

Water: The 1999 Price Review

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1 The review

Sixteen years ago, Professors Michael Beesley and Stephen Littlechild advocated that “the price of a bundle of telecommunications services should not increase by more than X percentage points below the retail price index (the RPI-X) for a period of five years. This could be applied to any set of services, perhaps weighted as the bills of a representative consumer. The level of X would, in practice, be the outcome of bargaining between BT and the government; an exhaustive costing exercise is not called for.”¹

I will spare you the much quoted reference to RPI-X being a temporary safeguard, not a permanent method of control. But I do need to remind you that “the one-off nature of restriction is precisely what preserves the firm’s incentive to be efficient, because the firm keeps any gains beyond the specified level”.

We are just going through the process of consultation over draft determinations for water and sewerage charges over the period 2000-05. This will culminate with the publication of final determinations on November 25th. Few can complain about the degree of openness and consultation. The document on which the Director General of Water Services, Ian Byatt, is seeking representation amounts to some 150 pages. This followed a document entitled “Prospects for Prices” (135 pages) published last October, another five documents consulting on the proposed framework, seeking guidance from the Secretary of State for the Environment and setting out the technical details of efficiency determination and the financial framework - 300 pages in total - and several letters to managing and regulatory directors of water companies on levels of service, mergers and the cost of capital. As an exercise in consultation, this periodic review has been exemplary.

It also demonstrates due process. The cost of capital was determined after discussions with institutional shareholders, City analysts, finance academics, banks, bond investors, credit rating agencies and other regulators. The regulator received advice from financial advisors, results of surveys of institutional investors, and he was aware of the academic literature on the subject. How do I know – because he tells us!

The 600 or so pages of consultation compares with a slim volume entitled “Future Charges for Water and Sewerage Services” of just 58 pages at the last periodic review in 1994. What has happened? Have water and sewerage services become radically more complex? Has the regulator been stung by complaints of rising prices and excessive rates of return of water companies? Is he protecting himself against

¹ Beesley, M. and S. Littlechild (1983), “Privatization: Principles, Problems and Priorities”, Lloyds Bank Review.

Competition Commission investigations, judicial reviews and interference from his political masters? Or has the process simply become more sophisticated and accurate?

I will try to answer these questions by focussing on four key areas of debate in this review:

- 1 Environmental standards, water quality and level of services
- 2 Opex and capex efficiencies
- 3 Incentives
- 4 Cost of capital and financial indicators

Improvements in *standards, quality and level of services* are expected to increase bills by just under 10% by 2004/5. Even this is very much at the bottom end of what is likely to materialize, particularly towards the end of the regulatory period. As the DG himself notes “new quality and environmental directives are on the way. They may increase investment needs considerably and they would need to be allowed for in price limits..... History has shown that it is likely that further new obligations will be imposed before the next review” (page 17).

The quality and service level increases that Byatt has allowed are more than offset by anticipated *efficiency savings* of over 10%. Table 1 shows the differences in efficiency savings achieved by different sectors before their most recent reviews (1994 in the case of the water industry) and the expected savings for the next period (as set in the periodic review). It shows that historically water has had lower operating efficiency savings than other sectors. These however increased during the last review period and are projected to be in line with those in electricity distribution in the next period.

Table 2 shows that there are two components to the anticipated efficiency savings, as outlined by OFWAT in draft determinations. The first is a shift in the frontier of the most efficient firms of 1.4% per annum for base operating expenditure and capital maintenance and 2.1% per annum for operating and capital enhancement. In addition, firms are on average expected to catch-up 40 to 75% of the difference between actual and efficient levels of operation and investment.

Key to projections of efficiency savings is an estimate of future productivity improvements. As table 3 records, there is a wide variation in estimates of total factor productivity growth in different sectors of the economy. Over the ten years from 1986 to 1996 these ranged from –0.2% in water to 6.5% in electricity and gas. There is also a considerable discrepancy in estimates of potential productivity

improvements in water. Europe Economics and Professor Nick Crafts² have estimated potential operating cost reductions of 1.25% to 1.75% per annum. In contrast, Professors Derek Bosworth and Paul Stoneman³ have proposed potential reductions of only 0.1% per annum. There is therefore a large margin of uncertainty surrounding (a) the quality of services and environmental improvements that companies will be expected to deliver and (b) the costs of meeting them.

Considerable attention has been given by both water and electricity regulators to the provision of *incentives* for companies to pursue efficiency savings. The perceived advantage of price cap over rate of return regulation is that it has stronger incentive properties. Ian Byatt has stated that “the incentive framework has delivered substantially greater savings than were anticipated in the 1994 review” (MD145). Its deficiency is that towards the end of a regulatory period, incentives are weakened by anticipation of a clawback of the gains in the subsequent regulatory settlement. The regulatory regime originally allowed companies to retain out-performance for up to ten years but following the MMC investigation into South West Water in 1994, this was reduced to five years. To overcome the problem of incentives waning towards the end of the regulatory period, it is proposed that companies should be allowed to retain efficiency savings on a rolling five-year basis. This means that projected rather than actual levels of expenditure will be employed in determining price caps over a five-year period but thereafter actual expenditures will be used. In the case of water it is proposed that this rolling five-year approach should apply to both operating and capital expenditures. In the case of electricity, the rolling five-year approach will apply to capital but not operating expenditures. Shifting to the rolling five-year period overcomes the termination date problem but moves regulation closer to an annual assessment of which expenditures are to be included as efficiency savings. It raises the issue of how costs will be monitored, how efficiency savings will be separated out from other factors affecting actual costs, and how an output monitoring system will be developed alongside the cost analysis.

The *cost of capital* continues to be a source of dispute. The Capital Asset Pricing Model (CAPM) is firmly established in UK regulation as the basis for determining the cost of capital. But there are disagreements concerning the riskless rate of return and the equity risk premium. The regulator proposes setting the riskless rate close to current yields on long-term index-linked government bonds. Companies argue that these are subject to considerable fluctuation and an average of recent past rather than current rates is appropriate. The water regulator argues that the equity risk premium is in the range of 3 to 4% and the electricity regulator in the range 3.25 to 3.75%. In

² Europe Economics and Crafts, N. (1998), ‘Water and Sewerage Industries General Efficiency and Potential for Improvement’, October, prepared for OFWAT.

³ Bosworth, D. and Stoneman, P. (1998), ‘An Efficiency Study for the Water Industry’, August.

contrast, the MMC used a range of 3.5 to 5% in the Vodafone case, and historic averages and surveys of investors in the US are well in excess of this. There is a considerable measure of uncertainty surrounding the equity risk premium.

In addition, both the electricity and the water regulator have introduced a new procedure into their financial analyses. They claim that there is no reason why customers should be required to finance the windfall tax or what may be deemed to be excessive dividend distributions by firms. In computing whether proposed levels of charges satisfy minimum financial requirements to maintain investment grade ratings, they have therefore gone back and rewritten companies' balance sheets to eliminate the windfall tax and assumed excess dividend distributions. This clearly introduces a further degree of discretion into regulation and increases regulatory uncertainty from the perspective of utilities. Whether it satisfies the regulator's duty to ensure that companies can "finance their functions" is a moot point on which the newly established Competition Commission or the courts may well be asked to adjudicate.

In sum, while the water periodic review has been a model of process and consultation, it has also been extremely complex and detailed. There remains considerable uncertainty about obligations on companies, the costs at which they should be delivered, the incentives that companies will be able to retain, and whether they will earn appropriate rates of return on new investments and existing assets that will allow them to finance their functions. There is a significant probability that at least one of the many heroic assumptions (concerning quality, quantity, productivity, efficiency, riskless rates, equity risk premia or financial ratios) will prove to be false and that companies will end up making unacceptably large profits or will not be able to meet their targets. If so, the regulator will have to intervene once again between periodic reviews to adjust charges or the way in which they are levied. This will further undermine the credibility of price cap regulation and push us closer towards rate of return regulation. The volume of material produced in this review therefore reflects the fragility not the robustness of the process.

To illustrate, there is an active debate about whether the current proposals for charging in water are too draconian. The regulator points to the large efficiency gains made in the past, the overestimation of operating costs and capital expenditures by companies at the last review (often referred to as 'gaming'), and current declines in the cost of capital. The companies claim that they have made large savings in the past by implementing demanding efficiency programmes. They argue, however, that they have now wrung all possible savings out of their systems and there are no more to be had, that the infrastructure will deteriorate on projected expenditures and that movements in cost of capital are cyclical and will be reversed.

Who is right? I could express my own views on this but I would be as much crystal-ball gazing as anyone else. In any event while facts are free, you shouldn't value an opinion for which others don't pay and you shouldn't hear an opinion for which others do pay. The water companies can point to such graphs as figure 1 that shows that water companies' returns have fallen by 30% over the past year relative to the stock market as a whole since the regulator published his first consultation document. On the other hand, the regulator might retaliate by showing total returns since privatization (as in figure 2) that have still been in excess of those on the stock market as a whole even allowing for recent under-performance and the effect of the windfall tax.

But neither graphs are very relevant since high or low returns can be due to either slack (or tight) regulation or efficiency savings over and above those anticipated at the previous review. Past returns therefore do not allow one to identify the source of over- or under-performance. Of more relevance is the market's current assessment of likely future returns relative to the amount that companies should be receiving. This can be measured by comparing the value that the market attaches to utilities (their market capitalization) relative to the value that regulators attach to their assets when setting charges (the regulatory asset base). If anticipated future rates of return are just in line with the cost of capital then this ratio should be equal to unity. If the regulator has been too generous in setting prices or has over-estimated the cost of capital then the ratio will be greater than one and if he has been too draconian it will be less than one.

Unfortunately, diversification of utilities out of their core activities has complicated this powerful test. At a previous one of these seminars, Tim Jenkinson and I argued that core utilities should be listed on stock markets separately from the rest of their groups. This is required to allow valuations of regulated businesses and their costs of capital to be determined. It is particularly important where utilities have been acquired by other firms. It is now impossible to obtain any accurate stock market information on electricity distribution companies. The problem exists in water but is less acute. It is nevertheless necessary to make adjustments for the non-core businesses of water firms. Table 4 reports the ratio of the market capitalization (market value of equity plus book value of debt) to the sum of the regulatory asset base of utilities and the book value of the remainder of their businesses. It records ratios that are somewhat in excess of but close to unity. It is probably an overstatement of the true ratio because the book value of non-regulated businesses has not been restated to current costs. Nevertheless, it suggests that the market believes that current price proposals are not far off those required to yield a normal return on current regulatory asset bases.

2 What is going wrong with regulation?

Given that it is hard to imagine a regulatory review being undertaken with greater care and consideration, why does the process remain so fragile and at risk of collapsing into rate of return regulation? The answer is that it has one serious deficiency. To see what this is, consider the theory that underlies the incentive arrangements described above. Companies are to be given five year retention periods after which gains are to be passed onto customers. Why? This is thought to replicate competitive markets in which firms gain temporary competitive advantage before entry occurs or competitors react and imitate. There is no particular reason for choosing five years – it is very short in comparison with the lives of many assets in the water and sewerage business and short in comparison with most patent lives. It therefore provides weak incentives for the pursuit of efficiency savings. It is however probably long in relation to periods over which costs can be predicted with any measure of confidence and to political cycles over which attitudes to utility profits may change. The five years therefore has more to do with regulatory and political expediency than economic theory.

Indeed this is not how competition works at all. Firms operating in competitive markets do not earn a fixed excess return for specific period and then normal returns thereafter. They earn high returns so long as competitors fail to match their output or costs and until new firms enter into the market. If, as indeed it should, regulation mimics competitive markets then the rolling five-year procedure is not the appropriate system.

Furthermore it is unlikely to be sustainable. It relies on being able to project normal levels of costs and demand over the five-year period. To the extent that errors are made in these projections, firms have windfall gains and losses imposed on them. That is precisely what has happened since privatization. When Ian Byatt notes the unanticipated efficiency gains in water over the past five years, he is as much describing the inaccuracies in predicting productivity gains as the powerful influence of the regulatory system.

It is the inherent impossibility of making accurate aggregate forecasts over five years that undermines the current system. After all, macroeconomic forecasting over two let alone five years is regarded as highly suspect. The provision of abnormal losses or gains for the industry as a whole is neither a necessary nor a desirable feature of an incentive system. It gives rise to precisely the types of calls for profit sharing arrangements that we have heard powerfully expressed over the past few years. The regulators and the government have quite rightly resisted these. They point to the fact that it is a move in the direction of rate of return regulation and blunts incentives. But that is an inevitable consequence of creating a regulatory process that gives incentives through industry wide returns. This has nothing to do with the way in which markets

provide incentives. As noted above, competitive markets operate through the relative incentives that they provide to companies to earn temporary abnormal returns against the background of average normal returns.

This conflict between stable returns at the industry level and individual firm incentives lies at the heart of the problem with the current regulatory system. The impossibility of accurate forecasting over even a relatively short period of time combined with the political and commercial unacceptability of abnormal industry wide profits and losses mean that the current system of price cap regulation will almost inevitably break down. Whether or not price cap regulation is formally abandoned in the near future, interventions by the regulator between reviews will undermine the operation of regulation as anything like a pure price cap.

A graph of rates of return in the water industry since privatization published in OFWAT's consultation document illustrates the point very clearly (figure 3). It shows that at the beginning of the privatization period water companies were on average earning around 12% post tax rates of return and even now they are earning 8%. Given that the regulator currently believes that the post-tax cost of capital is under 5%, it is not surprising that there has been a political outcry when the industry as a whole, not individual firms, have been consistently allowed to earn between 50% and 150% more.

But this gloomy prognostication does not mean that price cap regulation should be abandoned. At each review, regulators regularly go through the ritual of reaffirming their support for price cap regulation. And so they should because the principle of creating a regulatory system that provides firms with incentives and does not create the gold-plating of rate of return is vitally important. Furthermore, there is no reason why the incentive effects of regulation need be lost. There is a perfectly feasible way of delivering them without either incurring the high costs of the current review or the inevitable political backlash of inaccurate forecasts. But it needs a different approach.

3 A different approach

The main attraction of rate of return regulation is that it avoids the need to make prior forecasts of future costs and demand. Prices are simply set to achieve a particular outturn return. However, this simplicity is achieved at a considerable cost in terms of incentives to lower costs. As noted above, competitive markets achieve these incentives by providing *relative* incentives for firms to outperform each other. A desirable system of regulation would therefore combine the simplicity of rate of return at the aggregate level with the relative incentives of competitive markets.

The way in which this can be done is by setting prices as at present for firms on the basis of projected costs over a five or ten year period. The regulatory asset base which is used to determine prices would be rolled forward in relation to projected capital expenditures as at present (together with price revaluations) and prices set on the basis of the cost of capital and projected operating costs. But at the end of each year the regulatory asset base would be adjusted not only for projected new capital expenditures and changes in the RPI but also for differences between average rates of return in the industry as a whole and the cost of capital.

To take an example, suppose that the average rate of return of water companies is 2% in excess of the cost of capital. Then at the start of the next period the regulatory asset base of all companies will be reduced by 2%. Relative values of the asset base and price levels of companies will be unchanged but the average level will re-establish returns at the cost of capital across the industry as a whole.

The attraction of this approach – which I will term relative price regulation (RPR) - is that it combines the best features of price cap and rate of return regulation. It retains incentives for companies to outperform their peers. As noted above, competitive markets create incentives via relative returns for as long as companies have superior performance not for pre-specified periods. That is precisely what RPR does. Companies with costs below average go on earning returns above the cost of capital until competitors mimic their performance.⁴

RPR has the merit of rate of return regulation that at an aggregate level prices are set ex post. It therefore avoids the fundamental problems noted above of having to make accurate projections over five year periods of industry wide levels of demand, productivity growth, operating and capital expenditures. Aggregate fluctuations in these are simply offset through adjusting outturn industry wide rates of return to bring them back in line with the cost of capital.

It also incorporates profit sharing without a diminution in incentives. Customers share in the benefits of out performance at the industry level through price reductions to bring aggregate rates of return back in line with the cost of capital. Companies retain incentives to out-perform their peers by retaining relative returns in excess of the cost of capital.

It might at first sight be surprising that incentives are not weakened by clawing back aggregate industry profits. The reason is that the benchmark against which the performance of firms is measured is unaffected by the performance of a particular

⁴ The approach cannot, of course, be applied to natural monopolies, for example national electricity or gas transmission. It emphasizes the advantages of comparators and the costs of mergers in regulated industries

firm. Thus if $EP_i(X_i)$ is the excess profit of firm i ($P_i(X_i)$) relative to the industry average which is dependent on its efficiency savings X_i then

$$EP_i(X_i) = P_i(X_i) - \sum_j \alpha_j P_j(X_j)$$

where α_j is the share of firm j of industry assets. Thus the marginal return to firm i of a unit increase in its efficiency savings is

$$EP'_i(X_i) = P'_i(X_i) - \alpha_i P'_i(X_i)$$

where ' denotes a derivative. Provided that the number of firms is large and the share of firm i is small then this is approximately the same as $P'_i(X_i)$ – the incentive of firms with no benchmark adjustment. Even this small diminution of incentives can be eliminated by measuring the benchmark of the industry for firm i as average profits excluding that of firm i , ie $\sum_{j \neq i} \alpha_j P_j(X_j)$. In that case, $EP'_i(X_i)$ exactly equals $P'_i(X_i)$.⁵

Far from diminishing incentives, RPR intensifies them by allowing excess returns to be retained for longer periods without risks of regulatory intervention. By separating industry wide and individual firm adjustments, it offers the opportunity of providing more powerful incentives than at present. The need for ex post interventions by the regulator will be avoided by the automatic adjustments that occur at the industry level. Regulators will be therefore be able to commit credibly to the retention of incentive arrangements whereas at present they are prevented from doing so by the emergence of unexpectedly high or low rates of return.

RPR therefore eliminates three of the four fundamental difficulties with the current regulatory review recorded above – predicting obligations, forecasting operating and capital efficiencies and providing incentives. RPR also eliminates the fourth problem that is currently being encountered and that is the determination of the cost of capital. Under RPR rates of return at the industry level are equal to the cost of capital. While rates of return are unknown for individual firms, they are across the industry as a whole. The cost of capital of all water utilities is therefore known precisely. It is the riskless rate. The reason is that a portfolio comprising all the water companies (weighted together by their regulatory asset base) will earn a rate of return equal to the cost of capital. A portfolio of water companies is therefore riskless even though each individual firm is risky. In terms of figure 3, had RPR been in place since privatization then post-tax rates of return would have been flat throughout at a cost of capital close to the riskless rate and in looking forward rates of return can be predicted with confidence to be equal to the cost of capital.

⁵ This assumes that there are no direct spillovers of efficiency savings from one firm to another arising from, for example, technical improvements.

This has two attractions. Firstly, the cost of financing the water industry will be reduced because in aggregate it will be riskless. This will significantly lower charges to customers. Secondly, problems of measuring equity risk premia and beta coefficients will be avoided by making the regulatory cost of capital dependent only on debt and not equity costs of finance. This deliberately overstates the point. In practice, some residual equity risk will remain since rates of return will be adjusted at most annually but its scale and significance will be considerably reduced.

RPR will not of course eliminate the need to undertake cost comparisons. The cost structures of firms are dependent on a range of factors outside their control (eg population density, age of inherited capital stock, physical terrain etc). As at present, price structures across the industry will have to take account of these considerations. However, what RPR does is to focus attention appropriately on relevant relative cost considerations and away from aggregate future changes. As OFWAT has led the way in demonstrating, considerable progress can be made in comparative cost exercises and benchmarking. There is an immense amount of data on which to perform cost comparisons. Over time, as more data accumulates then these models will be further refined. The factors that will drive relative prices are therefore amenable to modelling; those that relate to aggregate movements cannot be modelled with anything like the same precision. Relative cost projections can be updated in a mechanical fashion as new information becomes available, though the more weight that is placed on current as against historic cost data in projecting forward relative costs, the lower will be the proportion of relative performance retained by firms. A balance can therefore be struck between strengthening incentive effects by allowing firms to retain relative out-performance for longer periods than at present as against updating relative cost estimates with current data.

4 Conclusions

The periodic review in water has been a very impressive exercise. It continues the principles that OFWAT established from the start of openness, careful analysis, consultation and discussion. Since economists are rarely praised for their practical competence, it is a pleasure to note that it is an economist who has been at the helm of this process.

I have avoided trying to draw conclusions in this paper as to whether proposed prices are too high or too low. As I noted, both sides can put forward compelling evidence in support of their cases. But the high degree of uncertainty as to who is right is indicative of the nature of the regulatory problem: there are too many issues over which reasonable people can significantly disagree. The regulator may have over-reacted to past excess returns and imposed too draconian efficiency assumptions on

firms. The cost of capital may have been pushed down too far. OFWAT believes that it has produced convincing evidence in support of its proposals; many people in the industry genuinely believe that this is not the case and that proposed charges will not be adequate to finance their obligations.

The regulatory process simply should not have such a high degree of uncertainty associated with it. We should not, some 15 years after the introduction of price cap regulation in BT, still be arguing about the fundamental process of price setting. Even if the Beesley and Littlechild's aspiration of regulation withering on the vine was a touch optimistic, we should by now have converged on a procedure that is essentially mechanistic in nature. But we haven't. We are still debating the very basic issues: cost projections, incentives and costs of capital. Something is fundamentally wrong.

The paper has argued that what is wrong is the incentive mechanism. Providing incentives through price cap as against rate of regulation was a noble objective and should not be lost. But the way in which it is currently being implemented, not just in water but across utilities as a whole, is both inappropriate and unsustainable. It relies on creating aggregate incentives over time instead of relative incentives across firms. It therefore hinges crucially on projections that are inevitably disproved almost as soon as they are made. The regulatory process is, as a consequence, inherently unstable and exposed to regulatory and political interference. In its current form, it seriously risks collapsing into rate of return regulation.

Not only would this be highly undesirable, it is also unnecessary. A system that combines the best features of rate of return regulation (in particular setting prices on the basis of actual rather than projected outcomes) with the incentives of price cap regulation has been described. "Relative Price Regulation" involves adjusting the regulatory asset base of all companies for divergences of average industry rates of return from the cost of capital. It is easy to implement, avoids the need for accurate medium term cost and demand projections at an industry level and focuses attention appropriately on comparative costs. It reduces the cost of capital close to the riskless rate and allows lower charges to be levied on customers. Most significantly of all, by incorporating an element of profit sharing at an industry but not an individual firm level, it credibly re-establishes and enhances the incentive properties of price cap regulation.

Table 1**Operating Efficiency Savings of Different Utilities Prior to and After Their Most Recent Reviews**

	Annual OPEX growth for each sector	
	Prior to review (actual)	After review (allowed for)
Water industry–real OPEX per unit delivered	-0.2	-2.0
REC distribution–real unit OPEX, net of depreciation	-2.7	-2.0
NIE–real OPEX per customer	-8.5	-5.7
Transco–real OPEX per unit throughput	-5.6	-8.0
BT–real unit costs	-3.4	-3.0 to -4.0
BAA–real staff costs per passenger	-3.8	-4.0 to -6.0
Manchester Airport–real staff costs per passenger	-2.9	-4.6

Source: OXERA calculations.

Table 2**Operating Efficiency Targets Set for Water Services in the Next Review Period**

	Frontier	Catch-up	Aggregate
Base OPEX	1.4	0 – 3.5	1.4 – 4.9
Capital maintenance	1.4	3 – 12	7 – 16
Capital enhancement	2.1	3 – 19	9 – 25
Enhancement OPEX	2.1	0 – 21	2 – 23

Source: Draft Determinations, OFWAT, 1999.

Table 3**Productivity Growth in Different Sectors of the UK Economy, 1986 – 1996**

Sector	Growth %
Electricity	6.5
Gas	6.5
Water	-0.2
Transport and storage	2.4
Market sector	1.5
UK economy	1.3

Source: OXERA Productivity Database

Note: The negative TFP estimate for the water sector is biased by the difficulty in measuring a key output in the sector, namely quality.

Table 4

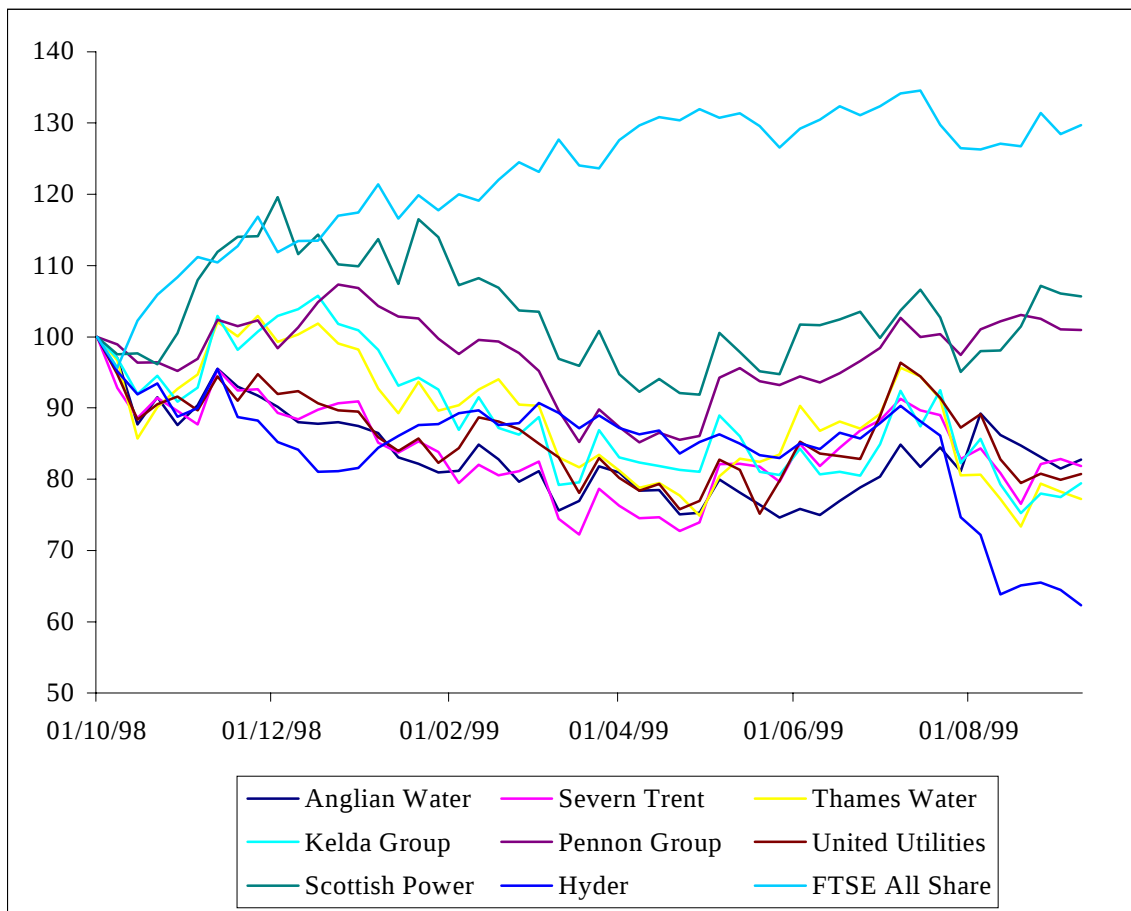
Ratio of Market Capitalisation (Market Value of Equity and Book Value of Debt) to Sum of Regulatory Asset Base of Water Companies and the Book Value of the Remainder for the Groups

Firm	Market Capitalization plus Book Value of Net Debt	Regulatory Asset Base (RAB) plus Book Value of Non- Regulatory Assets (NRA)	Ratio of Market Cap plus Book Value of Net Debt to RAB plus NRA
Anglian	3386.7	3041.4	1.11
Hyder	2398.8	1999.4	1.20
North West (United Utilities)	6360.3	5209.9	1.22
Severn Trent	4503.2	3787.9	1.19
South West (Pennon)	2052.2	1344.5	1.53
Thames	4596.8	3774.7	1.22
Yorkshire (Kelda)	2446.8	2089.8	1.17

Source: OXERA

Figure 1

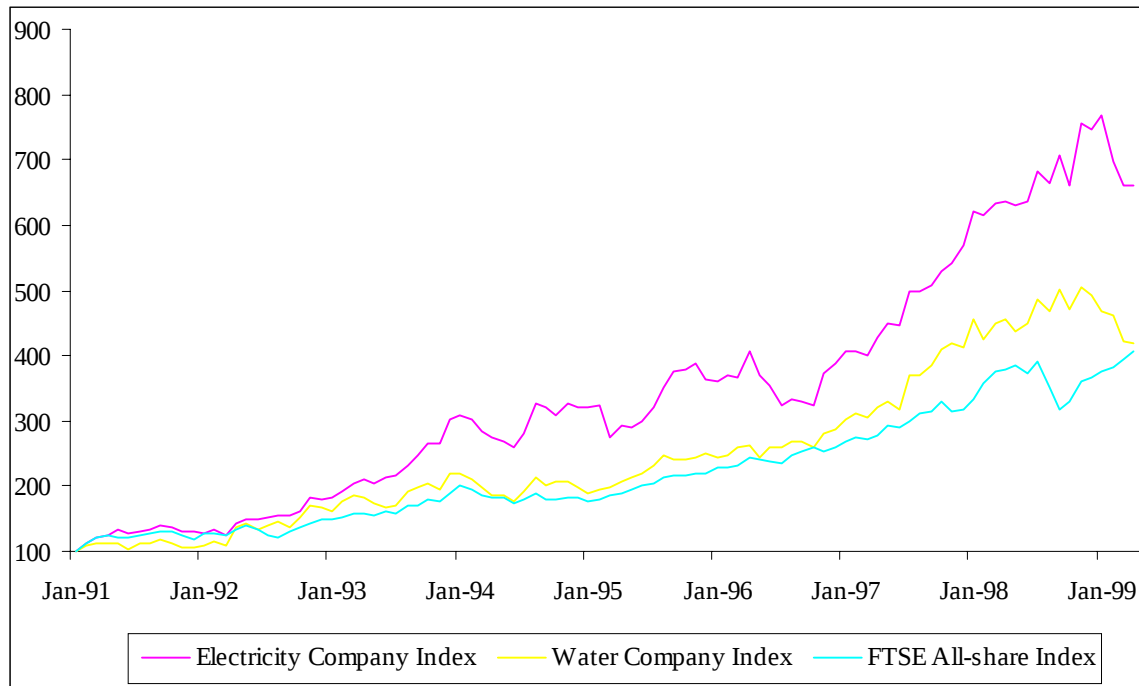
Total Rates of Return of Water and Sewerage Companies and the FTSE All Share Index, October 1998 to September 1999



Source: OXERA, UtilityView Finance Database; Datastream

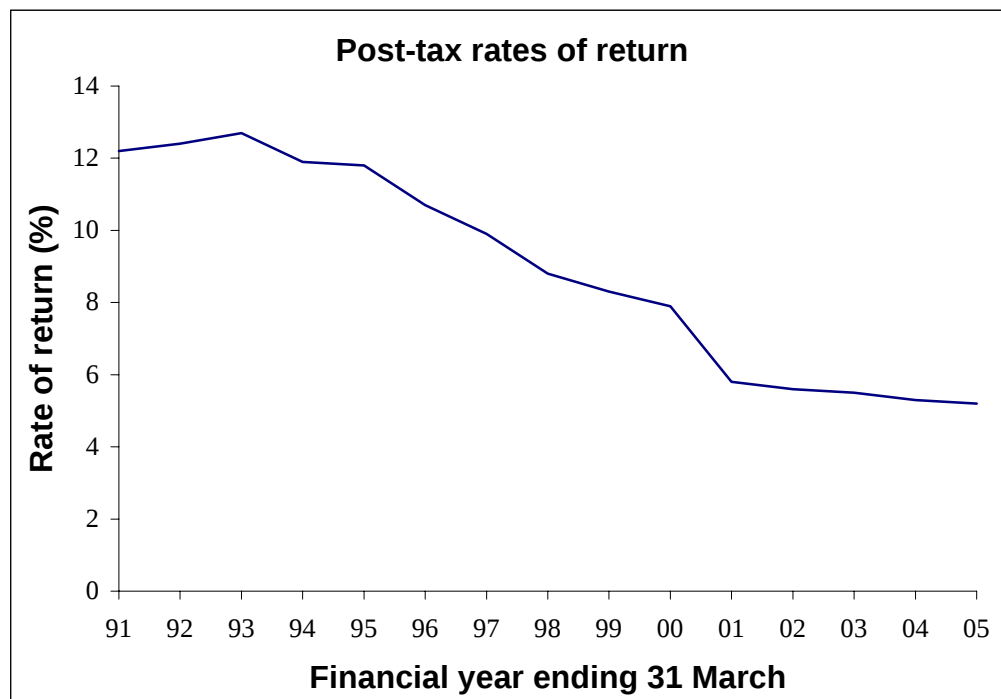
Figure 2

Total Rates of Return of Water and Electricity Company Indices and the FTSE All Share Index, January 1991 to April 1999



Source: OXERA

Figure 3



Source: Draft Determinations, OFWAT, 1999.