Incentive regulation in water — case study

Alan Booker, Office of Water Services, Birmingham, United Kingdom.

Background

Incentive regulation embraces a wider agenda than setting price caps. It should include the collection and publication of comparative performance information, and deciding appropriate penalties for poor performance. This session concentrates entirely on the approach to setting price caps.

The general approach to setting price caps in the UK is discussed. This is followed by tracing the history and development of the approach to setting price caps in the UK. This was initially done by the Government, as part of the process of privatising the former water authorities in 1989, the Periodic Review of price limits by the Director General of Water Services followed in 1994. The preparation for the next Periodic Review of price limits by the Director in 1999 is well under way. The state of the art in the UK is contained in current consultation documents about regulatory methodology and process.

Medium term price caps

Price caps are a benefit sharing mechanism. Periodically the economic regulator sets forward looking limits on prices by reference to a basket of tariffs. Those forward looking price limits will make assumptions about costs and the scope for efficiency improvements. The assumed efficiency improvements are built into price limits, therefore, creating the incentive for companies to improve efficiency even more than the Director's judgements. It gives the customer the benefit of those efficiency savings from year to year. At the end of five years the extra savings, known as out-performance, are returned to customers by way of further price reductions which might be one-off price cuts or returned gradually to customers by price cuts over a number of years. The second method would be known as a glide path.

Out-performance can accrue from lower expenditure than that assumed in operating expenditure, capital expenditure or capital maintenance. Typically, there will be a period of five years between price limit reviews to create an incentive on companies to reduce costs continuously and to provide in the medium term a stable environment. Price limits may be set for a period longer than five years. In addition to affording customers the protection of price limits which will, in a period of stable obligations, reduce charges to customers, it is also important to maintain and protect levels of service so that charges are not being reduced at the expense of reduced standards of service. An important part of an incentive regulatory regime will be to monitor performance of the regulated companies and to penalise companies for poor performance.

One of the important functions of a regulator who operates an incentive regime, is to promote economy and efficiency measured by reference to inputs and outputs. Input costs should be reduced continuously for the same or higher outputs.

In such a regulatory environment it is important for the regulator to define the functions of the regulated companies in terms of their outputs for customers. The regulator should have a duty to ensure that companies are able to finance their functions. This does not mean at the expense of services and it does not mean that inefficient companies should be underwritten by the economic regulator at any price. Far from it. The regulator may have a duty to ensure a reasonable return on a company's capital. But it is the management of the company's responsibility to achieve, at least, the return on capital which the regulator judges to be reasonable. Incentives also need sticks as well as carrots. Sticks would be in the form of penalties which poor performance would attract, whilst carrots would normally be the opportunity to earn a reasonable return or to out-perform the efficiency improvements which the regulator will have built into forward price caps, and earn a higher than reasonable return.

The regulator will need to undertake sophisticated financial modelling in order to set price caps and test out the robustness of a range of options, against a number of financial indicators such as gearing, interest and dividend covers. He will need to do this in advance of coming to sound decisions on price caps, which he will be able to explain publicly and justify when challenged through an appeal mechanism if necessary.

There are other essential features of incentive regulation. The first is the annual monitoring of company performance to ensure that companies maintain or improve levels of service. The information needed for that has to be provided by companies annually and some form of independent reporting is essential to ensure its credibility.

The second related feature is comparative competition. The regulatory incentives provide a surrogate for normal market competition. Comparative competition is used in two ways. The first is through the publication of league tables of performance against key indicators. The second is the use of comparative unit cost information as an input to econometric models to inform the regulators' decisions about the scope for further year on year cost reductions. Econometric modelling is important in helping the regulator to make proper allowance for explanatory factors in his efficiency analysis.

Initial price caps at privatisation — 1990–1995

In the UK regime the price adjustment factor or price cap (K) is the amount by which prices of a basket of tariffs is allowed to increase year on year by reference to a general price index. The retail or consumer price index is probably the least controversial and best understood index available. Price caps are set on the best information about costs which the regulator has. In 1989 the water companies were asked for estimates of their costs. These costs were scrutinised by consulting engineers and then reduced on the basis of the best available evidence about the scope for efficiency savings. The result was a real increase in charges over that period of about 5 per cent per annum or 25 per cent in real terms of the quinquennium.

However this increase has to be seen in the context of the substantial increases required in drinking water quality and environmental quality being demanded as a result of European directives. These improvements required an increase in the capital expenditure of the water industry in the UK from £1 billion a year to £3.5 billion a year.

The first asset management plan or AMP1 was really a bottom up approach to determining functions and costs. In simple terms companies were asked what they needed to do and how much it would cost and price limits were set by Government to allow companies to do what they thought was needed. This process gave results which allowed the water and sewerage companies flotation to take place and investor confidence to be established in an industry which no one in the late 80's seriously thought could be sold off to hard nosed financiers.

There was also a concept developed and embodied in the companies licence of appointment which gave further protection to their income stream. This was known as cost pass through, whereby any unforeseen costs which companies had to incur to finance their obligations, allowed them to come to the regulator with a case for a further increase in their price limits.

Further aspects of the initial price cap were that the financial indicators were extremely loose. This meant that some companies did not need to borrow to finance their capital expenditure programmes which could all be financed from customer charges. There had been no direct customer involvement in setting price limits, and it was only after the event when privatisation had been successfully achieved that customers started to feel the impact. In some cases they experienced very substantial price rises which they laid at the door of privatisation.

In fact the water companies were able to exert undue influence over Government in the setting of initial price limits.

Increasingly, over the period 1990 to 1995 there was customer unrest, high levels of complaints about charges, a great deal of complaining to members of Parliament with the ensuing political fallout, particularly in those areas which were hit worse than average and which also happened unfortunately to be relatively low income areas. By 1995 affordability had become a real issue for a significant number of low income customers, located in particular, but by no means entirely in the South West of the UK. Average incomes are lower than the national average and a major environmental clean up programme was needed to improve bathing water quality.

The regulator had a major problem looming ahead of the first Periodic Review of price limits in 1994 which would put in place price caps for the period 1995–2000.

First Periodic Review — 1995–2000

The methodology and the process adopted at this first Periodic Review of price limits was a considerable development on the initial price caps. The cost of achieving even higher quality standards was identified at an early stage as the main upward pressure on price limits. During the process of consultations which preceded the review it became clear that there was merit in identifying the components of the K factor as -X to represent the scope for efficiency improvements and +Q, the impact of new quality obligations.

Out-performance in terms of the actual return on capital, was returned to customers over the course of the whole ten years for which price limits were set. The glide path was not a straight line. It removes something like 75 per cent of the out-performance in the second quinquennium. Return on investment had been running at the level of around 13 per cent throughout the first five years against a real weighted average cost of capital of between 5–6 per cent which was determined by the Director following consultation.

The issue of the cost of quality attained the status of a major national debate. In the early part of the first quinquennium around 1991–92, Office of Water Services (Ofwat) decided that it would not be acceptable to allow the price escalator to continue to accelerate to absorb continuous increases in drinking water and environmental quality standards. Following an initial scene-setting publication by Ofwat, a quadripartite arrangement was established under the aegis of the Department of the Environment. The economic regulator, the two quality regulators, the Drinking Water Inspectorate and the National Rivers Authority came together with the water companies to examine the costs of achieving specific standards associated with the European Directive on Urban Waste Water Treatment, and the impact on customer bills.

This quadripartite process resulted in public advice in an open letter from the economic regulator to Government as to the options and likely costs, and their implications for customers' bills of quality improvements being adopted at different rates. The Government responded by indicating that these obligations should not go further nor be achieved more quickly than necessary to just meet EC standards. Guidance was given to the Director General as allowed in the water legislation. This guidance set out the part to be played by not only the economic regulator, but the quality regulators, the companies, and by the Department of the Environment in ensuring that quality standards were increased but at a rate which customers could afford. The need for a political process to balance quality and affordability was, therefore, formally established.

As part of the first Periodic Review the cost and output matrix was defined. Costs were set out in terms of operating expenditure, capital maintenance expenditure, capital expenditure and its associated return on capital. Outputs were defined in terms of base service provision, service enhancements, providing for growth and enhancements to quality. All output elements other than quality was wrapped up in the -X element of the price cap.

The debate between the regulator and the companies about cost of capital was intense and at times heated. However, at the end of that debate the companies accepted that the provision of water and sewerage services is a low risk business attracting relatively low risk capital. The figure of 5–6 per cent real was fixed as the average weighted cost of capital allowing for significant additional borrowing to finance capital expenditure. Headroom of up to 1 per cent above that was built in to reflect the uncertainties both generally and for individual companies.

In order to complete the return on capital calculation asset values were determined. This was done on the basis of flotation values of the companies at privatisation making appropriate allowance for debt or cash, in the companies balance sheets, and for subsequent investment on new assets.

AMP2 was significantly different from AMP1. It was defined as a strategic business plan covering not only underground assets, but also surface assets. It was anticipated that companies would assemble their AMP2 submissions to the regulator with an executive overview, which he said he would read personally and which would give the Director a strategic overview of the business plans. In the event, and disappointingly, the AMP2 submissions or strategic business plans turned out to be little more than overbids for resources to carry out dubious improvements which Ofwat had to set about cutting down to size. A typical example of attempted gold-plating.

The process associated with the first Periodic Review was a significant development on the process for initial price caps. It involved the collection of a considerable quantity of information on costs over time about the quality obligations. It also involved a number of discrete publications consulting in public on individual parts of the methodology and cumulating in a substantial publication in the autumn of 1993 setting out the approach to be used by Ofwat in setting price caps at the determination in 1994. There was also a substantial effort made to involve customers in the process. Companies were required to undertake market research to find out what their customers were willing to pay for improvements in standards of service. Companies undertook an examination of customer preferences. In some cases this was quite innovative. The customer service committees and in particular the chairmen of those committees were involved in the price setting process. For instance, the chairmen attended the formal due process meeting between the Director and the companies, at which draft determinations were discussed, and at which companies were asked to formally make known to the Director their key concerns arising from draft determinations. Following that due process the chairmen had the opportunity to put customer views about affordability and willingness to pay to the Director.

When the Director published the new price limits at the end of July 1994, together with a detailed explanation of his reasoning behind them, relating to the methodology published a year previously the CSC Chairmen also published a statement to say that they were satisfied that the outcomes were consistent with the companies obligations and the Director's duties.

The publication explaining price limits also broke new ground identifying the X and Q components of K and giving an indicative split of K between water and sewerage.

Following the 1994 determination many commentators acknowledged publicly that the thorough open and transparent process which had been adopted achieved a considerable advance in regulatory process.

The outcomes of the Review were that the escalator had been slowed considerably from +5 per cent per annum to +1 per cent. Quality improvements were still being maintained. A new climate had been established with companies subject to significantly higher efficiency expectations. The incentive ratchet was tightened.

Second Periodic Review — 2000–2005

Incentive regulation was working well but customers were still dissatisfied with the fact that companies were making significant profits and top management was paying itself high levels of remuneration. The period since 1995 has largely been characterised by sniping at the first Periodic Review by customer pressure groups, and by the

Parliamentary opposition, and sniping at the fat cats — the senior directors of water companies and shareholders.

One of the first jobs of the new Government was to implement a special one-off tax on all the utility companies to put right what it regards as the bad deals struck by its predecessor when selling off the utilities. In a sense this move signals a break with the past and a coming to terms with utility privatisation.

Work is already well under way for the second Periodic Review. The timetable has been established and consultation documents have been published covering the approach and methodology and the business planning and consultation process.

Broadly the methodology is captured in RPI - P_0 - X + Q ± V ± S. P_0 is the initial reduction in prices resulting from out-performance during the second quinquennium. X is the forward looking expression of scope for efficiency in the third quinquennium. Q as before reflects the upward pressure of higher environmental and drinking water quality standards. V represents the impact of the supply/demand balance. It can be either positive where new resources are required, or negative in those cases where companies have an abundance of resources and might be expected to export some of their surplus. S represents the service factor which can clearly either result in enhancements or a controlled reduction in standards.

The Director has indicated that he wants to see an initial price cut followed by four years of generally stable prices. This means that any upward pressure on price limits should be contained within the scope for cost reductions from efficiency improvements, i.e. -X should be equal or greater than +Q ± V ± S. The Director has also indicated that in his view price limits should be determined for a period of five years rather than ten years.

Non statutory quality improvements may be an issue for the 1999 Periodic Review. The new Government wants to put the environment at the heart of its policies, and may be more interested in achieving further quality improvements at the expense of stable prices, which the Director has indicated he would like to see. There are also resource issues arising from climate change and the intention of the now Environment Agency (formerly the National Rivers Authority) to review abstraction licences and to reduce abstractions from some environmentally sensitive sources.

Other methodology developments relate to capital maintenance where in 1994 the approach was less well developed than other elements of the matrix. Ofwat has undertaken a considerable amount of work in order to bring the costs of capital maintenance under similar econometric modelling as opex. The principles underpinning capital maintenance are the maintenance of serviceability for customers and the requirement to achieve broad equivalence over time between expenditure and accurate provision for current cost depreciation.

Other approaches to cost estimates are likely to follow similar methods to 1994. Although the process of firming up on costs is likely to be more rigorous in certain respects and better informed.

The final difference in methodology may result from the Director's ability to reprofile capital expenditure and efficiency improvements over the five years of the determination in order to reflect the learning gained from observing the behaviour of companies over the second quinquennium. The experience is that following agreement of the next set of price limits, companies delay capital expenditure for as long as possible and reduce operating costs as quickly as possible in order to out-perform price limits and retain the fruits of out performance for as long as possible.

One idea proposed in the consultation paper is that companies should have to actually deliver quality improvements before they receive the benefit in price limits.

The business planning and consultation process is more elaborate than in 1994. There is still significant effort required of companies to consult their customers. However, much of the information required for setting price limits is likely to be published as are draft determinations. All this public information will be subject to analysis and challenge. Business planning contains a number of iterations to allow the impact of new obligations both on quality and the supply/demand balance to be costed and the interaction with other outputs to be taken into consideration in an endeavour to achieve stable prices following the P_0 adjustment.

AMP3 will now not be produced until after the determination has been concluded and will reflect the outputs which are being financed. It will become the monitoring document during the period 2000–2005.

Arguments about the commercial confidentiality of information will undoubtedly create a number of issues in the run up to the 1999 Periodic Review. However, the initial expectation is that the burden of proof will reside with the companies to demonstrate to the Director that specific information should not be published on commercial confidentiality grounds. Their arguments for non publication would themselves be published. The process is moving continuously in the direction of more and more openness, more and more transparency and greater opportunity for analysis and challenge by commentators, academics and pressure groups. The great danger is that this process becomes so open and transparent that it will require a legal process to control it.

If incentive regulation is to continue to provide stability with flexibility and incentives to improve performance the UK needs to be wary of how process is developing.

The approach and methodology to determining price caps should not be capable of being developed much further. However, the development of process might be open-ended and could be counter-productive in the overall context of incentive regulation. Time will tell.