terms

Year	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06
Borrowing Consents (1) Implicit Borrowing Limits (2)	202.3	221.9	209	223.4 229	199.4	163.7	83.5	67.8
Sc. Exec. Borrowing figures (3) Sc. Exec. Borrowing Consents (4)			216 (a)	256 (b)	277 (b)	260 (b) 249.7	190.8	195.8

(1) Investing in You, 2000, Table 7.13

(2) Derived from section 7, Chapter 32, Strategic Charges Review, November 2001

(3) Scottish Executive Data: (a) The Scottish Budget, pub.2001; (b) The Scottish Budget, pub.2002;

(4) Actual Borrowing Consents, The Draft Scottish Budget 2003-04.

Net Borrowing = Operating Expenditures + Investment +	
Interest - Revenue	

The first line of Table 1 gives the net borrowing limits as set by the government up to 2001-02. (The derivation of the figures in the later lines of Table 1 is explained below.)

In April 2001, the government changed its control over the financing of the water industry, in line with its general introduction of resource accounting and budgeting (RAB)¹. The rationale of RAB was to move to a more accruals based system, (that is, recording expenditure as it is incurred, not when it is paid out), and to recognise the non-cash costs of government activity - e.g., the using up of capital (depreciation) even though this might not be matched by any actual financial payment in the year. Another non-cash element covered in resource accounting is a charge relating to the cost of capital, that is, the cost of holding assets, which was initially assessed at 6.5 per cent of net assets. By bringing in these non-cash items relating to assets, the government hoped to improve overall management of the asset base: this was one of the main differences from the previous method of cash accounting.

For the water industry in Scotland, the government replaced the former borrowing limit by a control measure based on RAB: the RAB control limit. The values of the RAB control limit, plus detailed notes on its definition, were set out in the Commissioning letter of August 2001. From Tables 32.1 to 32.6 of the Strategic Review, it can be deduced that the measure of RAB expenditure which the Water Commissioner counted against the RAB limit given to him by the Scottish Executive, was effectively:

RAB expenditure = Operating Expenditures + Investment + Depreciation + Capital Charge Element - Revenue(2)

(To satisfy the RAB controls, RAB expenditure has to be no greater than the RAB control limit as set by the Scottish Executive).

In this formula, the definitions of operating expenditure, investment and revenue are the same as in formula (1) above. The definition of depreciation is the total depreciation charge on both infrastructure and noninfrastructure elements of the system and includes actual expenditure (e.g., on replacement of pipes), required to maintain the functionality of the infrastructure. The capital charge element is the increase in capital charge above the 2003-04 level, where the capital charge represents the need of the industry, under RAB, to generate a return of 6.5% on its asset base.

We stress that formula (2) is, apart from minor items like the effect of working capital, the definition of RAB expenditure which underpins the Strategic Review. We shall return later to the question of how sensible this formula is, particularly in its treatment of investment and depreciation.

1. See HM Treasury website for general principles on RAB.

Year	01/02	02/03	03/04	04/05	05/06
RAB Control Limit (Table 32.6)	302.3	314.3	299.7	299.7	299.7
less planned margin (Table 32.6)	-9.4	49.2	61.3	37.1	73.5
= RAB expenditure (Table 32.6)	311.7	265.1	238.4	262.6	226.2
less depreciation (Table 32.6)	260.4	260.5	285	356.8	364.7
less capital element (Table 32.6)	0	0	0	11.3	21.1
plus interest (Table 32.5)	142.7	150.6	153.8	154.9	152.9
plus working capital (Table 32.4)	44.4	-5.0	-4.9	-3.1	0.9
= New Borrowing	238.4	150.2	102.3	46.3	-5.8

Table 2: The relationship between the RAB control limit and net borrowing in the Strategic Review: £ million

Line 1 gives the RAB control limits as set by the Scottish Executive.

Line 2 is the margin which the Commissioner built in to allow for flexibility in the face of, for example, unexpected shocks.

Line 3 gives the resulting RAB expenditure forecast to which the Water Commissioner was working.

Line 4 shows the total depreciation.

Line 5 shows capital charge movements, which only became relevant in 2004-05.

Line 6 shows interest payments to be made by Scottish Water on outstanding loans

Line 7 corrects for movements in working capital.

From a comparison of formulae (1) and (2), it follows that

So, if we know what the RAB expenditure is, it is possible to work back, by subtracting depreciation and the capital charge element, and adding in interest payments, to the figure for net borrowing required.

The Strategic Review of Charges shows calculations by the Water Commissioner, linking new borrowing and the corresponding RAB expenditures, for years 2001-02 to 2005-06. Table 2, which is based entirely on figures from Tables 32.4, 32.5, and 32.6 in the Strategic Review, shows the reconciliation between the RAB control limit, (the maximum limit on RAB expenditures) and net borrowing as assessed in the Strategic Review.

The derived figure for new borrowing in the final row of this table exactly equals, (apart from a maximum difference of 0.1 for rounding), the new debt figure in Table 32.4 of the Review.

Given the Commissioner's figures on depreciation, capital charge element, interest and working capital, then the maximum amount of new borrowing possible under the RAB control limit would be the sum of the lines for new borrowing and planned margin in the above table. It is this sum which is shown as the implicit limit on borrowing in line 2 of Table 1 above.

Finally, the Scottish Executive itself publishes each year the financial control totals which it sets for the water industry. In 2001 and 2002, the control totals were on the new RAB basis. At the same time, the Scottish Executive published the figures for new borrowing which it calculated were consistent with the RAB controls: however, no detail was

published on how these figures were derived. These borrowing figures are shown for 00/01 to 03/04 in line 3 of Table 1. In its budget for 2003, the Scottish Executive abandoned the RAB control total for water, and went back to setting a control total directly in terms of new borrowing. These figures for 2003-04 onwards are shown in the final line of Table 1.

To summarise, therefore, Table 1 shows, in its first line, borrowing control limits before the introduction of RAB; in its second line, the borrowing control limits implicit in the financial modelling undertaken by the Water Commissioner for the purposes of his strategic review, consistent with the RAB limits set by the government; and finally, the figures published later by the Scottish Executive as their view of the borrowing levels consistent with their expenditure controls.

The contrast between line 2 and lines 3 and 4 is very striking. For example, in 2003-04, the figure in line 2 is almost £100 million less than that in line 3: and in each of the next two years, the difference between line 2 and line 4 is over £100 million as the discussion in the next paragraph makes clear this is a genuine inconsistency, and not an artefact of comparing figures from different documents.

To put this another way: when the Water Commissioner was carrying out his strategic review on charges, he was implicitly taking the view that the expenditure controls exercised by the Scottish Executive were imposing a very tight squeeze on the funding of the water industry reducing the annual borrowing ceiling from £229 million in 2001-02 to £67.8 million in 2005-06. This contrasts sharply with the figures published later by the Scottish Executive which indicate that, over the same period, the annual borrowing ceiling would start at a higher figure of £256 million and reduce only to £195.8 million, implying a very much milder financial squeeze.

	2001-02	2002-03	2003-04
	2001-02	2002-03	2003-04
Strategic Review			
RAB Control Limit	302.3	314.3	299.7
Implicit Borrowing Limit	229	199.4	163.7
Scottish Executive AER			
Resource Budget	-159.2	-159.7	-178.3
plus Capital Budget	461.5	462	478
= RAB Control Limit*	302.3	302.3	299.7
Net New Borrowing	256	277	260

Table 3: Comparison between Strategic Review and Scottish Executive view on relationship between RAB control and net borrowing: £million

* This figure is not published as such in the Annual Expenditure Report, but the figure for 2003-04 appears in the commissioning letter, and that for 2002-03 is only £12 m less than that in the commissioning letter.

The contrast between the Commissioner's figures and the Scottish Executive's figures in table 1 is hugely significant from the point of view of the charging decisions made during the review. How could it have arisen that the Commissioner, at the time of the review, was taking a view about the maximum availability of funding to the water industry through net borrowing which was, by the end of the review period, some £130 million more adverse than figures which the Scottish Executive published later in its Annual Expenditure Report? There is strong evidence that what underlies this apparent inconsistency is that the Scottish Executive and the Commissioner take different views on how the RAB control limit relates to net borrowing. Overwhelming evidence for this is shown in Table 3 below. The first two lines in this table are repeated from Table 2 and Table 1 above. The bottom four lines are derived from the Scottish Executive's Annual Expenditure Report (AER) for 2003-04 published in April 2002.

It is not possible to extend this table into later years because the Scottish Executive had abandoned RAB control for later years. But it is clear for this period, for which a direct comparison is possible, that the Scottish Executive were assessing a different relationship between net borrowing and the RAB limit than the Commissioner had done while he was conducting his review. We do know that part of the difference is due to different assumptions on interest charges: (the interest payments assumed by the Scottish Executive exceeded those assumed by the Commissioner by \pounds 11.7 million, \pm 6.4 m., and \pm 26.2 m. in the three years in question). But these differences in interest charges are relatively small compared to the differences in overall net borrowing, starting from RAB limits which are virtually identical.

Unfortunately, other than interest payments, the Scottish Executive does not publish the required detail which would enable their RAB and net borrowing figures in Table 3 to be further reconciled. It seems clear, however, going back to the reconciliation of the Commissioner's figures in Table 2 above that the only other element which could account for the discrepancy between the Commissioner and the Scottish Executive relates to the handling of depreciation: (the only other candidate is working capital, which is small).

There are two possible explanations which could account for depreciation having a differential impact in the Scottish Executive and Commissioner's assessments.

The first possibility is that the Commissioner simply used a different assessment of depreciation from that used by the Scottish Executive. We do know, from the Strategic Review, that the Commissioner did revise his assessment of depreciation during the conduct of the Review, both by revaluing the asset base at current prices, and by adopting more prudent depreciation and infrastructure renewal models. The Commissioner notes that both these factors had the effect of increasing his estimates of depreciation: (see Section 7, Chapter 32 of Strategic Review). Such a revision could account for the Commissioner's estimates of depreciation being higher than the estimates available when the original RAB limit was set. However:

- (a) the Scottish Executive figures quoted in Table 3 were produced after the Strategic Review. If the Commissioner had significantly revised upwards depreciation for the water industry, why had the Scottish Executive not taken these estimates on board in producing their later figures?
- (b) if the Commissioner did revise his estimates of depreciation significantly up, why was consideration not given to revising the new RAB control limits up, rather than squeezing the borrowing finance available to Scottish water down? After all, when the Treasury introduced the new RAB system of control in 2000, it was specifically stated that non-cash costs like depreciation would, for a trial period, be included in Annually Managed Expenditure (AME) rather than in the DEL: that is, such elements would not count directly against cash limits for an initial period, and leeway should therefore have been available for revisions. To quote from Treasury advice on RAB from the Treasury website.

"Under a transitional resource budgeting regime introduced in the 2000 Spending Review, the non-cash costs introduced by resource accounting and budgeting, (cost of capital charges, depreciation and impairments, and accounting based provisions to meet future expenditure) were included in AME rather than DEL. This decision was taken in order to allow departments to gain more experience in monitoring and forecasting these items following their inclusion in budgets. These items were moved into DEL in the 2002 Spending Review."

In the light of this Treasury advice, which was in force when the commissioning letter was issued in August 2001, it appears to us that there should have been scope to adjust the new RAB limit upwards if the Commissioner significantly increased his depreciation estimates.

We also question why the commissioning letter from the Scottish Executive refers to the RAB control for the water industry as setting "absolute limits" - even though they incorporate a depreciation element which, on the basis of the Treasury advice, should have been in AME.

Whether or not different depreciation figures were used, (and the position certainly needs to be clarified), there is a second hypothesis. This hypothesis is, that there is a mistake in the relationship which the Commissioner has used for relating the RAB control limit to net borrowing: that is, that there is a mistake in the logic underlying the reconciliation of the RAB limit and net borrowing given in Table 2.

Consider formula 2 above, which shows the formula for RAB expenditure which was effectively used by the Commissioner in carrying out his review. In this formula, investment is gross, that is it includes expenditure on infrastructure renewals. The depreciation used in the formula also includes expenditure on infrastructure renewals. This means that formula 2 counts expenditure on infrastructure renewals twice. Because of this double counting, therefore, formula 2 actually overstates the use of resources by the water industry, to the extent of actual expenditure on renewal of infrastructure. A "correct" version of formula 2, which truly represented the organisation's usage of resources would be given by replacing gross investment in formula 2 by investment net of infrastructure renewals.

Subtracting formula 1 from this amended version of formula 2 would give the following relationship between net borrowing and RAB expenditure:

If, effectively, the Commissioner has been using formula (3), while the Scottish Executive were using formula (4) in preparing their annual expenditure report, then this could explain how the two parties are taking a consistently different view of the relationship between RAB and net borrowing and how the Commissioner has taken a much more pessimistic view of the net borrowing implications of a given RAB limit.

Just as with the first hypothesis, however, there are some very puzzling features about this second hypothesis: -

- (a) If the Commissioner and the Scottish Executive were using different formulae, this would imply a surprising lack of co-ordination between these bodies.
- (b) Secondly, the approach used by the Commissioner is in effect determined by the terms of the commissioning letter from the Scottish Executive. This specifies, for example, that for 2003-04, the RAB control on the water industry is that the industry's capital budget should be less than £299.7 plus profit: where the capital budget is specified in terms of gross capital expenditure and where profit is as calculated in the water industry published accounts. In the water industry published accounts, profit is calculated after deducting full depreciation, which includes infrastructure renewal. This effectively determines that the RAB measure used by the Commissioner must be defined as in formula (2).

If the second hypothesis held, therefore, this would imply that the advice in the commissioning letter from the Scottish Executive is inconsistent with the principles used by the Scottish Executive in compiling their 2003-04 annual expenditure report. What does seem clear, however, is that the commissioning letter involves a definition of RAB which overstates the true use of resources by the water industry.

We are therefore left in the unsatisfactory position that:

- (a) there is clear evidence that the Commissioner assumed a much more pessimistic relationship than the Scottish Executive about the net borrowing consequences of a given RAB limit.
- (b) both of our possible hypotheses to account for this embody puzzling features: although we do not have the evidence to say which is correct, there does not seem to be any other plausible explanation for the observed inconsistencies.
- (c) however, if either, or both, hypothesis is correct, then the charging decisions taken during the review were taken against the background of a misleadingly negative assessment of the net borrowing which would actually be available to the water industry. If hypothesis 1 holds, then, under the Treasury guidance then current, changes in depreciation should not have counted against a rigid control limit. If hypothesis 2 holds, then the net borrowing possible under the Strategic Review should have been recalculated using the corrected formula (4), leading to net borrowing figures much closer to those produced by the Scottish Executive.

We conclude that there is now a clear requirement to reopen the arithmetic of how the Scottish Executive set the RAB limits in the commissioning letter and how these were then used by the Commissioner. The inconsistency between the Scottish Executive and the Commissioner on the level of net borrowing consistent with a given RAB control limit must be resolved. The implication of the conclusion at paragraph 3.12(c) above is that, whatever the explanation for this inconsistency, the borrowing figures in the Strategic Review were probably too low, (and the revenue caps correspondingly too high). For the borrowing figures, the amount in question in each of the later years of the review period is well in excess of £100 million: (and this could approach £200 million if a less conservative view were also taken about the need for the planned flexibility margin which the Commissioner built into his calculations).

If it turns out that the borrowing figures used in the Strategic Review are indeed substantially too low, then this raises further questions which it would be for Ministers to consider. Namely, would they have taken the same charging decisions on the basis of the advice given in the Strategic Review if they had known that there was substantial additional borrowing headroom available to the water industry within the overall RAB limits. Furthermore, will they re-open their decisions, particularly now that the damaging consequences of high water charges for Scottish industry are becoming clear?

Other issues, and recommendations

The implication of what we have argued is that charging decisions will need to be re-opened. In doing that, other important issues need to be taken into account as well, some of which relate back to questionable decisions taken during the 2001 Strategic Review. Overall, the issues which need to be covered include: redressing the problems caused by the harmonisation of business rates; ensuring an appropriate balance between fixed and variable charges; addressing the need for flexibility in charging policy in the light of underspending on capital; ensuring that appropriate policies are operating on effluent charges; and importantly, ensuring that mechanisms are in place which will give an incentive rather than a disincentive towards achieving improved efficiency. At the same time, any review needs to take account of the wider objective of utilising to the full the potential of Scotland's water resources as a source of competitive advantage both to indigenous businesses and for attracting foreign direct investment. We now discuss each of these points in a little more detail.

Harmonisation of business charges

The decision to harmonise business charges was taken by the Commissioner in the course of the Strategic Review: the Commissioning letter to the Commissioner referred only to Ministers' wish to harmonise domestic charges. It is very doubtful whether the complete of harmonisation of business charges is desirable, for the following reasons.

- (a) If business charges are harmonised then there is no incentive for business to locate in areas where supply and/or treatment is cheapest. There will therefore be a sub-optimal location of industry.
- (b) As some units locate in high cost areas there will inevitably be an increase in the average cost of provision of water services; hence affecting the profitability of industry in Scotland.
- (c) The policy will also inevitably sterilise one of Scotland's premier potential comparative advantages, namely the ability to attract high water-use industries to low cost locations.

Fixed charges

The paper by Sawkins and Dickie (2003) makes clear how high the fixed cost burden is in Scotland relative to England. A high fixed cost regime like this is potentially severely damaging. One effect is that small users pay particularly high average charges per unit of water consumed. This results in an entry barrier to setting up in business, damaging the economy precisely where we are wanting it to be stimulated. Second, a high fixed charge system combined with low unit cost provides no incentive for economies in the use of water: this leads to the inefficient use of water and ultimately to higher expenditure.

Flexibility in light of underspend

Past performance of the Water Boards shows that capital programmes are likely to be underspent in any given year. In determining charges from year to year, any underspend should be taken into account, so that the customer can potentially benefit from reduced charges, rather than, say, the industry having a financial cushion which it can use to support existing inefficiency. There therefore needs to be a readiness, which seems to be lacking at present, to adjust charges pragmatically from year to year, and not just at the periodic Strategic Reviews.

The Mogden Formula

The Mogden formula is the basis for trade effluent charges throughout the UK, (Sawkins and Dickie). The charge to the firms reflects both the volume and quality aspects of that firm's trade effluent in the calculation of its final charge. Now that firms are subject to EU water directives and paying for substantial improvements in their effluent, there is a need to ensure that the Mogden formula adequately reflects the reduced costs of dealing with semi-treated effluent, otherwise there is a danger that some firms will be paying twice over for effluent treatment.

Efficiency

It seems clear from the investigations undertaken by the Commissioner that there is a significantly higher level of inefficiency in the water industry in Scotland compared to that in English water companies. There are however a number of difficult issues surrounding the question of efficiency. First of all, how robust are the Commissioner's estimates of the efficiency savings possible? Secondly, how best can adequate incentives be built into the charging and funding arrangements to ensure efficiency targets are met? In this context it is worth remembering that the effects of the last Strategic Review were possibly quite perverse: high charges were set on the basis of low borrowing potential whereas in the event higher borrowing potential materialised: the financial cushion which this represented would have acted as a positive disincentive to the achievement of efficiency gains.

Recommendations

In the light of the above, our two principal recommendations are:

- a) The arithmetic of the Strategic Review, carried out in 2001, should be re-opened to resolve the inconsistency between the Commissioner and the Scottish Executive on the level of borrowing which was consistent with the given RAB control limit.
- b) There should be a review of water charges, (as also recommended by Sawkins and Dickie), taking into account the conclusions arising from (a), and also addressing the other issues raised in this section.

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