Department of the Environment

Economic Regulation of Privatised Water Authorities

A report submitted to the Department of the Environment

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Contents

PREFACE

The terms of reference of this study were as follows:

> 'To advise the Department on the economic regulation of water authorities, if privatised, with particular reference to the applicability of the method used in the case of British Telecom, popularly known as RPI–X. You should consider whether amendments or qualifications of that approach are required; or, if you consider that method inapplicable, you should consider what alternative methods might be applicable. In carrying out this assignment, you would have access to the work already done by the Department on the possibility of privatising the water authorities, including the preliminary advice received from the Department's merchant bank advisers. To limit the scope of your work you should assume that the water authorities would be privatised in substantially their present form and that responsibility for economic regulation would be placed with an independent regulator, whose position would be similar to that of the Director-General of OFTEL.'

The study was commissioned in mid-October 1985. A first draft report was required by 22 November and a final report by 6 December.

I have been much helped by discussion with representatives of the Department of the Environment, three water authorities, the Water Authorities Association, the Department of Trade and Industry, HM Treasury, No. 10 Policy Unit, the Office of Telecommunications, British Telecom and several academic economists. I am particularly grateful for the comments and suggestions of Professor M. E. Beesley on the economic issues involved. None of these representatives or individuals should be held responsible for the views expressed in this report.

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1 Main Issues and Proposals: Executive Summary

1.1 Privatisation of the water industry in England and Wales differs in two fundamental respects from all other privatisations which have so far been achieved or actively considered. First, the water industry is largely a natural monopoly. Second, privatisation will involve not one but ten water authorities. These distinctive characteristics of water privatisation have important implications for economic regulation. (A third distinctive and significant issue, concerning protection of the environment, is largely outside the scope of this report.)

Regulation of Monopoly (Chapter 2)

1.2 This report examines the economic regulation of the 'core services' of water supply and sewerage, which account for about three quarters of a water authority's turnover. These services are natural monopolies and likely to remain so. In order to protect customers against monopoly power, it will be necessary to provide more comprehensive and permanent regulation than for other privatised industries. Regulation must encompass not only prices but also levels of service. The two aspects must be considered simultaneously.

1.3 The form of regulation needs careful thought because ill-designed regulation will discourage efficiency and innovation. Regulation of a monopoly needs to channel the profit incentive into reducing costs via increased efficiency, so that these cost reductions can be passed on to consumers in the form of lower prices and improved levels of service.

Privatisation of Ten Authorities (Chapter 3)

1.4 The privatisation of ten water authorities immediately invites comparison between them. Customers and shareholders will ask: have Ministers and regulators dealt equitably with each authority? This, and the burden of negotiating with ten authorities, means that regulation needs to embody as much uniformity as the different circumstances of the authorities permit.

1.5 The number of water authorities may be turned to advantage. It enhances the scope for competition, especially in the capital market. Shareholders will make direct comparison of performance. The regulator, too, can compare the policies and performance of the different authorities. To limit prices or profits he can use the performance of the whole water industry as a 'yardstick' outside the direct control of any single water authority.

The Scope for Competition (Chapter 4)

1.6 Competition is not an alternative to regulation of the water authorities, but it is an important complement which can facilitate the regulator's task and provide added protection to customers. The main scope for competition in the product market is in the provision of commercial services (including tourism and overseas consultancy), in the provision of core services on the borders between water authorities, and in franchising or sub-contracting.

Efficiency and the Capital Market (Chapter 5)

1.7 Even if competition in the product market is increased, it will still be small. The effectiveness of regulation will be enchanced by harnessing, rather than discouraging, the forces of competition in the capital market. The top management of a private water authority which engages in 'empire-building', or which fails to perform adequately in other respects, will be subject to pressure from shareholders. It will become vulnerable to takeover.

1.8 The present water authorities are not too large to be taken over. The Secretary of State would have power to block undesirable takeovers, in the event of an adverse report from the Monopolies and Mergers Commission. Customers would in any case be protected by enforcement of the licence conditions. The artificial prevention of takeover (e.g. by a 'golden share') would shield inefficient management and remove the main protection for shareholders. With properly designed regulation, the threat of takeover can be used to benefit customers as well as shareholders.

1.9 The accusation that privatisation is simply a transfer from public to private monopoly can thus be rebutted in this case. Competition *is* possible in the water industry, but it takes place in the capital market

rather than the product market. The possibility of takeover ensures that each authority is under pressure to run its entire business efficiently and innovatively. Regulation (it will be shown) can enable the resulting benefits of increased efficiency and innovation to be passed on to customers in the from of lower prices or higher standards of service.

The Regulatory Framework (Chapter 6)

1.10 It is assumed that the economic regulator will have similar powers and responsibilities as in telecommunications. His task will be facilitated by the opportunity to compare ten water authorities (e.g. in assessing performance prior to revising price constraints or level of service obligations, or in considering failure to meet prescribed quality standards).

1.11 Licence conditions can be enforced through the Courts, if necessary by fines for non-compliance. But payment of fines might reduce a water authority's ability to meet its level of service obligations. An embargo on dividends until these obligations are met deserves consideration. The ultimate sanction for inadequate performance is revocation of the licence. This could have real force in the water industry. The economic regulator therefore needs power to compel a forced sale of a delinquent authority's assets and licence.

Regulating Levels of Service (Chapter 7)

1.12 Water quality standards will continue to be governed by the EC Drinking Water Directive, enforced by the Department of the Environment. Given the dramatic transition from public to private ownership, level of service targets proposed and enforced by the authorities themselves, while commendable, will not provide adequate reassurance of future improvements. Statutory provisions concerning levels of service need to be strengthened. Requiring the water authorities to publish information on indicators of service levels will facilitate enlightened public discussion and effective regulation.

Level of Service Targets (Chapter 8)

1.13 To reassure customers that levels of service will improve, it is proposed that licence conditions include specific level of service targets. In order to be workable they should focus on those issues considered most important by customers and susceptible to measurement; they should be long term targets (e.g. applying 20 years ahead), with additional interim targets; they should prescribe minimum acceptable standards rather than average levels; and they should be uniform over all authorities. The aim is systematically to eliminate the worst levels of service throughout the country as a whole. A similar approach could be applied to environmental standards if required. The levels and dates of the targets would be chosen together with the constraints on prices to ensure that all authorities could finance the investments required to secure improvements in levels of service.

Regulation of Profits or Prices (Chapter 9)

1.14 An RPI-X constraint, as used in the regulation of British Telecom, means that the licensee may not increase the weighted average of its prices by more than the rate of increase in the retail price index less X per cent. This type of constraint is preferable to rate of return regulation of profits because it is simpler, less expensive and interventionary, and less vulnerable to 'cost-plus' disincentive effects.

Problems of Permanent Regulation (Chapter 10)

1.15 Since price control of privatised water industries will be permanent rather than temporary, adoption of the RPI-X scheme needs further justification. Concern about the 'right level' of X is largely unfounded: there is a feasible range of X, which may be quite wide, over which the system will work. The danger that an undemanding level of X will lead to management slack and empire-building can be met by fostering competition in the capital market – in particular, by maintaining the threat of takeover.

1.16 A permanent RPI-X system must nevertheless provide for periodic revisions of X, to prevent prices and costs getting too far out of line. To avoid blunting the incentive to efficiency, the revisions in each authority's X must be based on factors outside the control of that authority itself. An 'industry yardstick', reflecting performance in the water industry as a whole, can be developed for this purpose.

Single or Multiple constraints (Chapter 11)

1.17 A single aggregate RPI-X constraint applied to each water authority is simpler, less restricting and less arbitrary than multiple constraints for each authority (e.g. a separate constraint for each major service). The water authorities should provide undertakings on future tariff changes (e.g. for five years ahead) so as to reassure different classes of customer against any unexpected adverse rebalancing of tariffs.

A Uniform X (Chapter 12)

1.18 The different conditions of the ten authorities initially suggest the need for up to ten different values of X. However, there is a stronger case for a uniform

X across all authorities. This would avoid accusations of discrimination, facilitate operation of the 'industry yardstick' for revising X, and minimise the burden of licence negotiations.

1.19 A uniform X does not require identical prices or profit streams. Financial feasibility for flotation simply requires that each authority be able to generate sufficient revenues to meet its obligations. X should also be such that average prices do not increase in real terms. An authority expected to earn profits above the minimum level presents no difficulty: it will merely generate higher proceeds at flotation. Level of service targets will be chosen conjointly with X to ensure financial feasibility, bearing in mind also the scope for changes in prices and accounting policy before flotation.

Other Services (Chapter 13)

1.20 The economic regulation of services other than water supply and sewerage has been examined only briefly, with the following conclusions.

1) A licence requirement periodically to publish long term plans to meet future demand would provide useful reassurance and information concerning water resources.

2) Land drainage, flood protection and sea defence account for about 3 per cent of turnover. The financing of these duties is assumed to remain in the public sector.

3) Highway drainage costs, which account for perhaps 10 per cent of turnover, should be charged to highway authorities rather than to customers.

4) The treatment of environmental services (fisheries, recreation, navigation and conservation), which account for about 2 per cent of turnover, has not been investigated here.

5) Bulk transfers, abstraction charges, discharge permits and trade effluent charges account in total for about 10 per cent of turnover. The economic regulation of these services raises important issues which need more consideration than has been possible in this report.

Conclusions

1.21 The monopoly power of the UK water authorities will require comprehensive and permanent regulation, encompassing levels of service as well as prices. At the same time it is necessary to avoid discouraging efficiency and innovation.

1.22 The presence of ten water authorities has been used in this report to design a scheme of regulation meeting the desired objectives. It is proposed that existing statutory duties be strengthened and supplemented by licence conditions specifying uniform long term minimum targets for levels of service and environmental standards. A uniform RPI-X constraint puts a ceiling on average price increases without introducing disincentives. The spur to efficiency is sharpened by competition in the capital market, including the threat of takeover. Periodic revisions in X, based on the yardstick of performance in the whole water industry, preserve the incentive to efficiency and ensure that the resulting benefits are largely passed on to the benefit of customers.

2 Regulation of Monopoly

Services provided by Water Authorities

2.1 The relative significance of the various services provided by a water authority is shown by Table 1. This sets out the turnover associated with the different functions of two representative Water Authorities: Severn Trent (ST) and North West (NW).

2.2 A striking feature of Table 1 is the similarity of the proportions. The 'core services' – Water Supply and Sewerage Services – together account for about 85 per cent of turnover for both authorities. (Excluding highway drainage, the proportion is about three quarters.) Trade effluent, water abstraction and other services pertaining to water resources, water supply and sewerage account for about 10 per cent of turnover. Land drainage accounts for 3 per cent and environmental services for the remaining 2 per cent of turnover.

Table 1 Analysis of Turnover for Two Water Authorities

	Severn Trent		North West	
Charge	£m		£m	
Unmeasured water supply	86		86	
Measured water supply	48		56	
Unmeasured sewerage	156		102	
Measured sewerage	13		41	
	303	(83%)	282	(85%)
Trade effluent	15		14	
Water abstraction	14		11	
Other water resources, water supply & sewerage	11		2	
	40	(11%)	31	(9%)
Land drainage	12	(3%)	10	(3%)
Environmental Service Charge	6.6		4.1	
Other environmental	1.4		0.5	
	8	(2%)	5	(2%)
Total turnover	363	100%	331	100%

Source: Severn Trent Water Accounts, 1984–85, page 14.
North West Water Accounts, 1984–85, page 9.

Note: Turnover includes abstraction, sewerage and water supply charges which are charged internally (£10 million ST, £14 million NW).

2.3 The annual accounts suggest that the relative magnitudes of expenditure and operating profit (on a historical cost basis, before interest charges) are roughly comparable to those for turnover. The main difference is that sewerage services account for a somewhat higher proportion of total operating profit, the other services somewhat lower. The profit on environmental services is approximately zero.

2.4 Economic regulation will need to focus especially on the core services of water supply and sewerage. These are provided to industrial customers (measured services) and to domestic and commercial customers (principally unmeasured). These services constitute the heart of the monopoly problem: the task of regulation is to protect all customers in their dealings with a monopoly supplier. The bulk of this report is concerned with this problem.

2.5 Many of the remaining services involve environmental considerations. They involve externality and public good issues as well as monopoly. They are less important in money terms, but equally complex analytically, and potentially more contentious. In this report it has not been possible to go beyond a few observations in the final chapter. Further investigation of these problems is required.

The Water Industry as a Natural Monopoly

2.6 With the exception of British Telecom, all companies and nationalised industries privatised to date have been subject to competition across most of their activities. British Telecom currently has significant monopoly power with respect to local networks. Nevertheless, it is subject to competition in customer services and to impending competition on trunk and international networks. Technological change (e.g. satellites or cable) could quite conceivably reduce or eliminate even BT's local monopoly in the course of time.

2.7 Of those industries where plans for privatisation are actively under consideration, British Gas, has substantial monopoly power via its distribution network. It is nonetheless in competition with several other fuels in all its markets. British Airports Authority has significant local monopoly power in each city.

However, the demand for airport services is derived from the demand for air transport, which is subject to competition from other modes of transport.

2.8 The UK water industry is even more monopolistic. Its natural monopoly derives from the established local networks of pipes and sewers. (Strictly speaking, there are two separate monopolies, one for water supply and one for sewerage, with inter-related demands.) Given these sunk costs, it would not be economic for potential competitors to install rival networks. In the 'core businesses' of water supply and sewage disposal there is no significant competition between authorities or from products or services produced outside the industry. Nor is the situation likely to change in the foreseeable future (at least, without dramatic technological advances e.g. pertaining to recycling of water). The UK water industry is thus the natural monopoly par excellence.

2.9 There are certain respects in which the water industry is, or could be, subject to a degree of competition. Whether competition is facilitated or prevented will affect the extent of monopoly power in the water industry. The scope for competition depends upon the initial structure of the industry, the statutory obligations and licence conditions, and the nature of the economic regulation. These are discussed in chapter 4. But whatever the framework adopted, there is no doubt that the monopoly power in the industry is exceedingly great. Consumers will demand a more comprehensive and permanent scheme of regulation than would be appropriate in any other private or privatised industry.

The Need for Regulation

2.10 Monopoly power may be exerted in a number of different ways: by increasing prices; reducing quantity, availability or quality of service; allowing the environment to deteriorate; or allowing efficiency to decline. Regulation needs to be designed to prevent such adverse effects. Indeed, it should secure improvements such as lower prices, more adequate supply, higher quality, a better environment and greater efficiency.

2.11 Water authorities provide a vertical chain of services: water resources, water supply, sewerage services, sewage and effluent treatment and disposal. (Unusually, the consumer is interposed in the middle of the chain.) Monopoly power can be exerted at any point in this chain. If the profit on, say, water supply is held down, monopoly profit can still be extracted by increasing the (internal) charge for water resources to the water supply division, or by increasing the price of sewerage services (since 'water in equals water out'). Regulation will therefore need to encompass all these services provided by the water authority.

2.12 One qualification may be noted here for future reference. Although monopoly profit may be extracted anywhere in the chain, it cannot be extracted twice. It is not possible to charge a monopoly price for water *and* for sewerage. There must be a limit (albeit perhaps a high one) to the total amount that customers are willing to pay. Increasing the price on one link thus reduces the monopolist's scope for raising the price on other links. (To the extent that if the government were to extract monopoly profit via a tax on the abstraction of water, the ability of water supply and sewerage organisations to extract monopoly profit would be correspondingly reduced. An alternative form of economic regulation, not explored here, would be to replace controls on prices and profits by such a tax on water resources, and to distribute the proceeds to customers or taxpayers to compensate for high water prices.)

2.13 Large industrial customers have a degree of choice whether to use the water authorities' services. For example, recycling reduces the use of water, pretreatment reduces the trade effluent to be disposed of. Such alternatives are not generally available for the core services of fresh water supply and sewerage. Regulation will therefore need to protect all classes of customers, not only domestic, agricultural and commercial, but also small and large industrial customers.

2.14 Because the core services of the water industry are expected to be natural monopolies for the foreseeable future, any framework for economic regulation of the water industry must be seen as permanent rather than temporary. In the case of British Telecom, price control was designed to 'hold the fort' until adequate competition developed. In the water industry, no such competition is presently foreseeable. This makes it all the more important to 'get the regulation right'. In particular, it is necessary to design for the longer term, by paying special attention to incentives and structural flexibility, as well as to immediate political considerations of prices and service levels and environmental standards.

Ascertaining Trade-Offs between Price and Quality

2.15 Although regulation must cover prices, quantity, quality, environmental standards and other obligations, there is a trade-off in the supply of these various elements. The higher the various qualities and standards imposed, and the heavier the other obligations, the more costly it will be to provide the required services. At some point, higher quality means higher prices.

2.16 There is also a trade-off between these elements from the point of view of customers. Lower price provides some compensation for lower quality; improved service some compensation for higher price.

2.17 No one of the elements can therefore be pursued without regard to the others. Regulation of prices or profits must be determined jointly with other regulations on levels of service, and the other responsibilities of the privatised water authorities.

2.18 In a competitive market it is left to firms and customers to ascertain the trade-offs in cost and preferences, and choices are made accordingly. Regulation abrogates this process. It is therefore necessary to develop some mechanism for ascertaining trade-offs in order to strike the right balance between price and levels of service. Specifically, Ministers and regulators need to judge the costs of improvements and the preferences of customers and others.

Disincentive Effects

2.19 Regulation of prices and profits will have disincentive effects. To the extent that reductions in costs must be immediately and wholly passed on to consumers, and therefore do not accrue to the regulated company, there will be less incentive to improve efficiency and to innovate, and greater incentive to indulge in 'empire-building' regardless of cost. A balance must therefore be struck between encouraging efficiency and passing on the benefits to consumers. Means must be sought to increase the pressure for efficiency.

Effectiveness of Regulation

2.20 The more constraints that are imposed on a water authority, the more difficult and costly it is to enforce them. The more targets that are aimed at, the less weight that can be attached to any one of them. So there is another direct trade-off between the effectiveness of regulation (e.g. on a major issue such as environmental standards) and the number of regulations imposed. Effective regulation requires simplicity.

Alternative Regulatory Philosophies

2.21 Given the various problems of regulation, one approach would be to dampen the profit incentive. This could be done by severely limiting payment of dividends, emphasising fixed interest rather than equity shares, controlling investment programmes, and heavily regulating all activities of the company. This would prevent excessive profit, and ensure that prices do not exceed costs. However, it would not escape the problem of having to decide what prices and levels of service ought to be. It would not ensure that costs themselves were as low as possible, nor encourage improvements in efficiency over time. Consumers could not be assured of improved levels of service at lower prices in future. The companies would not be attractive to potential shareholders.

2.22 The alternative approach proposed in this report is to harness rather than dampen the profit incentive. Specifying a maximum ceiling on price increases and minimum targets for levels of service, and allowing competition for control of water authorities via the capital market, is a means of organising competition to improve efficiency and provide required services at minimum cost. Regulation can be designed to ensure that, over time, the benefits of this competition are passed on to consumers in the form of lower prices and improved levels of service. Potential shareholders will find such companies attractive.

3 Privatising Ten Water Authorities

3.1 The privatisation of water differs from all previous privatisations insofar as there are ten water authorities rather than one. This imposes certain constraints with respect to the uniformity of their treatment. However, it also offers the opportunity to make regulation more effective.

Uniformity of Treatment

3.2 There are great differences between the ten authorities with respect to size, condition of assets, costs of supply, financial situation, present environmental standards and other obligations. The framework of regulation must accommodate these differences.

3.3 At first sight, it seems necessary to 'treat each case on its merits', and to tailor the economic regulation of each authority to its own special situation. Certain common principles might be established (e.g. uniform rate of return on capital). Allowable levels of prices, revenues or profits will then be determined separately for each authority in the light of its predicted operating costs, investment programmes and new capital requirements. These, in turn, would take account of the authority's obligations and the target levels of service and environmental standards which had been set for it. These parameters would subsequently be revised in the light of that authority's past performance and current prospects, and any desired changes in future obligations or targets.

3.4 Consider some of the implications of this approach. Setting licence conditions and writing the prospectus is not merely a matter of making decisions in the light of available information: it involves hard bargaining with the company to be floated. In this respect, the burden on the DoE and Ministers will be roughly ten times that of privatising British Telecom or British Gas.

3.5 Privatisation will create an entirely new category of shares on the stock exchange. Just as they did with BT, market analysts will attempt to place this unfamiliar beast in the context of other animals within the zoo. But now they will have *ten* such beasts to examine. Attention will inevitably focus on similarities and difference *between* them. Ranking the water authorities will be a new exercise, but one in which market analysts will be particularly adept. (BT has already found them more informed and critical than its former paymasters.) Variations in treatment will be highlighted. Initial differences in propects will be clearly reflected in flotation proceeds.

3.6 Customers are aware that prices and levels of service vary across the country. They will question on what basis the changes in these prices and service levels are planned to vary from one authority to another. If, after privatisation, one authority's prices are allowed to rise faster than others, the Minister will have somehow to reassure its customers that privatisation nonetheless makes them better off than they otherwise would have been.

3.7 Analogous difficulties arise after flotation, in the course of regulation. Every change in the licence exposes the economic regulator and the Minister to charges of unduly favouring or penalising the water authorities concerned. Such allegations will carry particular weight when a regulatory decision can be publicly seen to affect an authority's stock market valuation by millions of pounds overnight.

3.8 Variety of treatment makes it more difficult to compare performance for purposes of control. It exposes the regulator to 'capture' by the private water authority. The resulting danger is that an authority's requests for (e.g.) price increases will be accepted without serious question, or that strict regulation of prices will be offset by lax regulation of standards.

3.9 To summarise, against the obvious attractions of 'treating each case on its merits' must be set the burden on the Minister and the economic regulator, the problems of inconsistency and alleged unfairness, and the difficulty of control. Design of the regulatory scheme therefore needs to embody as much uniformity and consistency between authorities and over time as their different situations permit.

How much Uniformity?

3.10 Uniformity of treatment is thus conducive to equitable and effective regulation. But how much uniformity is possible and desirable?

3.11 It is not necessary or desirable or even feasible to impose identical prices or levels of service or environmental standards on all authorities. Nor is it even necessary to provide for identical profit streams. Revenues need to be adequate to cover operating expenses and to ensure finance for necessary investment. They should not be so excessive as to encourage their dissipation on dubious schemes. But within this range, some variation in profit streams is inevitable. (Such variations in expected profits will be reflected in different flotation prices for the privatised authorities. They will not affect customers or shareholders.)

3.12 A major part of this report is concerned to explore how far uniformity of treatment across all authorities in the industry is desirable, and what it entails, and to consider what changes in financial conditions are indicated before privatisation in order to facilitate the required uniformity of treatment.

Competition

3.13 Where there is a natural monopoly, the viability of competition in the product market is severely limited, but is nonetheless worth facilitating. The presence of ten water authorities enhances the scope for competition, especially for non-core services and in the capital market. These topics are discussed in chapters 4 and 5 below.

Effective Regulation

3.14 Privatising ten authorities provides the opportunity to make regulation more effective in protecting consumers than it otherwise could be. It does so by making more information and instruments available to the regulator. He can make comparisons. In enforcing and revising licence conditions for each authority he can draw on the experience, policies and performance of the other nine water authorities, and indeed the views of their customers and the general public. He can use the performance of the water industry as a whole as a yardstick by which to assess the performance of each individual authority.

3.15 It was noted earlier that regulation of prices and profits discourages the search for efficiency by the regulated company insofar as any cost reductions have to be passed on to its consumers. If cost increases can also be passed on there is an incentive to indulge in 'expense padding' and 'gold-plating'. In order to judge prices or profits, the regulator requires a 'yardstick' which is outside the direct control of the regulated company, but nonetheless reflects actual or 'best practice' conditions in that industry.

3.16 The availability of ten water authorities means that the maximum price increases allowed to each authority could be based, not on changes in that authority's own costs and performance, but on changes in cost and performance in the water industry as a whole (e.g. on the *average* costs or performance of the ten water authorities). This ensures that average cost reductions are passed on to customers without blunting the incentives of any individual authority to reduce its own costs. Performance of all authorities is likely to be higher, hence benefits to customers greater.

3.17 The final important consequence of privatising ten water authorities is that the regulator could be provided with a more credible threat in case of serious and persistent violation of statutory duties or licence obligations. The ultimate sanction is to offer elsewhere the opportunities provided by the licence. This could take different forms e.g. placing temporary contracts to manage the assets on behalf of existing shareholders, or most drastically by transferring the assets to another party. That there are nine other private water authorities, apart from other possible contenders, adds to the credibility of the sanction. (In this respect, again, water is distinguished from telecommunications and gas.)

Conclusion

3.18 Privatising ten water authorities offers both problems and opportunities.

1) The very different situations of the ten authorities need to be taken into account. Yet the burden on Ministers and regulators, and the need for equitable treatment and effective regulation, dictate as much uniformity as possible.

2) The privatisation of ten authorities enhances the prospects for competition in the product market and capital market.

3) Privatising ten water authorities makes it possible to improve the effectiveness of regulation by
(a) providing comparative information
(b) enabling price and other controls to be related to a yardstick based on industry performance, thereby protecting consumers without discouraging increased efficiency, and
(c) increasing the credibility of the ultimate sanction available to the regulator.

4 The Scope for Competition

4.1 In privatising British Telecom, it was appropriate to consider how far competition was or could be an alternative to regulation. To a lesser extent this is true of British Gas. In the privatisation of water, such a choice does not arise: competition cannot be seen as an alternative to regulation. Nonetheless, it is appropriate to consider competition as a *complement* to regulation. Extensive regulation will be necessary in any case, but if competition can be encouraged it will facilitate the regulator's task and provide added protection to customers.[1]

4.2 There are broadly three possibilities. First, competition in other commercial markets which are presently not a significant aspect of a water authority's activities. Second, competition in the provision of core services along the borders between neighbouring authorities. Third, the franchising out of particular activities or indeed whole services. We examine these in turn.

Commercial Activities

4.3 Water authorities can compete with other companies in respect of various commercial activities ranging from bottled mineral water to overseas consulting. These are presently minor fringe activities, not part of the 'core' business. Some activities may require economic and political resources not presently available, but in future they could be quite significant for some privatised authorities.

4.4 One example is Thames Water Authority's £40 million tourism plan for the London stretch of the Thames. This involves new piers, probably housing shops and restaurants, and a service of fast river buses. (*The Times,* 20 November 1985). Another example is described in *Water Bulletin International,* 8 November 1985. 'The British water industry – including British Water International, the water authorities' overseas consultancy – is currently involved in a £2000 million plan to improve Cairo's sewerage system.' (The article also notes that 'future British participation in the project . . . lies in the hands of the politicians and bankers who will have to agree further loans and possibly aid money for the scheme to ensure British firms remain involved'.)

4.5 Water authorities are beginning to enter the market for customer services such as meter installation and pipe repairs, maintenance of private sewage works and quality inspection of large buildings. They could even move into plumbing.

4.6 To limit the possibility of subsidisation of commercial activities by core services, and to aid shareholders in the appraisal of commercial success, it would be sensible to require non-core activities to be carried on by a separate subsidiary company. (More generally, it would be helpful to the regulator if all major activities were divided into separate subsidiaries.) It would also be appropriate to reinforce the 1980 Competition Act by an explicit licence condition to prevent anti-competitive practices such as 'predatory pricing' or 'vertical squeezing'.

Competition between Water Authorities

4.7 The high costs of installing networks and transporting water or sewage means that direct competition between authorities to supply core services is largely uneconomic. Nevertheless, direct competition to supply water or sewerage facilities could be feasible on the borders between two authorities – for example, in the case of a new town, shopping centre, industrial estate or factory.

4.8 In order to protect customers, each authority will need to be given a defined territory within which it has an obligation to supply core services if requested. However, there is no need for this to be a statutory monopoly. Consumers will be better served and protected if they have the right to invite supply from neighbouring authorities.

4.9 Present restrictive practices legislation will need to cover any 'market-sharing' arrangements, for both core and non-core services.

4.10 Water authorities presently act together on a number of other issues – for example, wage negotiations and dealing with government. In some respects, it will be convenient for that to continue. But pressure from shareholders will change the attitude of the authorities themselves. It will also need to be considered how far the ten members of a private

industry should be encouraged or allowed to act together. In wage bargaining, or in negotiating licence revisions with the economic regulator, a 'united front' may not be in the customer's best interest.

Franchising

4.11 Given existing networks, facilities and plant, other organisations could compete to provide water supply and sewerage services on a franchise basis. There could conceivably be limited competition in the provision of new water resources (e.g. reservoirs and boreholes) and sewage treatment plants. The maintenance and construction of the networks themselves could also be put out to tender.

4.12 Some have advocated that all these services should be compulsorily franchised, with the role of water authorities essentially limited to the granting and supervision of such franchises. The terms of reference of this study, which require me to 'assume that the water authorities would be privatised in substantially their present form', rule out consideration of this alternative structure. The question therefore arises how far any benefits of franchising could be achieved within the present structure.

4.13 A private water authority will have the freedom to contract out any of its business, as indeed is now widespread (e.g. mainslaying, repair and maintenance) or to franchise any of its operations. In effect, there is competition between the authority's own in-house staff and outside contractors. This could be extended. Each authority will tend to specialise in those services where it has particular strengths (e.g. laboratory analysis) and to buy in other services. One can even imagine an authority having a subsidiary company responsible for administration of the regulated business, but buying in all its services (such as transport, computing, maintenance) from the most cost-effective source, whether from other subsidiaries inside the authority or from outside suppliers.

Restructuring

4.14 The form in which the water authorities are initially privatised does not preclude subsequent restructuring, either by statute or as a result of market forces. Over time, and consistent with meeting their statutory responsibilities and licence conditions, the authorities will restrict or widen the scope of their activities, specialising in those activities where they have a comparative advantage and expanding into new areas perhaps outside the water industry itself. Provided that licencing policy does not preclude it, they could divide into separate organisations; alternatively they could merge with other companies or with each other. They could engage in joint ventures to share investment in new resources.

4.15 All such restructuring would have to show net benefits in order to come about, otherwise shareholders will object. For example, any advantages from a merger between two water authorities (e.g. reduction in transactions costs or economies of scale in the provision of customer services) would need to outweigh the dis-economies of large scale operation. The Office of Fair Trading and the Monopolies and Mergers Commission would also have to be convinced that such benefits outweighed any detriments to competition, and that the merger was on balance not against the public interest.

4.16 If regulation can be designed to facilitate rather than discourage such voluntary restructuring in response to market forces, while continuing to ensure adequate service and to protect against monopoly power, this will allow more efficient industry structures to emerge over time, to the ultimate benefit of consumers.

4.17 Some have argued that there will be a tendency for authorities to prefer 'empire building' to cost-cutting. This is certainly likely if profits are regulated on the basis of cost-plus, or if there is insufficient pressure towards efficiency from the capital market. It is therefore important that economic regulation provide a strong incentive for the privatised authority to seek the most cost-effective set of contractual arrangements. The next chapter deals with this issue.

5 Efficiency and the Capital Market

5.1 Even if competition in the product market is increased, it will still be very limited. It is therefore necessary to consider how efficiency can best be promoted in other ways. A privatised authority must be prevented from extracting its monopoly profit in the form of inefficient management. A means needs to be found to counter possible disincentive effects of regulation.

5.2 The main pressure for efficiency must come from within: from the incentive of a private company to reduce costs so as to increase profits. As far as possible, regulation needs to maintain this incentive while at the same time ensuring that gains in efficiency are ultimately passed on to consumers in the form of lower prices and better service.

5.3 An important role in securing efficiency is played by competition in the capital market. The stock market sharpens the drive to efficiency because it provides such an immediate feedback on performance, both past and expected in the future. Shareholders care about future profits; they buy and sell shares in the light of their expectations. Share prices move accordingly.

5.4 The stock market influences control over resources. Other things being equal, more efficient companies will command higher stock market ratings, hence easier and cheaper access to capital. Companies that perform well will tend to expand; companies that perform less well will tend to contract.

5.5 The stock market also sharpens competition in the market for managerial talent. Top managers can more easily demonstrate success. The more able managers will be more quickly sorted from the less able, more highly rewarded, and given control of more resources. The less able managers will be asked to step down. Water authorities will be competing between themselves, and with quite different businesses, for the services of the best managers.

5.6 Competition in the capital market is naturally associated with the more entrepreneurial activities in which a water authority might engage. But it is equally applicable to its core business. The importance of water supply and sewerage services, and the lack of direct competition there, make it even more necessary to harness stock market pressures to increase efficiency. Price or profit control can bring down prices towards the level of cost, and eliminate excess profits. But regulation must rely on the profit incentive, enhanced by stock market mechanisms, to ensure that costs are systematically reduced wherever the opportunities to do so arise.

Takeover bids

5.7 A key feature of the stock market is the takeover bid. This is a means whereby alternative management teams compete to run the company. Under-utilised assets, overmanning, lack of corporate direction, failure to innovate, excessive or misdirected investment – all these render a company vulnerable to takeover. The takeover bid is the stockmarket's ultimate check on efficiency. It is also the major source of protection for shareholders.[2]

5.8 Note that it is not low profits *per se* (or for that matter high profits) that render a company vulnerable to a takeover bid. The stock market judges a company's actual profit performance against its *potential* performance. The performance of other companies is relevant only as a guide to what this potential might be. Age of assets, market conditions and regulatory constraints will all be taken into account. The central question is whether a company is doing as well as it could in the circumstances, or could do better under a different management.

Takeover and Natural Monopoly

5.9 Where there is natural monopoly, it has long been recognised that competition *in* the market is not feasible. The possibility of competition *for* the market has often been discussed. Franchising is a means of organising this, but a very imperfect one.[3] Takeover is a more effective means of organising competition for the market.

5.10 The threat of takeover thus has a particularly important role to play in the water industry. Many have argued the case for franchising out water supply and sewerage services as a means of introducing competition. There would be difficulties both in changing to this system and in operating it. Would

there be effective competition between incumbent and potential franchisees at, say, ten year intervals? What is to ensure that the franchising authority is itself efficient in awarding and monitoring franchises?

5.11 The possibility of takeover achieves the desired end more easily. If the incumbent management of a water authority is failing to operate efficiently, the takeover bid is precisely the means whereby a more efficient management can replace it. It is a continuous test, not limited to ten year intervals. A privatised water authority which insists on 'empire-building', when contracting out would be more cost-effective, will be more vulnerable to takeover.

5.12 Who benefits from takeover in the water industry? The technique itself is neutral. The distribution of benefits depends upon the regulatory framework. In order to protect shareholders, and to generate gains for redistribution, there needs to be sufficient inducement to potential bidders to discover and remedy inefficiency. But customers and the general public, too, need to benefit in the form of lower prices, improved levels of service and higher environmental standards. At the same time, of course, regulation needs to secure the continuation of core services, to protect customers against the creation and abuse of market power, and to prevent takeover which might have other adverse consequences.

5.13 To summarise, the public interest will be promoted by regulation which facilitates competition between alternative management teams via the takeover bid, provided that the benefits of improved efficiency due to takeover are ultimately and in large measure passed on to customers, and that there is a mechanism to prevent 'undesirable' takeover.

Feasibility of Takeover

5.14 Will the water authorities be so large that funding a takeover would be impossible or implausible?

5.15 It is not yet known what values will be placed on the assets of the privatised water authorities. The current cost valuation of their total assets is about £27 billion, so the average authority's asset value is just under £3 billion. This is large; but in 1984 alone there were 14 takeover proposals for companies with assets over £1 billion, the average value being £3.8 billion. (Source: Annual Report of the Director General of Telecommunications, 1984.)

5.16 The future stock market valuations of the privatised authorities are equally uncertain. They could range between £100 million and £1.5 billion. but in the last few weeks there have been five takeover bids worth over £1 billion, the largest being £1.86 billion (subsequently topped by the Guiness-Distillers bid of £2.2 billion).

5.17 Who might be interested in taking over a water authority? Potential candidates include design and construction companies and chemical firms. Direct experience of UK operations would be a valuable asset in bidding for overseas contracts. Foreign water companies are another possiblity. The General Water Works Corporation, the second largest US water treatment company with a 1983 turnover of $90 million, is a subsidiary of the French company Societé Lyonnaise des Eaux (which supplies water to 47 per cent of the population of France). Not least important are the nine other water authorities in England and Wales.

5.18 Thus, the financial size of the privatised water authorities would not be a barrier to takeover. In this respect, the water industry will be significantly different from telecommunications and gas. Competition in the Water sector of the stock market could be as active as in any other sector.

A Golden Share?

5.19 The possiblity of Government retaining a special 'golden share' has been mooted. This would serve a variety of control purposes, and in particular could be used to prevent undesirable takeovers. There is no doubt that some form of protection is required, but is a 'golden share' the best way to achieve it?

5.20 Such a control mechanism is an alternative to the regulatory framework examined in this report. The conditions for its use would need to be explained to potential shareholders. It is not clear what additional merits a 'golden share' would have. Indeed, it has disadvantages. It constitutes an additional difference between 'privatised' and other private firms, and sets a questionable precedent. It weakens the main protection which shareholders (including employee shareholders) have against inadequate management.

5.21 The proper specification and enforcement of licence conditions is the main protection for consumers. In addition, the 1973 Fair Trading Act already provides a well-established procedure for dealing with the possibility of undesirable takeover. The Secretary of State for Trade and Industry, advised by the Director General of Fair Trading, can refer a proposed merger to the Monopolies and Mergers Commission (MMC). If the Commission finds that the merger or takeover would be against the public interest, the Secretary of State has power to prevent it.

5.22 There is no doubt that a takeover of a water authority would fall within the ambit of the Act, on the £30 million size of assets criterion alone. There is

equally no doubt that any fears relevant to a water authority takeover (e.g. excessive concentration of ownership, or ownership by a foreign company) are within the statutory criteria pertaining to the public interest (s.84) and are in practice taken into account by the MMC and the Secretary of State. It is not clear what kind of takeover might be regarded as not against the public interest by the MMC yet require a special 'golden share' to prevent it.

5.23 A vital pressure to efficiency is lacking where takeover is precluded by statute, or rendered highly unlikely by other considerations. Both shareholders and customers are thereby disadvantaged. A 'golden share' is likely to deter beneficial takeovers, thereby protecting inefficient management, but is unnecessary to prevent undesirable takeovers. It would be preferable to avoid it.

6 The Regulatory Framework

6.1 It is assumed that each water authority will be subject to statutory duties and to an operating licence. The Secretary of State for the Environment (henceforth the Minister) will set the initial terms of the licence.

6.2 It is further assumed that the Minister and the Department of the Environment will have a continuing responsibility for

1) implementing the EC Drinking Water Directive, including granting derogations and delays (see next chapter);

2) enforcing and revising environmental standards;

3) judging appeals against water authority decisions concerning water abstraction permits and discharge consents.

6.3 The terms of reference for this study specify that 'responsibility for economic regulation would be placed with an independent regulator, whose position would be similar to that of the Director-General of OFTEL'. In this report the regulatory office is henceforth referred to as OfWat and the Director-General as DGWat. Assuming the regulatory framework to be as for telecommunications, the DGWat's responsibility will include

1) monitoring and enforcing the statutory duties and licence conditions (other than those which are the responsibility of DoE and local authorities);

2) negotiating licence modifications with the water authorities with the power to refer to the MMC in the event that he cannot secure agreement.

6.4 The precise division of responsibilities between DGWat and the Director General of Fair Trading (especially with respect to monopoly, anti-competitive practices and restrictive practices) has not been explored here.

Enforcement

6.5 If a water authority fails to meet any of its statutory provisions and licence conditions, what is the enforcement procedure, and what sanctions are available to OfWat?

6.6 Simply *publicising violations* of the statute or licence could be expected to have some deterrent effect. Chairmen do not like being pilloried. Statute and licence violations, even more than failure to meet self-imposed performance targets, will adversely affect the reputations and prospects of the authority and its executives. Nevertheless, if compliance may cost millions of pounds, bad publicity alone will not be a sufficient deterrent.

The Procedure in Telecommunications

6.7 In telecommunications, most of the inherited statutory obligations were transferred to the licences. This was partly because they could then be more closely tailored to the situation of each licensee, and partly because licences are more easily amended than statutes.

6.8 The enforcement procedure in telecommunications is expected to operate as follows. Suppose, perhaps after receiving complaints from customers or competitors or others, or in the light of other information, the DGTel has reason to believe that a licensee is contravening a licence condition (or has contravened and is likely again to contravene a licence condition). The DGTel will communicate with the licensee stating in what respects he believes the licence to be contravened, and asking the licensee to remedy the situation.

6.9 If this does not suffice, and the DGTel is satisfied that the licensee is contravening the licence, he has a duty to make an order requiring compliance. If the licensee fails to comply with the provisions of the order, he thereby violates his statutory duty to comply with the licence. Anyone who suffers loss or damage as a result of this breach of statutory duty can sue the licensee or anyone else whose deliberate action caused that breach. So too can the DGTel, who might institute proceedings for an injunction to benefit the general public (e.g. concerning the provision of public call boxes). Failure to comply with this injunction would eventually be a contempt of Court, punishable by fines. However, it is thought unlikely that a licensee would fail to comply with a Court order.

6.10 If the DGTel has not made a compliance order, a person affected by violation of a licence condition

cannot sue the licensee. However, he can apply to the Court for a writ of mandamus, requiring the DGTel to make an order, thereby allowing him to sue for future breaches.

6.11 Where the licence condition is a general rather than specific one (e.g. the universal service obligation), whether or not the licencee is complying will in certain cases be a matter of judgement. In such difficult cases DGTel will normally talk to the licensee first. Any resulting order will contain sufficient detail to be operational. (For example, it could conceivably require that a specified service be improved to a specified level by a specified date.)

6.12 The licensee can challenge an order through the Courts. However, this review would address only the question of whether the DGTel had followed the correct procedure, or acted ultra vires. It would ask whether there was available evidence to support the DGTel's view, or whether, on the contrary, no reasonable person could have come to this decision. The review would not assess the balance of the evidence, nor address the correctness of the DGTel's decision.

6.13 Mercury's licence requires it to provide service at specified numbers of nodes by specified future dates. Similarly, the cable licences specify numbers of homes to be called up in each area by specified dates. The licences give the DGTel discretion to alter the numbers, areas and dates of the interim targets but not the final number to be met by the final date. (This too, like most other licence conditions, can be modified by the DGTel by agreement with the licensee. There is also provision that a licensee is not obliged to do anything which is not practicable, though the licensee must use its best endeavours to comply. Whether it is 'impracticable' to provide a service can in the first instance be answered by the DGTel. As just noted, his decision can be challenged on procedural grounds.)

Implications for the Water Industry

6.14 The cost incurred or avoided in meeting or not meeting a level of service licence condition could run into millions of pounds. Would DGWat be willing to make a compliance order in the face of determined opposition by a private water authority pleading various reasons why compliance is not practicable?

6.15 In making this decision, DGWat has to judge whether failure to comply with licence factors is justified by conditions outside the control of the authority, or whether the authority has been negligent, incompetent or deliberately evasive. This is where the experience of the other nine authorities proves valuable. If all authorities have found unexpected difficulty, there may be a case for a *uniform* modification in all the licences (e.g. to lower a particular target or defer its achievement date). If, alternatively, the management of one single authority is called into question, this is where capital market pressures have an important role to play. An order requiring compliance is a signal to investors and alternative management teams that all is not well, that a change of management may be indicated, if necessary by takeover.

A Dividend Embargo

6.16 A difficulty in meeting level of service targets could no doubt be attributed to lack of funds. It would be argued that a fine of comparable magnitude to the cost involved would make it even more difficult for an authority to meet its level of service targets.

6.17 Where management is at fault, it would be helpful if some means could be found of penalising shareholders directly and redirecting all available funds towards meeting the licence conditions. One possibility would be to *prevent payment of dividends until the licence conditions are met*. The effect of this dividend embargo would be felt well before the actual date on which licence compliance was to be judged. Since the stock market discounts future dividend policy, share price would fall as soon as it was rumoured that an authority was likely to cease paying dividends. An authority which was entirely capable of meeting the targets, but through inefficient management was unlikely to do so, would become vulnerable to a takeover bid and would need to take appropriate remedial measures immediately.

6.18 The arguments against such a dividend embargo are that it would further distinguish privatised water authorities from other companies in the private sector, that it would be novel and unpredictable, that it might prejudice successful flotation, and that it would set an undesirable precedent.

6.19 The arguments for and against a dividend embargo are analogous to those for and against a 'golden share'. They merit serious consideration before deciding on policy.

Revocation of Licence

6.20 The ultimate sanction for serious and persistent failure to meet licence provisions is *revocation of the licence*. This would be appropriate whether the failure was due to deliberate flouting or simple incompetence.

6.21 In telecommunications, such a sanction is more plausible for minor licensees than for public telephone operators such as British Telecom. If British Telecom's licence were revoked, it is not clear who else could take over. In contrast, the threat of revocation could have real force in the case of water authorities. At

minimum, there are nine other existing water authorities who could take over management of a delinquent water authority on an emergency basis or permanently. Any presumption against merger between two water authorities could be set aside where there is serious failure to meet licence conditions. OfWat would need to be given powers to ensure continuation of the core business, e.g. to compel a forced sale of the delinquent water authority's assets.

7 Regulating Levels of Service

7.1 Present statutory duties require the water authorities to provide a wholesome and sufficient supply of water, to provide public sewers and to make provision for sewage treatment. These duties are assumed to continue. (Certain defined exceptions are allowed e.g. the Drought Act provides that under specified conditions water authorities may apply to the Secretary of State for emergency powers to restrict supply; presumably this will continue also.)

7.2 This chapter considers the regulation of water quality; the possibility of self-regulation by the water authorities themselves; the possibility of amplifying the statutory duties to require improvements in service; the provision of information to facilitate enforcement of statutory duties; and the desirability of making foul flooding subject to the normal law of nuisance.

Water Quality

7.3 The World Health Organisation specifies minimum bacteriological standards for water supply. The recent EC Drinking Water Directive lays down minimum bacteriological, chemical and acceptability standards. It covers about 60 parameters. This Directive has the force of law. The Government is responsible for ensuring compliance with these standards.

7.4 Not all UK water supplies presently meet these standards. Individual supplies falling short of standard are specifically authorised by the DoE, by means of delays or derogations. A delay may be granted where there are public health implications, to give the authority time to carry out remedial work. A delay implies that the standard must be met at the end of the specified period. A derogation is a deferment of decision where there are no public health implications; at the end of the specified period the DoE may require compliance or grant a delay or a further derogation. Water supply covered by such authorised delays and derogations is regarded as compliant with the EC Directive.

7.5 It is assumed that this policy will continue. Water supply which is compliant with the EC directive will presumably satisfy the statutory duty to supply wholesome water.

7.6 Monitoring of water quality standards is presently the responsibility of district councils, most of which rely mainly on the water undertakers' own monitoring procedures. It is assumed that this responsibility will continue after privatisation. As testing becomes more sophisticated, the local authorities may increasingly find it necessary to sub-contract the monitoring. (It was suggested earlier that competition between authorities might develop in the provision of monitoring services.)

7.7 Privatisation will fundamentally change incentives in the water industry. Privatised authorities are likely to bring greater pressure to bear for derogations and delays. Clear and non-discriminatory guidelines will need to be developed to avoid allegations of laxness, favouritism or unfairness. The prospectus will need to include an explicit statement of future DoE enforcement policy. This will affect each authority's capital and operating costs and hence the maximum prices or profits that can be specified (or, alternatively, it will affect the proceeds of flotation). Although the economic regulator and his office will not be responsible for authorising or enforcing water quality standards, they will need to take DoE policy into account when considering revisions in licence parameters.

Self-Imposed Targets

7.8 In 1982 each water authority agreed with Government that one of its three main objectives would be to 'offer a quality of service that is acceptable, having regard to costs and to effects on the environment, and to remedy recognised deficiencies over a reasonable period'.

7.9 To illustrate, Severn Trent has defined and collects level of service data on four parameters which it believes are most directly perceived by the customer. This information is used to support the DoE data referred to later in this chapter. It reportedly influences the priority accorded to capital schemes. Thus, in its 1985 Corporate Plan (p.2) Severn Trent identified the following number of properties as suffering from unacceptable service, and made plans to resolve about 30 per cent of the problem within three years.
No doubt other authorities likewise collected information which they deemed most relevant to their own situations, and made plans accordingly.

Properties with Unacceptable Services (000's)

	Existing 1984–85 (000's)	To be Improved by 1987–88 (000's)	Capital Cost of Improvement £m
Pressure	24.1	7.4	8.3
Availability	6.2	1.9	11.2
Observed Quality	49.7	14.9	10.3
Flooding	1.1	0.4	21.8

7.10 What role should such targets play after privatisation? Suppose that the licences required each water authority to set itself level of service targets, perhaps after discussion with its consumer consultative committees. These targets would be published in the authority's annual corporate plan and/or its annual report, along with its previous and current performance record. They would be revised from time to time. It would be up to each water authority itself to ensure that challenging targets were set and met.

7.11 Such self-regulation involves little burden on the regulatory authority OfWat, which would neither set nor enforce the targets. It puts the initiative and responsibility fairly and squarely on each water authority.

7.12 The water authorities have expressed some concern about this approach. In its response to the DoE discussion paper on privatisation, the Water Authorities Association said (June 1985):

> "19(f) It is also for consideration whether authorities should publish their standard of service targets. This would be for the information of consumers and to promote an informed dialogue, not as a basis for a regulation or enforcement."

7.13 Self-imposed targets are a natural policy for a nationalised undertaking. But would a privatised water authority have any incentive to set and meet challenging level of service targets which did not contribute directly to profits? The satisfaction associated with providing good service is not to be discounted, and even an unregulated private monopolist would be willing to sacrifice some profit to reduce complaints. A good reputation would be an asset in bidding for overseas contracts and in attracting high quality staff; likewise a manager associated with successful performance would have improved job prospects elsewhere.

7.14 Nonetheless, it is questionable whether the satisfaction and long run increase in revenue as a result of better reputation would be sufficient to make it financially worthwhile voluntarily to divert as much capital expenditure to improving levels of service as customers would prefer. Other avenues for investment, either more profitable or specifically required to meet licence obligations, would no doubt have priority.

7.15 In any case, the changes in incentives as a result of privatisation will be so novel and suspect that customers will fear the worst. They will need further assurance that each authority will 'remedy recognised deficiencies over a reasonable period'. Thus, while authorities should be encouraged to set, publicise and meet their own targets, some further conditions will be required in the licence if it is desired to ensure that minimum quality of service will be raised to specified levels.

Strengthening Statutory Duties

7.16 The present statutory duty to supply does not explicitly require the water authorities actually to improve their less acceptable standards of service. It may therefore be helpful to amplify the duty to supply by a further duty 'to maintain and improve the levels of service of water supply with respect to (e.g.) reliability, pressure, wholesomeness and acceptability'. There would be analogous modifications for sewerage services.

7.17 This wording is not entirely satisfactory: it is not worth improving for ever regardless of cost. Intuitively, the idea is to formulate as a statutory duty (or more probably as a license condition) the objective which the water authorities have recently accepted (see above) 'to remedy recognised deficiences over a reasonable period'.

7.18 Such a duty leaves open the question of what precise levels of service are required. Nonetheless, any *fall* in levels of service from present levels would presumably constitute a breach of this duty. So too would any *absence of improvement* in aspects where other water authorities offered both higher and improving levels of service.

7.19 In order to enforce a duty to improve levels of service, the DGWat would need information about current service levels. The DoE indicators are an obvious source to examine.

DoE Level of Service Indicators

7.20 All water authorities currently collect and publish information on a set of 25 indicators of levels of service. The definition of these indicators is nationally agreed with the DoE. They pertain to the following aspects of service:

Water Supply Availability:	new connections, response time.
Water Supply Quantity:	reliability, pressure, supply failure.
Water Supply Quality:	bacteriological, chemical, acceptability.
Sewerage Availability:	new connections

Sewerage Service Quality:	flooding, sewer collapses, storm overflows.
Environmental Protection:	river water quality, estuarial quality, sea outfalls, sludge disposal, effluent consents.
Land Drainage and Flood Protection:	standards, conditions of main river, tidal defences, flood warning.
Customer contact:	emergencies, correspondence, administration, billing.

In its annual corporate plan, each authority gives details of its current performance on each indicator, together with predicted performance for the next four years.

7.21 It must be appreciated that the levels of service reported for each of these indicators are necessarily *estimates*. There is no automatic or objective mechanism for recording (e.g.) water pressure at each point of supply. Estimates of inadequate service are built up by the water authority from complaints and a limited number of measurements, coupled with subjective estimates of how wide an area suffered the deterioration in service, how many consumers (or what quantities of water) were affected and how long the poor service lasted. In several cases, authorities apparently did not collect the data necessary to make a reasonable estimate of the level of service indicator requested. In other cases the estimates reported may have reflected strategic considerations (e.g. to strengthen the case for more investment).

7.22 Interpretation may differ between authorities and over time. For example, Thames feared in 1984 that half its water would fail an EC directive because of traces of organic compound; one year later it predicted no non-compliant supplies after 1985–86. The measurement of taste is subjective, and requires tasting panels. Authorities and perhaps consumers have different views on what standards are relevant and acceptable in their areas.

7.23 There are also difficulties in definition. Some of the indicators cover many aspects, and one single figure is necessarily unrepresentative. For example, as regards chemical quality, in 1982–83 Severn Trent water was over 99 per cent compliant with respect to nitrate, chloride, lead, manganese, magnesium and sulphate, 98 per cent for fluoride, 95 per cent for ammonia, but only 78 per cent for iron and 69 per cent for hardness.

7.24 Despite these various difficulties, there would be three major advantages in continued publication of such indicators:

1) it would provide for better understanding by customers and more informed public debate;

2) it would provide the regulatory authority and investors with valuable data on these aspects of comparative performance;

3) it would provide the regulator with the evidence necessary to enforce the statutory and licence conditions with respect to the present duty to supply and the proposed duty to improve levels of service. (Enforcement procedures are discussed in Chapter 9 below).

7.25 British Telecom used to publish statistics on service quality, but ceased doing so after privatisation. Oftel is having to make other arrangements to acquire the necessary information. (*Sunday Times*, 12 January 1986).

7.26 It is therefore proposed that the licences include conditions requiring the water authorities to continue to publish past, present and projected future levels of service with respect to these 25 standard indicators (or modified versions thereof).

7.27 If these indicators are to be published and used in these ways, it will be necessary to agree on precise definitions and interpretations and to specify the sampling procedures to be used. It may be difficult and costly to obtain accurate estimates, and in such cases the net benefit of the indicator needs to be considered, but distorted indicators are not an acceptable basis for regulatory decision-making.

7.28 Other indicators are in course of preparation, pertaining to state of assets and operating costs. The licences could usefully require such further information to be published for similar reasons.

Foul Flooding

7.29 Foul-flooding is what economists call an 'externality': a detrimental effect on a third party. Such detrimental effects are normally subject to the law of nuisance. Anyone who is adversely affected is entitled to have the nuisance stopped or to adequate compensation, and may enforce this in Court if necessary.

7.30 The water authorities, along with many other nationalised industries, currently enjoy the legal privilege of being exempt from proceedings in tort. They cannot be sued for nuisance. At the time of privatisation BT lost this legal immunity. Presumably this will also happen when the water authorities are privatised. Foul flooding will then be subject to normal legal procedures. It will not be necessary to deal with the problem by means of regulation.

7.31 In many cases it would be more economic for a water authority to pay compensation than to eliminate the nuisance (e.g. if protecting a couple of properties from occasional flooding would cost £50,000). Terms of compensation could no doubt be found which would benefit both the authority and affected parties. If the

legislation or licence precluded such settlements, and insisted on eliminating foul flooding regardless of cost, this would increase the water authorities' costs. If such settlements were allowed, not only would the public have the protection of law, but the Minister could also negotiate a better deal for customers at the time of flotation, in terms of constraints on average price increases.

7.32 It is for consideration whether other aspects of sewerage service quality (e.g. sewer collapses and storm overflows) should be dealt with in the same way, or whether they are more appropriately dealt with in terms of the various regulatory procedures discussed in this report.

Conclusions

7.33 Levels of service can be protected and improved in the following ways:

1) Water quality standards will continue to be governed by the EC Drinking Water Directive, enforced by DoE. Future enforcement policy needs to be clearly stated.

2) Level of service targets set and enforced by the water authorities themselves are to be encouraged, but will not suffice on their own to reassure customers that service levels will be raised.

3) The present duty to supply could usefully be amplified by a further duty to maintain and improve levels of service.

4) Requiring the water authorities to publish information on indicators of service levels will facilitate enlightened public discussion and effective regulation.

5) Privatisation will presumably remove the present legal exemption from proceedings in tort. Foul flooding will become subject to the law of nuisance. This will be a more effective protection for the general public than regulation.

8 Minimum Level of Service Targets

8.1 One of the aims of privatisation is to achieve significantly higher levels of service where these are now unacceptably low. Given the change of incentives in the water industry, statutory duties or licence conditions of a general nature, even those requiring an authority 'to improve levels of service', will probably not provide adequate reassurance to customers that the defects will be remedied soon enough.

8.2 This chapter explores the possibility of writing into the licences certain targets on levels of service, expressed in quantitative terms, that the water authorities should have to meet. These targets would be set initially by the Secretary of State and enforced and revised where necessary by OfWat.

8.3 A workable set of licence targets needs

1) to apply non-discriminatorily to every authority, in order to avoid accusations of prejudice or favouritism, and to facilitate comparisons of performance;

2) to recognise that current levels of service vary greatly within and between authorities;

3) to concentrate on the few most important aspects of service rather than attempt to control everything; and

4) to allow adequate time for services to be raised.

8.4 These conditions suggest that the licence targets should concentrate on remedying the most unacceptable levels of service rather than on improving levels of service which are already reasonably adequate. This implies raising the lowest levels of service to a *uniform national minimum,* over a practical period of time.

8.5 Uniform level of service targets may cause some concern. Given the different initial situations and the different costs involved, is it desirable or even possible for all authorities to meet them? Whether it is desirable gradually to eliminate substandard service over a period of, say, twenty years is a matter for public policy, but it seems not unreasonable. Whether it is feasible, and what the costs are, depend entirely upon the levels of service and the target dates prescribed.

8.6 It will be emphasised in the following chapters that constraints on prices need to take fully into account the cost and investment implications of level of service targets. Various changes in prices and other policies may also need to be made *before* flotation. So licence conditions on prices and services levels, albeit uniform for all authorities, need to be chosen so as to ensure that *all* water authorities can finance their required investment programmes. They will have a positive expected future profit stream and can therefore be floated as private companies. (It will further be argued that insofar as differences in future costs between water authorities lead to differences in profit streams, this will simply be reflected in flotation proceeds: it is not necessary for all authorities to have the same expected profits.)

Illustration

8.7 The above principles may be illustrated using the data on DoE service levels published in the 1985 corporate plans. Take as examples the indicators for water pressure, bacteriological quality and chemical quality. (Although, as noted, the latter two aspects will be covered by other arrangements.)

8.8 The first two columns of Table 2 show the percentage of population in each authority experiencing inadequate water pressure in 1983–84 and the authorities' own projections for 1988–89. The initial levels (of those reported) vary from 0.2 per cent to 7.2 per cent; the 5 year predicted levels vary from 0.1 per cent to 5.5 per cent. The median rate of elimination of unsatisfactory service is one quarter over five years.

8.9 An illustrative level of service target meeting the principles outlined above would have the following form: no more than (say) 0.1 per cent of the population of any authority should experience inadequate water pressure by the year 2003–04. (Since there will be 'pockets' where costs of improving service would be extremely high, it will usually be more sensible to formulate targets in terms of probabilities or proportions than to require 100 per cent compliance.)

8.10 Interim targets for the more immediate future may be useful as a means of reassuring customers and monitoring progress. A first interim target might take the form: by 1988–89 (i.e. after 5 years) each authority must be at least one quarter of the way from its 1983–

84 starting point to the long term 2003–04 target level. Such a formulation of the interim target would preserve the principle of uniform treatment while recognising the very different starting points of the authorities. Figure 1 illustrates this graphically.

8.11 The penultimate column of Table 2 juxtaposes the 1988–89 levels of service implied by this interim target, and the levels proposed by the authorities themselves. They are very similar. This is intentional, to show that uniform targets are consistent with initial differences between authorities and with present plans. More (or less) demanding interim or long term targets could obviously be imposed if desired. The present calculations are purely illustrative.

8.12 Table 3 shows the percentages of supplies failing to meet the bacteriological standard and certain chemical standards of the EC Directive. The illustrative minimum level of service targets are: no more than 0.2 per cent of water supplied should fail to meet the bacteriological standard of the EC Drinking Water Directive by the year 2000, and no more than 0.1 per cent should fail to meet certain chemical standards by that year. The interim targets are that by 1988–89 each authority should be at least one quarter of the way towards meeting these targets.

8.13 The three illustrations all assume an interim target of the form: one quarter of the way to the 20 year long term target within 5 years. It is convenient and politically attractive to have this proportion uniform for all targets, but by no means necessary. The more important requirement is that, for any target, the proportion should be uniform for all authorities.

Table 2 Population Experiencing Inadequate Water Pressure

Authority	Reported actual	Present prediction	Illustrative interim target*	Illustrative long term target
	1983–84	1988–89	1988–89	2003–04
An	4.1%	3.6%	3.1%	0.1%
NW	3.5	2.6	2.7	0.1
N	0.3	0.2	0.25	0.1
ST	7.2	5.5	5.4	0.1
SW	0.2	0.1	0.2	0.1
S	0.7	0.1	0.55	0.1
Th	n.a.	n.a.		0.1
Wel	2.0(?)	1.6(?)	1.5	0.1
Wx	1.3	1.0	1.0	0.1
Y	1.1	0.9	0.85	0.1

* assuming 25 per cent reduction of difference between 1983–84 level and 2003–04 long term target.

n.a. not available.

Source: Percentages in this table are obtained by dividing absolute numbers in 1985 Corporate Plans by connected population at 1.4.83.

Note: Inadequate pressure is pressure too low to supply the roof storage system of a normal two-storey house on more than a specified (small) number of days per annum (with certain further qualifications).

Table 3 Non-Compliance with EC Water Quality Standards

Authority	Reported actual	Present prediction	Illustrative interim target	Illustrative long term target
	1983–84	1988–89	1988–89	2003–04
A. *Bacteriological Standard*				
An	0.7%	0.7%	0.6%	0.2%
NW	6.2	3.8	4.8	0.2
N	0	0	0	0.2
ST	10.0	n.a.	7.7	0.2
SW	3.1	2.7	2.5	0.2
S	0.8	0.6	0.65	0.2
Th	n.a.	n.a.		0.2
Wel	n.a.	n.a.		0.2
Wx	2.7	2.4	2.2	0.2
Y	25.6	9.2	19.4	0.2
B. *Chemical Standards*				
An	66.1%*	n.a.	49.65%	0.1%
NW	2.1	0	1.65	0.1
N	0	0	0	0.1
ST	14.1–46.2	n.a.		0.1
SW	2.2	2.1	1.7	0.1
S	0	0	0	0.1
Th	0.9	0.9	0.75	0.1
Wel	n.a.	n.a.		0.1
Wx	n.a.	n.a.		0.1
Y	0.07	0	0.07	0.1

* For 1984–5.

n.a. not available

Source: Percentages are calculated by dividing forecast non-compliant quantities in 1985 Corporate Plans by total water supplied in 1982–83.

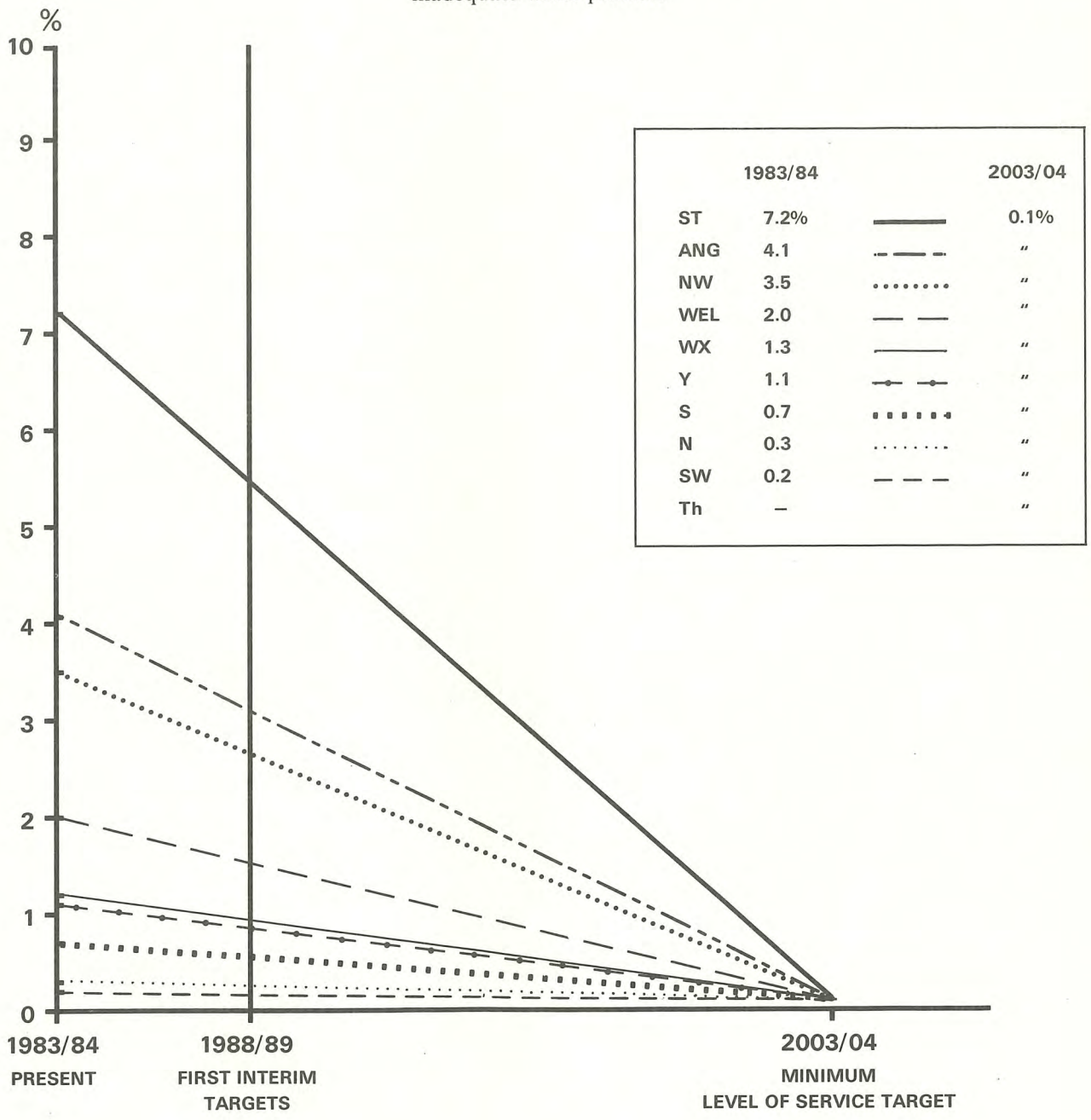
Definitions: Estimated volume of water supplied per annum which fails to meet the MAC** Maximum Admissible Concentrations in EC Directive relating to Quality of Water intended for Human Consumption for

A Bacteriological standard: total coliforms and faecal coliforms

B Chemical standards: 1 or more of sodium, nitrates, nitrites, chlorine and lead.

8.14 An alternative approach (not further explored here) would be to set only short-term targets, say for five years ahead, but to make them uniform and to revise them every five years. In the present illustration of inadequate water pressure, the target for 1988–89 might be set at 5.4 per cent, for 1995 at 2.7 per cent and for 2000 at 0.1 per cent. The procedure would reduce the need to decide now on acceptable standards for the long term uncertain future. A disadvantage is that in the earlier years the targets would not bite on the better-placed authorities. Of course, the proposed long-term target levels are not immutable: if it became apparent that they had been set too high or too low, they could be uniformly modified with due notice given.

Figure 1: An illustrative level of service target: percent of population experiencing inadequate water pressure



River Quality and Pollution Control

8.15 The procedure described for levels of service could, if desired, be applied to environmental standards. DoE currently specifies five measures for sewage treatment and disposal:

- river quality (proportion in each of 4 classes)
- estuarial quality (ditto)
- coastline quality (population connected to unsatisfactory sea outfalls)
- population with unsatisfactory sludge disposal
- effluent discharges not compliant with consents.

8.16 It is assumed that the Government intends to be more explicitly involved than hitherto in setting and revising water quality standards for rivers, estuaries and coastal waters. One way of doing this is to embody minimum standards in the licences. As with water supply, there are significant advantages in concentrating on one or two major issues, setting uniform national minimum standards, and requiring a uniform proportional rate of elimination of unsatisfactory conditions.

8.17 Table 4 illustrates this with reference to river quality standards. Take classes 1 and 2 as 'acceptable', classes 3 and 4 as 'unacceptable'. The final column in Table 4 shows the implications of requiring all authorities to reduce the length of unacceptable quality rivers to at most 4 per cent of total by the year 2003–04. The illustrative interim target is a quarter of this achievement by 1987–8. The interim targets correspond roughly to present plans, although North West would be pushed harder, and Anglia and Severn-Trent not so hard. Southern Water already meets the 4 per cent target (the proposed 'maintain and improve' statutory provision would ensure that its standards are not allowed to decline). As before, if exceptionally high targets were set for the latter authorities, this would allow others to plead for exceptionally low targets. The force of the environmental policy would be lost.

8.18 As with level of service targets, the level of environmental standards prescribed will directly affect the prices charged and/or the proceeds of flotation. All need to be set (bargained for) together. Subsequent changes in environmental standards will be concentrated at (say) five yearly intervals when revision of prices or profits is also considered.

Table 4 Length of Unacceptable River Quality

	Total length	Actual unacceptable length		Planned		Illustrative interim target*		Illustrative long term target	
	1982–83	1982–83		1987–88		1987–88		2003–04	
A	4441	514	11.6%	281	6.3%	431	9.7%	178	4%
NW	5068	858	16.9	844	16.7	693	13.7	203	4
N	1344[a]	97	7.2	87	6.5	86	6.4	54	4
ST	5143	403	7.8	281	5.4	355	6.9	206	4
SW	2705	179	6.4	160[b]	5.9	157	5.8	108	4
S	2011	68	3.4	60	3.0	68	4.0[c]	68	4[c]
Th	3737	185	5.0	185	5.0	179	4.8	149	4
Wel	4781	320	6.7	306	6.4	287	6.0	191	4
Wx	2011	95	4.7	67	3.3	90	4.5	80	4
Y	6031	690	11.4	615	10.2	579	11.6	241	4

Source: 1984 Corporate Plans

Definition: 'Unacceptable' means total length in kilometers of water courses in classes 3 and 4 (as proportion of total length in classes 1 to 4 excluding class X).

* set at one quarter of distance from 1982–83 actual to 2003–04 long term target

[a] 1340 in 1987–88.

[b] 1983–84 latest target available.

[c] Where present standards already meet the target, it is assumed that standards will be required not to decline.

Determining Priorites

8.19 Which particular aspects of service should be embodied as targets in the licences? What target levels should be set? These questions have both political and economic aspects. It is beyond the scope of this report to answer them in detail, but some relevant considerations (first raised in chapter 2) may be noted here.

8.20 Inclusion of a target in the licence reassures the electorate that explicit provision is being made to protect consumers. But the more targets that are included, the greater the costs of compliance and the problems of monitoring and enforcement.

8.21 Which aspects of service are initially included in the licence determines what the Minister and the water authorities have to take into account in bargaining over prices before privatisation. The more targets, and the higher target levels, the less attractive deal the Minister will be able to negotiate on prices, or alternatively the less that will be realised on flotation. The effect on prices and proceeds will of course vary between authorities.

8.22 In setting licence conditions before flotation, it will be necessary to form a view as to what different improvements in service will cost and what consumer preferences are. OfWat will subsequently need to make such appraisals as an input into the next round of

standard setting. The first targets (set before flotation) will necessarily be rudimentary; (later they can be refined where necessary.) Traditionally, the water authorities themselves have taken the lead on such matters. Mechanisms for gathering relevant information for DoE and OfWat will therefore need to be established. For example, Oftel is setting up a quality control panel from about 3000 telephone users to monitor numerous aspects of quality of telephone service (including interference, audibility, reliability of connections, frequency of faults, repair service, directory service, operator enquiries and payphones). (*Sunday Times,* 12 January 1986)

8.23 Effective regulation does not necessarily require every condition of service to be specified in the licence *ab initio*. After privatisation, attention can be focused on particular problems in particular authorities. Take customer contact, for example. What constitutes good, acceptable or unacceptable service is particularly subjective and difficult for a regulator to monitor. Such matters seem more appropriate for self regulation by the water authority. If customers are encouraged to rely on OfWat rather than go to the authority in case of complaint, OfWat will become overburdened and water authorities themselves will tend to ignore complaints until they have been filtered and backed by OfWat. Regulation of customer contact service levels needs to be a last resort rather than a first option.

8.24 But suppose complaints about a particular water authority *do* mount up. After investigation, DGWat may be able to secure an undertaking from the authority that customer service will be improved to specified acceptable levels within a specified time. If not, DGWat can either make a compliance order (if he believes the water authority is violating a general licence provision), or he can propose a compulsory licence amendment to the MMC. Indeed, he can make a general monopoly reference, requiring the MMC to investigate this and other respects in which the water authority may be abusing its monopoly position.

8.25 Regulation is always costly and should not be extended unnecessarily. But the monopoly situation of the water industry requires comprehensive regulation, and the presence of ten authorities helps to make regulation a more manageable task. Admittedly there may be more work in gathering information. But the greater diversity of experience, and the ability to make comparisons, will be an aid to regulation. Competition in the capital markets may also be invoked to aid in enforcement, as chapter 6 indicated.

9 Regulation of Profits or Prices

9.1 At the heart of economic regulation lies the question whether there should be constraints on profits or prices, and in either case how these constraints should be formulated and implemented. This financial regulation cannot be considered in isolation from the regulation of quantity and quality of service, nor from the 'regulation' stemming from competition in the product markets and capital markets. All these three elements are interdependent and form part of economic regulation. The effectiveness of economic regulation depends upon all three being designed to work in harmony.

9.2 Control of profits by means of an allowed rate of return on capital is the method used in American regulatory systems. It is well understood and accepted by US investors. Although not widely used in this country, it is the basis on which the statutory water companies are regulated. However, it has not been adopted for the regulation of British Telecom. There, a price control system is in use, popularly known as RPI-X. The system adopted for BT is also proposed (with modifications) for BAA and British Gas, and is currently more familiar in the UK. There is increasing dissatisfaction with regulation in the USA itself, and American authorities have expressed interest in the RPI-X system used in the UK.

Rate of Return Regulation of Profits

9.3 Under the US system, a regulated company that wishes to change its tariff puts forward a proposal to the regulatory authority. The total revenue which the proposed prices are expected to yield is compared with the total revenue requirement. The latter is defined as operating expenses plus depreciation plus allowed rate of return on capital.

9.4 The central argument for rate of return regulation is that it protects both consumers and producers by ensuring that expenses and investments are justified, and by providing a fair reimbursement for the services provided. These claims have increasingly been challenged.

9.5 The problems of 'cost plus' contracts are well known in the UK. Likewise, a company which is regulated under the US system has reduced incentive to cut its costs and seek efficiency, insofar as any savings must immediately be passed on. (This is offset to some extent by 'regulatory lag'.) There is also an incentive to 'gold-plate' the rate base by excessive investment, and to bias the long term planning process towards capital-intensive rather than labour-intensive methods of production. There is limited evidence of this so-called Averch-Johnson effect in the USA.[4]

9.6 To counter these tactics, the regulatory authority needs to determine in some detail which expenses are allowable, what depreciation policy is appropriate, and what rate of return is 'fair'. All these will typically change over time and be disputed. The regulatory authority also needs to approve major capital expenditure programmes to make sure the investment is not excessive. It needs to allocate joint costs between the regulated and unregulated businesses, and between the different services provided. The burden on the regulatory authority is therefore quite considerable, implying the need for a large staff and budget. Moreover, the allocation of joint costs is by definition arbitrary, and hence political.

9.7 The more the regulatory authority is involved in 'second-guessing' the company's plans, the more it becomes committed to defending the company when the approved plans are implemented. There is a heightened danger of 'regulatory capture'.

9.8 Empirical evidence suggests that prices in regulated US electric utilities during the earlier part of this century were no lower than in comparable unregulated electric utilities. It is increasingly apparent that regulation has served to keep prices higher than they otherwise would have been in the US airline and trucking industries. In many cases, it now appears, economic regulation was introduced and designed to protect producers rather than consumers. Other interest groups apart from shareholders, notably suppliers and employees, have also secured monopoly rent at the expense of consumers.[5] All forms of regulation are vulnerable on this score; the point here is that rate of return regulation can no longer be assumed to offer the protection for consumers that was once taken for granted.

9.9 Economists have sometimes seen rate of return regulation as a means of securing 'optimal' prices in

a non-competitive market. Some US regulatory authorities have taken an interest in the structure of prices, but on the whole the system has been notable for the lack of success in this direction. Nowadays economists are less convinced that a set of 'optimal' prices exists. More weight is placed on the incentives (or lack of them) provided by the regulatory system for the company to discover and meet consumer preferences and to adopt more efficient techniques of production.

RPI–X Regulation of Prices

9.10 Under the system used to regulate British telecom, it was written into BT's licence (and prospectus for flotation) that the company could not increase the weighted average of its prices by more than the rate of increase of the retail price index less 3 per cent for a period of five years. This is the RPI–X formula, with X set equal to 3.

9.11 There was relatively little discussion of the starting point from which the rate of BT's price increase was to be measured. For the water authorities, these starting points (i.e. the levels of prices obtaining at the time of flotation) may be crucial. This point is discussed in chapter 12.

Advantages of RPI–X

9.12 There are four main advantages of RPI–X compared to rate of return regulation. They relate to political effectiveness, the quality of public decision-making, the cost and burden of regulation, and the effects on the efficiency of the regulated company.[6]

(1) *Political Effectiveness*

9.13 RPI–X focuses attention on what consumers ultimately care about: the prices they will have to pay. The first concern must be the *average level* of prices, in practice with respect to inflation.

(2) *Public Decision Making*

9.14 In the context of water a crucial issue is the trade-off between price and quality. The higher the quality of service required, the greater will ultimately be the rate of increase in prices charged. A rate of return system tends to conceal the consequences of imposing higher quality standards because the costs of doing so are not, at the time, made explicit. An RPI–X regime, in contrast, obliges the level of service targets and the maximum price constraints to be juxtaposed and chosen jointly.

9.15 Flotation forces the issue. The Minister and his advisers at DoE must ask themselves the question: what will be the consequences of setting price and quality licence conditions at this level rather than that, and what will the public prefer? The DGWat will have a similar decision to make at periodic intervals thereafter, when modifications in X and in level of service targets are under consideration. An RPI–X system may thus be expected to clarify and improve public decision making concerning the allocation of scarce resources. (*Inter alia,* it will determine how far additional capital is attracted into the water industry.)

(3) *Burden of Regulation*

9.16 Under the RPI–X mechanism, the company has discretion to change its level and structure of tariffs within the agreed formula. Once X has been chosen, the regulatory authority does not need to approve price changes nor vet the company's investment programme. There is less intervention in the company's business. Fewer regulatory staff are required. Regulation is cheaper. Decision-making is not held up or distorted by bureaucratic inertia or political pressures.

(4) *Incentive to Efficiency*

9.17 RPI–X does not blunt the incentive to efficiency. The company is assured of keeping the fruits of increased efficiency during the period while X and the level of service targets remain unchanged. In this way, adverse consequences of the cost-plus approach may be minimised. Profits may be higher, but because costs are lower, an average price ceiling can be imposed that is lower than the cost-related prices that would otherwise obtain. (A parallel may be drawn with patent legislation, which protects profits in order to stimulate innovation and thereby generate longer-term benefits for consumers.)

Conclusion

9.18 These advantages suggest that price control along the lines of RPI–X rather than rate of return control, should form the basis of regulating privatised water authorities.

9.19 However, price control, as embodied in the RPI–X approach, is not entirely free of the problems associated with rate of return control. This is especially true when regulation is permanent. The next chapter explores these problems.

10 Problems of Permanent Regulation

10.1 RPI-X was initially adopted as an interim measure for regulating BT, pending the development of more effective competition. It has yet to be decided whether to retain this constraint after the first five years, and if so whether to modify the scope of the control and the level of X.

10.2 For privatised water authorities, price control will be necessary for the foreseeable future. Adoption of the RPI-X scheme therefore needs further justification. One set of worries concerns the 'right level' of X; the other more serious problem concerns incentives to efficiency.

A 'Right Level' for X?

10.3 One argument is as follows. Since the future is uncertain, the regulated company's operating costs or investment requirements may turn out to be higher than expected. The company will make losses, further capital will not be forthcoming, unemployment and perhaps bankruptcy will ensue, required services will not be provided, and customers will suffer. Alternatively, operating costs and investment requirements may be lower than expected. Profits will be excessive, but will tend to be absorbed by higher wages and salaries and 'managerial slack'; resources will be dissipated in 'empire-building'. Shareholders, management and employees will benefit, again at the expense of customers. This suggests, so the argument runs, that the success of the RPI-X system is balanced on a knife-edge, requiring the 'right' level' of X to be chosen, yet it is extremely difficult to know what the 'right level' of X should be.

10.4 A further twist to this argument has been put forward. After the event, it is claimed, we shall know whether X was too low, becauset the company will be in obvious financial difficulties. But we shall never know whether X was too high because any excess profits will be absorbed by 'managerial slack' or 'empire-building' before we can observe them. (Actually, the uncertainty is just as great in the first case: how do we know whether a company's difficulties reflect inadequate revenues or excessive costs?)

10.5 The force of these arguments is to suggest that, if RPI-X is not actually replaced by a rate of return system, it should at least be supplemented by a rate of return system. In other words, X should be set initially, and revised frequently (perhaps annually) so as to ensure that the regulated company earns a specified allowed rate of return of capital.

10.6 Parts of this argument are valid. The future is uncertain – both market conditions and company performance – so profits may turn out lower or higher than expected, perhaps to an unacceptable degree. It is also difficult to judge ex post what performance *might* have been. But this does not invalidate the use of RPI-X. There is a feasible range, which may be quite wide, rather than a knife-edge, of levels of X under which the system will work. Nor is a rate of return system required to supplement it. Rate-of-return considerations are already necessarily implicit in the choice of X. The argument does, however, highlight the need periodically to revise the level of X, and to secure the information required to do this. It will help to spell out these counter-arguments more fully.

A Feasible Range for X

10.7 The stock market price immediately after flotation will reflect the market's estimate of the company's future profits. Revenues will depend upon the initial level of prices and the level of X (which constrains the average rate of increase in prices); expenditures will depend upon the levels of service required (which influence operating costs and required investment). Undemanding price and service constraints will be immediately translated into a high share price; tight price and service constraints into a low one. The share price will simply capitalise the expected future profit stream and provide the same rate of return to shareholders as other investments of comparable risk. Shareholders are thus not affected by the initial level of X and the required levels of service, since they can decide whether or not to invest in a given authority. At the time of flotation, then, there is a direct trade-off between benefits to consumers (in terms of price and quality) and benefits to taxpayers (via proceeds accruing to the Treasury), but shareholders are not affected.

10.8 After flotation, the situation changes. Taxpayers and the Treasury are henceforth unaffected by changes

in market conditions, in X and in the target levels of service (except for tax considerations and to the extent that the Government has not yet disposed of all its shares). Shareholders will be affected by *unexpected* changes in these parameters. Any changes in the expected net income stream will be immediately translated into changes in stock market price. So after privatisation, the trade-off is between consumers and shareholders, with taxpayers essentially unaffected.

10.9 Because the initial level of X is simply reflected in the initial share price, the only requirement for the system to be workable is that the share price should be sufficiently high (hence X sufficiently low and if necessary negative) to generate a positive expected profit stream in order that the company can be floated. As conditions change over time the precise location of this end point will vary, so X may need to be changed, but the ultimate constraint is to maintain a positive share price if the company is to survive.

10.10 The location of the other end-point to the feasible range of X depends upon political rather than financial or economic considerations. A high initial RPI-X (i.e. a low or negative X) will not benefit shareholders but it will benefit taxpayers at the expense of customers; a subsequent increase in RPI-X will benefit shareholders at the expense of customers. There is a limit to which the electorate will accept either of these redistributions of income.

10.11 To look ahead briefly, the existence of a feasible range for X, which may be quite wide, rather than a single optimal level, will be important when it comes to the question of whether X should be uniform across all water authorities. If there were a unique optimal X for each authority, it is implausible (given their different situations) that licence parameters could be chosen to make these X's the same. But if each authority had a wide feasible range for X – indeed, if it is essentially open-ended in one direction – the problem of choosing a single X which is feasible for all authorities is a much more tractable one.

Importance of the Capital Market

10.12 Some have argued that the RPI-X constraint needs to be set as tight as possible (i.e. to yield at most a 'normal' rate of return given the other licence obligations). This is to prevent 'management slack' and 'empire-building', and to force the company to increase efficiency. It is suggested that, in the absence of competition, the company may need such a 'stick' in order to force through managerial reorganisations, changes in work practices, and other revisions of policy which would otherwise be resisted internally.

10.13 These postulated dangers are real, but they depend upon market conditions rather than upon the level of X. In the absence of competition in the product market, the crucial determinant is the degree of competition in the capital market. A company which is not subject to effective stock market pressure is indeed likely to allow costs to rise and to dissipate profits. As emphasised earlier, the effectiveness of the RPI-X constraint in dealing with natural monopoly depends upon the threat of takeover.

Permanent RPI-X control

10.14 The longer the period that RPI-X control is expected to remain in operation, the greater the uncertainty about the location of the 'feasible range' for X, and the greater the likelihood of this range moving beyond the initially-chosen X. An RPI-X price control that is expected to be permanent must therefore make provision for revising the level of X when necessary.

10.15 This immediately reintroduces the problem of incentives. The great merit of a fixed RPI-X over rate of return control is that the former preserves the incentive to cut costs while the latter does not. But if X is able to be revised, the regulated company will consider what effects its actions are likely to have on future levels of X. It will realise that greater cost reductions today will lead to pressure for greater price reductions when X is reset in future. Higher profits may even lead to a public demand to revise X prematurely. To this extent, incentives to maximum efficiency are blunted. When RPI-X is seen as a permanent regulation, this is a potentially serious problem.

An Industry Yardstick

10.16 To avoid blunting the incentive to efficiency, it is necessary to base the revision of X on factors outside the direct control of each authority, but nonetheless relevant to that authority's situation. An 'industry yardstick', reflecting performance and prospect in the *industry* as a whole, could be developed for this purpose.[7] Each authority then knows that the future level of X is essentially independent of its own performance. If it fails to maintain comparable efficiency to the rest of the industry, it loses profits and its shareholders suffer. If it performs above average, it keeps the profits and its shareholders benefit. Future levels of X will reflect the past and expected future performance of the water industry as a whole. Thus the benefits of increased efficiency will be systematically passed on to consumers in the form of lower prices (or alternatively higher standards). The crucial advantage of the industry yardstick is that no authority has any incentive to hold back on improving performance for fear that it will jeopardise the prices and profits allowed to it in the future. The water industry is significantly

different from telecommunications in that the presence of 10 authorities enables this procedure to be adopted.

10.17 The precise way in which revisions to X relate to industry performance needs further consideration. It would not be desirable to reset X merely to accommodate the least efficient authority. The emphasis needs to be on average performance or 'best practice'. If average performance could be distorted by one or two exceptionally good or poorly performing authorities, revisions in X might be related to *median* performance (i.e. the authority 'in the middle'). The comparative cost indicators currently being developed by DoE may also have a useful role to play here.

10.18 If an industry yardstick is appropriate for periodic revisions in X, would it be preferable to relate the price constraint itself to an index of industry costs instead of to the Retail Price Index? This was done in the control designed by the MMC for London Rubber Company's pricing of contraceptive sheaths.[8] The advantage of this system is that prices might not get out of line so quickly. But changes in technology or market conditions could still necessitate revisions in X, so the latter problem still has to be solved. The advantages of the Retail Price Index are that it is not subject to influence by the parties involved, and more widely understood and accepted by the majority of consumers and investors.

10.19 What should be the mechanism for triggering a revision of X? Leaving it until sufficient pressure develops introduces political considerations and involves more work in monitoring. It would be preferable to have a periodic review at fixed intervals. A shorter interval reduces the risk of X lying outside the 'feasible range' but involves a greater burden on the regulator and may reduce incentives to efficiency. An interval of 5 years seems about the minimum time necessary to protect incentives; 10 years is about the maximum that shareholders, customers and government would find acceptable.

10.20 In deciding how far to revise X (and other licence conditions), the economic regulator needs to examine the company's production methods and investment programme. He must ascertain the scope for cost and price reductions through increased productivity and efficiency, and the need for capital expenditure. He needs to predict the consequences of different levels of X on what the company will do, how it will do it, how consumers will be affected and how consumers and others will react. (The Minister needs similar information in setting the initial level of X.) So permanent regulation is more complex than temporary regulation.

RPI-X and Rate of Return

10.21 It should now be evident that rate of return considerations are necessarily implicit in setting and resetting X. The Minister and economic regulator know that flotation and continued operation are not possible if the rate of return fall below the cost of capital (i.e. negative profit stream), and that an excessively high rate of return will not be politically acceptable to customers. The bargaining between Minister and company before privatisation concerns precisely the level of X necessary to get within the feasible range. The DGTel has recently said explicitly that he would have cost of capital in mind when appraising BT's prices and profits (*The Times* 19 November 1985). The concept of a combination of the rate of return system and the RPI-X system, which is somehow different from RPI-X alone, thus reflects a misapprehension.

Conclusion

10.22 Since price control of privatised water industries will be permanent rather than temporary, adoption of the RPI-X scheme needs further justification. Concern about the 'right level' of X is largely unfounded: there is a feasible range of X, which may be quite wide, over which the system will work. The danger that an undemanding level of X will lead to 'management slack' and 'empire-building' can be met by fostering competition in the capital market – in particular, by maintaining the threat of takeover.

10.23 A permanent RPI-X system must nevertheless provide for periodic revisions of X, to prevent prices and costs getting too far out of line. To avoid blunting the incentive to efficiency, the revisions in each authority's X must be based on factors outside the control of that authority itself. An 'industry yardstick', reflecting performance in the water industry as a whole, can be developed for this purpose.

11 Single or Multiple Constraints

11.1 Precisely how will RPI–X apply to water authorities? This chapter examines whether each authority should have one single RPI–X constraint, applying in aggregate to all services covered, or whether each authority should have multiple constraints, one for each separate service or customer class. The chapter also examines the implications of metering for this question.

An Illustration

11.2 An aggregate RPI–X constraint modelled on the BT formula would take the following form: in any of the five years beginning with the date of flotation, average increase in measured and unmeasured water supply and sewerage charges, weighted by respective revenue in the preceding year, must be at least X percentage points below the rate of increase in the retail price index over the previous 12 months. (Other services besides water supply and sewerage might be included in the constraint, but this report has not examined them.)

11.3 A base year could be chosen as an alternative to the preceding year, but updating follows consumer preferences more closely. (Although water services differ from telecommunications in being jointly demanded and less responsive to price.) It also gives a higher weight to services where prices have earlier been raised the most. If the actual price increases in any year are less than the limit, BT can take credit for this in either of the next two years.

11.4 The average increase in each of these charges would be reasonably straightforward to calculate. Tariff levels and structures vary between authorities, but are no more complex than in British Telecom. In Severn Trent, for example, unmeasured water supply is charged at a constant price per £ of rateable value; this charge varies by division (from 16.6p/£RV to 20.8p/£RV) to reflect differences in average levels of rateable value throughout the region. The same is true for sewerage charges, where there are three schedules according to whether the customer takes the full service, or a partial service of only surface water or used water disposal. Measured water supply is charged at a constant price (26.7p/cubic metre), as is measured used water (18.6p/cubic metre). In other authorities standing charges would need to be incorporated. Changes in minimum charges would also need to be considered.

11.5 Table 5 illustrates the way in which RPI–X calculations would be made, using purely arbitrary price increases for Severn Trent and North West. Because of the different proportions of revenue in the two authorities, the average price increase is slightly lower in Severn Trent than in North West, even though the assumed price increases are identical for each service separately.

Table 5 Calculation of Average Price Increase with reference to Aggregate RPI–X formula

Severn Trent	Revenue £ million	1984–5 %	Hypothetical Price Increase %	Weighted Increase %
Unmeasured water supply	86	28.4	7	2.0
Measured water supply	48	15.8	4	0.6
Unmeasured sewerage	156	51.5	2	1.0
Measured sewerage	13	4.3	2	0.1
	303	100.0		3.7

Weighted average price increase is 3.7 per cent.

North West	Revenue £ million	1984–5 %	Hypothetical Price Increase %	Weighted Increase %
Unmeasured water supply	86	30.2	7	2.1
Measured water supply	56	19.6	4	0.8
Unmeasured sewerage	102	35.8	2	0.7
Measured sewerage	41	14.4	2	0.3
	285	100.0		3.9

Weighted average price increase is 3.9 per cent.

11.6 The next chapter discusses whether X should be uniform for all authorities. But regardless of this, there is no requirement that the individual price increases for each service be identical for all authorities. Thus, it may be calculated that North West could alternatively meet a 4 per cent RPI-X constraint by, say, increasing all sewerage charges by 10 per cent and reducing all water supply charges by 2 per cent. (Or, for that matter, it could reduce sewerage charges by 2 per cent

and increase water supply charges by 10 per cent, since in that particular authority sewerage and water supply currently generate equal amounts of revenue.)

Single or Multiple Constraints?

11.7 For each authority, should there be one single aggregate RPI-X constraint on the average increase in charges for all water supply and sewerage services? Or one constraint for water supply and another for sewerage? Or separate constraints for each class of customer (domestic, industrial, commercial and agricultural)? Or even a separate constraint on each particular tariff?

11.8 A single aggregate constraint would be simpler. It would follow the British Telecom pattern, where the constraint applies to the weighted average increase in four main services. It would allow the water authorities to 'rebalance' their charges if they wished to do so. My understanding is that unbalanced tariffs do not constitute a significant problem in the water industry as they did in the case of British Telecom. Nevertheless, relative costs may change in future. Artifical obstacles to rebalancing tariffs would lead to inefficient use of resources and ultimately to higher costs.

11.9 The main disadvantage of a single aggregate RPI-X constraint is that, because it does not constrain the prices of individual services, each consumer might feel vulnerable to a significant rebalancing of tariffs. An aggregate constraint offers less protection than separate constraints. This would suggest a separate RPI-X constraint for each major class of customer. There may, however, be ways to avoid this added complexity.

Alternative Weights

11.10 Since domestic customers are most vulnerable, one possibility would be to define the weights used in calculating the average price increase in terms of revenues from domestic customers rather than revenues from all customers. In the two authorities studied, it seems that the ratio of sewerage charges to water supply charges is greater for domestic customers than for industrial customers. (For ST, sewerage accounts for 64 per cent of unmeasured charges and 21 per cent of measured charges; for NW the figures are 54 per cent and 42 per cent, respectively.) Thus, this approach would maintain a single RPI-X constraint but give a higher weight to sewerage charges in order to reflect concern for domestic customers.

11.11 Another variant would be to use the weights associated with the usage pattern of the customer with the median bill (defined as that amount such that half the water authority's bills are larger and half are smaller). The median bill is typically smaller than the average bill, and likely to be a domestic rather than industrial customer, perhaps even a lower income household.

11.12 This possibility was examined in telecommunications, when considering whether to include international and trunk calls in the 'basket of services' on which RPI-X was to be defined. These services had a significantly lower weight for residential customers than for BT's turnover as a whole. In the water industry, there is not such a variety of services available, nor such differences in usage patterns. It is not clear that the additional complication would be worthwhile.

Formal Undertakings

11.13 A preferable way to handle the problem of vulnerability is by means of formal undertakings. Because of concern on the part of domestic consumers, BT gave a separate written undertaking, not incorporated into the licence, to limit the increase in domestic rentals to RPI + 2.

11.14 Whether such an undertaking is significantly different from a licence condition is debateable. An undertaking gives the company more flexibility. Unilaterally abandoning the undertaking would not constitute a breach of licence. Admittedly the Director General of Telecommunications could apply to the MMC to have the undertaking written into the licence but the MMC's agreement cannot be taken for granted.

11.15 The reception given to BT's price increases in October 1985 is instructive. It is widely believed by domestic customers that BT 'got around' the RPI-X constraint. The DGTel was forced to investigate. He found that BT's price increases were within the RPI-3 constraint on average price and the RPI + 2 undertaking on domestic rentals. However, Oftel calculated that the bill for a residential subscriber who is a light user of the telephone would increase by about 8.6 per cent (*The Times*, 9 December 1985). In retrospect, it is apparent that domestic customers were not aware of the extent to which BT wished to rebalance its tariffs, nor of the extent to which the RPI-X constraint allowed this; had they been better informed they might have wished the undertaking to have been framed differently (e.g. to cover local calls as well as domestic rentals).

11.16 In the water industry, rebalancing is unlikely to cause such difficulty, but it would be helpful for the water authorities to make explicit their future intentions on structure and balance of charges and the implications for different classes of customer.

Separate Constraints for each Service?

11.17 An argument in favour of disaggregation by service is that each water authority is really engaged in several different businesses, and that the balance of activities differs from one authority to another. This is especially true with respect to likely future expenditure. Some current obligations (e.g. cleaning up the Mersey) bear heavily on sewerage rather than water supply. This would indicate at least two separate constraints, one for water supply and another for sewerage services.

11.18 Against this is the principle of integrated river management, which holds that these services are all aspects of the same business. We have also noted earlier the point that each water authority supplies a vertical chain of services in joint demand. A constraint on total profit is as adequate as separate constraints on individual services.

Conclusion

11.19 The introduction of multiple RPI-X constraints necessarily raises questions of fairness and joint cost allocation. These questions are unanswerable by economic criteria and are hence political. The likely consequence would be to freeze the structure of tariffs in their present form. This would not be desirable in an industry which has been dominated for so long by political rather than market forces.

11.20 On balance, therefore, it seems preferable to adopt the simpler and more flexible single aggregate RPI-X constraint. This could usefully be coupled with formal undertakings, outside the licence, concerning future changes to each major tariff for, say, the next five years.

11.21 If an authority's pricing policy, while entirely consistent with the RPI-X constraint and any undertakings, does develop in a way which many customers and the DGWat feel to be undesirable, there are remedies available. The DGWat can warn the authority (as the DGTel has done with BT), and if necessary try to persuade it to accept a licence modification. If agreement is not reached he can apply to the MMC for power to modify the licence unilaterally. So customer protection on pricing is greater than the RPI-X constraint alone implies.

Fine Tuning

11.22 The RPI-X constraint was originally developed as a broad-brush reassurance during the dramatic transition from public to private ownership of BT. It may be extended by means of the industry yardstick to form a permanent constraint on average price increases (indeed, to ensure a slight but steady price decrease in real terms). It might also be possible to develop a set of indices relating to industry costs of different services, which over time could supplement the aggregate RPI-X constraint. But RPI-X itself is not intended as a means of fine-tuning the tariff structure.

11.23 For this latter purpose the principles of Section 30 of the Water Act 1973 are more appropriate. Section 30 requires that in fixing charges the water authorities must have regard to the cost of providing services. Although they may make different charges for the same service in different cases, their charges must not show undue preference to, or discriminate unduly against, any class of persons.

11.24 The actual implementation of Section 30 has been subject to criticism. A recent study found as follows:

> 'We conclude that charging by reference to rateable value, the basis used at present for all except four out of every thousand households:
>
> a. offers only a rough and ready link with the amount of water customers use;
> b. does not give customers any incentive to take account of the cost of providing a service.

(Department of the Environment, *Joint Study of Water Metering*, Report of the Steering Group, Chairman R. Watts, December 1985, at para 2.14.)

11.25 The British Telecom licence prohibits BT from showing undue preference or undue discrimination. This provision needs to be embodied in the water authority licences. Whether a cost-related condition is necessary and desirable needs further consideration.

Metering

11.26 Whether or not to require metering is beyond the scope of this study; we are merely concerned here with any implications of metering for the regulation of prices and the form of the RPI-X constraint.

11.27 Metering will facilitate (indeed, may be necessary for) a greater variety and flexibility of tariff. The main argument for metering usually analysed is to depress demand so as to reduce the need for investment. But in the longer run metering may enable *more* water to be provided profitably (e.g. via discounts for demand at off-peak times, or when there is no danger of drought). More imaginative tariffs could also minimise any adverse effect of metering costs on smaller consumers (e.g. rising block tariffs with a cheaper initial segment for public health requirements and a more expensive additional segment for amenity and leisure use).

11.28 Private water authorities are likely to be more enthusiastic about metering than nationalised ones:

metering is an integral part of the commercial customer relationship. The privatisation legislation and licence will presumably be drafted so as not in any way to prevent or inhibit metering itself or metering experiments. (Cf. *Joint Study of Water Metering*, op.cit., para 11.24 above.)

11.29 If separate price constraints were levied on measured as compared with unmeasured services, the decision whether or not to meter could be biased by the levels at which these disaggregate constraints happened to be set. A single aggregate RPI-X constraint avoids this difficulty.

11.30 The possibility of a licence amendment to require universal metering might usefuly be put by DGWat to the MMC after a few years of privatisation, before the first major review of RPI-X. By that time, further evidence may be available and attitudes are likely to be different.

12 A Uniform X

12.1 Since there are ten water authorities to which the RPI-X constraint will be applied, the question arises: should X vary from one water authority to another, or be uniform over all authorities?

12.2 The conditions of the water authorities differ greatly with respect to finance, geography, infrastructure, present levels of service, investment requirements and future prospects. It seems both natural and inevitable that prices should reflect the situation of each authority.

12.3 This is entirely possible. A uniform X does not mean that *prices* must be uniform across all water authorities. It provides a uniform ceiling on average price *increases* – in effect, a uniform protection for consumers. It does not require that the ceiling be reached (BT has not done so), nor does it dictate how the average price increase should be composed. Most importantly, it does not assume a uniform starting point. Present prices vary greatly between authorities. There is further scope (discussed below) for revising the price levels between now and flotation so as to accommodate the very different conditions of the ten authorities.

12.4 A uniform X seems necessary to operate the 'industry yardstick' described in chapter 9. It is conceivable that the yardstick could be applied to a set of different X's – for example, revising them all by a common absolute or percentage amount – but this would be complicated.

12.5 A uniform X has a second advantage. Different X's and changes in X render the Minister and the regulator vulnerable to political pressures from aggrieved consumers and shareholders. 'Why do we have to suffer higher percentage price increases than they do?' 'Why has our company been restricted more than their company?' As noted earlier, the existence of ten private water authorities quoted on the Stock Exchange will ensure that any initial differences in treatment, and any subsequent changes in the rules, are immediately reflected in stock market prices. Critics claiming 'unfair' changes will point to millions of pounds added to, or wiped off, company valuations overnight. The regulatory authority, and ultimately the Minister, need protection against such allegations of unfairness and discrimination. A uniform X provides such protection.

12.6 A third advantage is the practical difficulty of negotiating ten different X's.

The Requirements of Financial Feasibility

12.7 Given the very different present situations and future investment requirements of the ten authorities, is a uniform X financially feasible, especially when coupled with uniform minimum level of service targets?

12.8 It was emphasised in chapter 10 that financial feasibility does not require identical or even similar profit streams. The magnitude of the expected profits is simply reflected in the magnitude of the flotation proceeds (which accrue indirectly to the taxpayer). If one water authority is expected to earn higher profits than another, this does not affect potential shareholders or customers of either company.

12.9 The requirement for financial feasibility is that it should be possible actually to float every authority. This requires that the expected profit stream of every authority be positive rather than negative. In other words, even the water authority in the most difficult financial position should be able to earn sufficient revenue to cover operating expenses and to finance the minimum investment programme necessary to meet its statutory and other prescribed level of service obligations.

12.10 One way to achieve such profitability would be simply to remove any constraint on the rate of increase of prices. This would be unacceptable to customers. In fact, to reassure customers that they are benefiting from privatisation it will probably be necessary to ensure that average prices decline in real terms. So the requirement of financial feasibility becomes rather more severe: it should be possible to float every authority with a positive value for X.

12.11 There would be an advantage in avoiding such a spread of profits that some water authorities are so awash with cash that their costs rise and they are tempted to engage in empire-building projects for their own sake. But this can be countered by stock market

pressures. Their shareholders will expect them to earn an adequate yield on the high capitalisation of the company. If resources are squandered, the authority will be vulnerable to a take-over bid. The water authority with the largest prospective profits is not necessarily in a more comfortable position than the authority with the lowest prospective profits. Both are under pressure to make best use of the assets and revenue available to them.

Achieving Financial Feasibility

12.12 The 1985 Corporate Plans show quite a variation in expected increases in charges over the next few years, ranging from 5.5 per cent to 17.3 per cent per annum. However, these increases reflect government-determined financial targets and External Finance Limits (which have since been modified). They do not necessarily represent the pricing policy that would be followed after privatisation.

12.13 There are numerous 'degrees of freedom' available which suggest that it will be financially feasible to privatise all authorities with a uniform X and uniform minimum level of service targets.

12.14 First, there are different ways of meeting level of service targets via different capital investment programmes. There is also some discretion in depreciation policy, as to how fast investments are written off.

12.15 Second, there is a choice as to which aspects of service (and environmental standards) are entered into the licence (i.e. which are relevant in bargaining for X) and how each of these is precisely defined. If a particular constraint seemed likely to present a problem, it would be possible to vary the level of the target or the horizon date or the required rate of movement towards it. (The changes would be made for all authorities, not just one.)

12.16 Third, the relative financial situations of the authorities may be adjusted between now and privatisation (i.e. in the next two to four years). The obvious possibility is to adjust interim price increases. Government policy on EFL's and financial targets was recently laid down for 3 years, of which 1985 is the first. This effectively determined price increases until 1987. However, the 1986 financial targets have been relaxed and policy for 1987 is to be reviewed. 1988 policy is as yet unconstrained. It would seem possible to allow a faster increase in prices before flotation for water authorities with heaviest required investment programmes, and a slower increase or even no increase for other authorities.

12.17 A fourth possibility is differential write-off of capital before privatisation, hence lowering or raising depreciation charges after privatisation. This could be tied to government subsidy for those elements of expensive schemes (e.g. cleaning up the Mersey) which are primarily justified on environmental (as opposed to consumer) grounds. (Some might feel that this is inequitable insofar as the customers of other authorities have, over time, paid for the cost of avoiding pollution. But many of the customers who have not paid are now dead. To make future customers pay the shares of previous customers is not obviously more equitable.)

Choosing X

12.18 It is worth emphasising again that the uniform level of X and the uniform level of service targets will all be chosen together before privatisation. They will be chosen in the light of the trade-offs between prices, quality and flotation proceeds. But they must also be chosen so as to make it feasible to float every authority i.e. to ensure that every authority can earn sufficient revenue to cover its operating costs and finance required investment.

12.19 Further detailed calculations need to be carried out. It will be necessary to estimate the likely implications for prices and service levels of present investment programmes. Then alternative hypothetical level of service targets can be postulated, and the implications calculated for investment, costs, prices and flotation proceeds. In this way the relevant trade-offs can be estimated.

12.20 Finally, it will be necessary to make a realistic assessment of what improvements in efficiency privatisation can secure. The water authorities have been reducing manpower over the last few years. Some believe there is little scope for further savings in costs. BT's experience since privatisation proved there was scope for more savings than hitherto thought possible. BT has cut out a whole regional tier of management, reduced staff numbers and announced plans for significant further manpower cuts. It has begun second sourcing and pressuring its UK suppliers (e.g. by going abroad) to reduce equipment costs. There is increased emphasis on getting value for money in investment. Changes in top management have provided new insights and determination. The scope for further savings in the water industry after privatisation may thus be greater than is presently thought.

13 Other Services

13.1 This report has focused on the economic regulation of the 'core services' provided by water authorities, namely water supply and sewerage. Together these account for about three quarters of turnover (excluding highway drainage). This final chapter contains some necessarily brief observations on the economic regulation of the remaining services. It will be apparent that further examination of some of these issues is required.

Water Resources

13.2 Water authorities presently have a duty to conserve, redistribute, augment and secure the proper use of resources in their area, and to transfer resources to other authorities (1973 Act s.10). They are required to produce and update at regular intervals a long term plan which sets out estimated future demands, and documents the steps the authority has taken and is intending to take in order to meet these demands (1973 Water Act s.24).

13.3 Insofar as it needs to be demonstrated that the authorities have adequate plans to meet future demands, it would be appropriate to retain such a plan-publication condition in the licence. The long term plans could be taken into account by OfWat when considering revisions to the licence conditions pertaining to prices and quality of service – say, at five yearly intervals – and when decisions are made concerning licence renewal.

13.4 The purpose of publishing the long term plan is to reassure the government, the regulator and the public that adequate resources will be available. It is not an efficiency audit or an exercise in investment appraisal. One of the aims of privatisation is to place responsibility for investment planning and appraisal firmly in the private sector, and to avoid 'second-guessing' or 'nannying' by regulatory authorities. OfWat would not be required to approve the water authority's programme of investment in treatment plants, distribution networks, sewerage and so on. Nevertheless, the economic regulator will take an interest in such matters, since they will be relevant to his recommendations concerning future licence conditions.

Bulk Transfers

13.5 Some further examination of the basis of charging for transfers between authorities will be necessary. Present legislation provides for water resources to be transferred from one water undertaker to another. In principle, this is done on a 'no profit, no loss' basis. But since the receiving authority will presumably import water where this is cheaper than alternative sources, the above rule effectively means that the receiving authority enjoys all the gains.

13.6 After privatisation, market forces will have greater influence. Commercial pressures will strain the 'no profit, no loss' principle. The exporting authority will have a great incentive to charge 'what the market will bear', or at least to demand an equal share of the total gain. This will strengthen the incentive to make good quality water resources available. But how much discretion should the sending authority have in supplying bulk transfers? Should the receiving authority have comparable rights to other extractors? Should the DGWat have an adjudicating role in case of dispute? These questions require further consideration which has not been possible here.

Abstraction Licences

13.7 Water authorities presently control the offtake of water by abstraction licences. In granting abstraction, water authorities have regard to the needs of other abstractors and other users of the river and ground water. Their own abstractions are licenced by the Secretary of State; other parties may appeal to the Secretary of State against water authority decisions.

13.8 Industrial consumers and the statutory water companies are concerned that, if this system continues, private water authorities may not continue to act 'even handedly', i.e. they will give preference to themselves where resources are scarce. An 'even handedness' obligation will presumably need to be clarified and written into statute or the licences. This report has not investigated alternative systems (e.g. transferring licensing to the DoE or (re)creating river authorities) which might be more reassuring to such users.

13.9 Present policy is to recover the costs of maintaining, enhancing and monitoring the water

resources of the area by means of abstraction charges. These are spread over all abstractors, including the water authority itself (i.e. a credit to the water resources account is met by a debit to the water supply account). About 60 per cent of Severn Trent's water resource costs were met in this way by the authority itself (and ultimately by its water supply customers).

13.10 The system of abstraction charges takes into account the source and quality of water taken, the time of year, and the proportion expected to be returned to the river system (ranging from 0 per cent for evaporative cooling through about 60 per cent for most domestic use to 98 per cent for direct cooling for electricity generation). Severn Trent has a table of 90 such charges, ranging from 0.00122p per 1000 gallons for water power use from poor quality unsupported sources to 311.04p per 1000 gallons for spray irrigation, evaporated cooling and export taken in summer from good quality impounded sources.

13.11 Private abstractors may be concerned that privatised water authorities would weight these calculations against them, include inappropriate additional cost items in the water resource account, or set charges above cost. To deal with this, a licence provision could require charges to recover appropriate costs (as at present), and OfWat would have power to inspect the accounts and order amendment in case of justified complaint.

13.12 There is a danger that pricing on this cost-plus basis will encourage excessive investment in water resource facilities. The main guard against that probably has to be the fact that water authorities themselves pay over half the cost. However, regulation needs to limit their ability to recover this expenditure from customers on prices of core services, in order that they have an incentive to be cost-conscious.

13.13 There is an additional question, equally applicable under public ownership, whether charges limited to recovering expenditure on the system are able adequately to reflect the opportunity costs of extracting water at times of peak demand.

13.14 Privatised authorities would be more sympathetic and responsive to charges related more closely to opportunity cost considerations. However, allowing authorities greater freedom to set prices raises problems of controlling monopoly power. In the longer term this would be limited by the ability of private abstractors to vary the technology or location of their production processes, but in the short term some constraint would be necessary.

Discharge Permits

13.15 Control over discharge permits is an important instrument by which the government can control the quality of rivers, estuaries and coastal waters, and thereby reduce pollution. The procedure for granting discharge permits is similar to that for abstraction licences, although no charges are made.

13.16 If this system continues, industrial dischargers will again (as with abstraction licences) be concerned about the even-handedness of private water authorities, especially if the latter are under greater pressure to improve river quality and reduce pollution. The possibility of permits being granted by DoE or separate river authorities has not been explored.

13.17 It is likely that present policy of zero charges, or even charges to cover monitoring costs, leads to a misallocation of resources (e.g. in precluding new discharges in favour of existing discharges); this has not been investigated. The possibility of creating property rights via tradeable discharge permits deserves consideration.

Trade Effluent Charges

13.18 Trade effluent charges, accounting for some 4 per cent of total turnover, fall logically under the umbrella of water supply and sewerage (rather than the externality or environmental umbrella). Yet the monopoly problem is by no means so severe as with the core services. Many of the customers have a degree of choice. For example, a large industrial company has the alternative of pre-treatment and re-circulating water.

13.19 The setting of trade effluent charges is governed by an agreed formula. However, there is some feeling that charges are unexplained and unacceptable. For example, the interpretation of the formula has been alleged to favour large and very dirty dischargers at the expense of small and less dirty dischargers (e.g. car washes and launderettes). One proposal is to repeal the relevant parts of the Public Health Act 1936 and to deal with trade effluent charges as for sewerage (i.e. subject to the cost-related non-discriminatory principles of Section 30 of the Water Act). But as noted in chapter 11 above, the wording and implementation of Section 30 are not entirely satisfactory. As a minimum, an undertaking by each water authority might be appropriate with respect to these charges for the first five years, or for whatever period present consumers are 'locked in'.

Land Drainage, Flood Protection and Sea Defence

13.20 Land drainage charges account for about 3 per cent of water authorities' turnover. It is assumed that statutory responsibility for land drainage, flood protection and sea defence will remain within the public sector. The responsible bodies will determine policy, raise finance and contract for the work to be

done. Water authorities and private contractors would be eligible to tender for the work. (This incidentally provides another element of competition for water authorities.)

13.21 DoE curently identifies four measures of performance for land drainage and flood protection. It would be desirable if there were a continuing requirement to publish details of performance in these areas after privatisation. They would be relevant to decision-making by the public sector bodies concerned, and would not require monitoring by OfWat.

Highway Drainage

13.22 It was noted in chapter 2 that a significant proportion of sewerage charges is accounted for by drainage. Rough orders of magnitude in Severn Trent are as follows (for 1986).

	£ m
Sewerage and sewage disposal	130
Surface water drainage	40
Highway drainage	40
Land drainage	13
Total	£223 m

13.23 Highway drainage is related to environmental considerations rather than to provision of customer services. It is a public rather than a private good. It would be appropriate to recover highway drainage costs from the highway authority concerned rather than from customers. The highway authorities would negotiate with the water authorities as to extent of work and charges, perhaps with appeal to OfWat to resolve disputes.

Environmental Services

13.24 Environmental services (fisheries, recreation, navigation and conservation) are relatively minor in terms of cost (one or two per cent of turnover), but are nonetheless emotive and complex. Experience with the privatisation of British Telecom suggests they will account for a great deal of public debate. Provision clearly needs to be made to ensure their continuance but these issues have not been investigated in this report.

Conclusions

13.25

1) A licence requirement periodically to publish long term plans to meet future demand would provide useful reassurance and information concerning water resources.

2) Bulk transfers, abstraction charges, discharge permits and trade effluent charges, account in total for about 10 per cent of turnover. The economic regulation of these services raises important issues which need more consideration than has been possible in this report.

3) Land drainage, flood protection and sea defence account for about 3 per cent of turnover. The financing of these duties is assumed to remain in the public sector.

4) Highway drainage costs, which account for perhaps 10 per cent of turnover, should be charged to highway authorities rather than to customers.

5) The treatment of environmental services (fisheries, recreation, navigation and conservation), which account for about 2 per cent of turnover, has not been investigated here.

Footnotes

1. [para 4.1]
On the roles of competition and regulation, see M. E. Beesley and S. C. Littlechild, 'Privatisation: Principles, Problems and Priorities', *Lloyds Bank Review*, July 1983, no. 149, pp. 1–20

2. [para 5.7]
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