Regulatory Policy Institute

Competition in the Provision of Water Services*

Professor George Yarrow
Professor Tony Appleyard
Dr Christopher Decker
Timothy Keyworth

April 2008

Views expressed in this and other Regulatory Policy Institute reviews and reports are those of the authors, and they should not be attributed to any organisation(s) with which the authors are associated. The Institute is a charitable organisation dedicated to the promotion of the study of regulation for the public benefit, and it does not itself take positions on the relevant policy issues.

The Institute welcomes general and specific support grants for its various activities. In this case funding for the study was provided by Water UK, and we would like to express our thanks to that body and its members for granting this opportunity to contribute to thinking in an important area of public policy.

* We are grateful to the many people from business, government and regulatory agencies with whom we have talked during the course of this study, and also to those who have commented on draft material for the Report. All errors are our own.

31-33 Westgate, Oxford OX1 1NZ, UK.

TABLE OF CONTENTS

1. INTRODUCTION 4

1.1 Scope of study 4
1.2 Background/context and issues to be addressed 5
1.2.1 Brief sectoral overview 5
1.2.2 Competition or monopoly? 8

PART I: COMPETITIVE PROCESSES AND POLICY PRINCIPLES 10

2. COMPETITION: ITS MEANING, FORMS AND PROPERTIES 10

2.1 Concepts of competition 10
2.1.1 The meaning of competition 10
2.1.2 Forms of competition 11
2.1.3 Competition and discovery 13
2.1.4 Competition and regulation 14
2.1.5 The rules of competition 15
2.1.6 Discovery of rules of competition that work well 16
2.2 Immediate, post-privatization forms of competition in water services 17
2.2.1 Capital market competition 18
2.2.2 Franchising and contracting out 19
2.2.3 Yardstick competition 20

3. PRINCIPLES-BASED POLICIES 23

3.1 General principles 23
3.1.1 Regulatory know how 23
3.1.2 The centrality of context and the factual matrix 24
3.1.3 Approaches to assessing 'prospects for discovery' 25
3.1.4 Accounting values vs economic values 25
3.1.5 Average costs vs incremental costs 26
3.1.6 Proportionality 27
3.1.7 Sequencing, priorities and information 28
3.1.8 Unbundling and targeting 30
3.1.9 The relevant counterfactual(s) 30
3.2 Policy objectives and their implications 31
3.2.1 Avoiding false oppositions 31
3.2.2 Identifying key policy questions 32
3.2.3 Necessity/indispensability 33
3.2.4 Competition as a means of achieving wider policy objectives 34

4. REGULATORY AND COMMERCIAL UNBUNDLING 36

4.1 Regulatory unbundling 36
4.1.1 Regulatory unbundling as a priority activity 36
4.1.2 Examples of regulatory unbundling in other sectors 38
4.2 Commercial unbundling 42
4.2.1 The rationales for accounting separation and organisational unbundling 43
4.2.2 Pros and cons of accounting and business separation 44
4.2.3 Voluntary and mandatory unbundling 45

PART 2: THE SPECIFICS OF WATER SERVICES 48

5. DEVELOPMENT OF COMPETITION IN THE WATER SECTOR 48

5.1 Inset appointments 48
5.2 Retail competition in Scotland 49
5.3 Retail competition in England and Wales 51
5.4 Combined supply competition 52
5.5 Secondary supply 54

6. RE-FRAMING THE ISSUES 56

6.1 Introduction 56
6.2 Water resource issues 57
6.3 Network issues 59
6.4 Retailing 61
6.5 Competition in other activities and domains 62

7. AREAS FOR POLICY DEVELOPMENT 64

7.1 The abstractions regime: discovering the value of water 64
7.1.1 Recent developments 64
7.1.2 Unnecessary restrictions on trading 65
7.1.3 Availability of water 68
7.1.4 Abstraction licence fees 70
7.2 The access regime in water services 73
7.2.1 Terms of access agreements 73
7.2.2 Access pricing 74
7.3 Retail competition in water supply 78
7.4 Retail competition in sewerage services 81
7.5 Insets 83

8. SUMMARY AND CONCLUSIONS 86

Appendix 1. Managing the transition to unbundled access and resource pricing 91

1. INTRODUCTION

1.1 Scope of the Study

This Report is published as a contribution to the current debate in the UK on the prospects for the development of competition in water, sewage and sewerage services (henceforth abbreviated to 'water services'), and on the forms that such competition might take. It does not seek to cover all aspects of relevant policy in the sector, but rather focuses on a number of key issues, concepts and trade-offs that appear to be of central importance for policy development.

A major theme of the study – a theme that frames much of the discussion – is that competition is a discovery process that can be expected to generate new information, the content of which cannot be predicted *ex ante*. This perspective has obvious implications for the conduct of public policy: evaluation of the 'prospects for competition' (or the prospects for anything else for that matter) depends on information available *at the time of evaluation*, but currently available, relevant information is limited, in large part because of the restricted roles played by competition in the sector to date.

Recognising this rather fundamental information problem, our emphasis is on the exploration of where and how new competitive processes might most usefully be fostered in water services, taking particular account of the expectation that discovery prospects are unlikely to be uniform. The emphasis is on ways of thinking about the issues, ways of tackling them, and ways of determining priorities, rather than on attempting to develop comprehensive and specific solutions to problems, most of which will likely be better resolved with the benefit of later, better information.
We therefore do not attempt to cover every element of the supply chain in detail – for example, the coverage of sewage and sewerage activities is relatively light compared with the coverage of water activities, and there is no explicit discussion of water storage – but this should not be interpreted as a judgment that the prospects for competition in the (relatively) neglected areas of activity are necessarily poor.

Assessment of the prospects for competition in water services requires both an understanding of (a) the general characteristics of competitive processes and the policy principles that have proved valuable in the promotion and governance of such processes and (b) the specific characteristics of the water services sector. The study therefore encompasses both tasks, focusing on the first in Part I and on the second in Part II, which also seeks to bring principles and context together.

We start with an outline of the characteristics of competitive processes because it is remarkable, even in evaluations where competition issues are to the fore, how little thought is sometimes given to the nature of those processes and their properties. Given recent debates about the European Treaty, there is now somewhat greater familiarity with the idea that "free and undistorted competition" might be a Good Thing, but it is only necessary to ask the question *What precisely does <u>un</u>distorted competition look like (as compared to distorted competition)?* to realise how vague and imprecise the notion of competition can sometimes be.

The most basic definition of competition is that it is simply rivalry. The nature of a particular rivalry is in turn defined by the relevant context, including the relevant 'rules' (or lack of rules) governing behaviour. It follows immediately that there can be many different forms of competition, all sharing one general characteristic (rivalry), but each exhibiting particular characteristics in combinations that tend to be unique.

Assessment of prospects for competition in water services is not, therefore, an abstract exercise. It requires consideration of different ways in which competitive processes might be developed, and of the potential characteristics and consequences of alternative approaches to competition, in the specific context of water services. Different approaches can be expected to have different impacts and implications, and these alternatives merit careful assessment.

For the reason already stated (information conditions that can be expected to change in unexpected ways in consequence of competition), we do not believe that it is feasible to perform precise cost-benefit analysis on different approaches to the development of competition in water services. That is not to say that economic assessment of competition is itself infeasible, but rather only that rather broad judgments, based largely on experience, are principally what is *initially* required of policy makers.

Once underlying issues are clarified, we think it almost trite to say that, for most conceivable specifications of public policy objectives, there are obvious opportunities for improving policy effectiveness in the water services sector by affording greater roles than hitherto to competitive processes. The more important issues lie at a less abstract level, and concern the detail of the rules of competition to be adopted and the priorities to be given to alternative areas of policy development. As already indicated, different forms of competition have different characteristics. Some may work well in a water services context; others may not. The study is therefore principally a preliminary exercise in the exploration of these issues.

1.2 Background and context

1.2.1 Brief sectoral overview

The water sector can, in broad terms, be characterised as a regulated, network industry but, in developing policy for such a sector, the specific context tends to be extremely important: networks tend to differ from one another in economically important ways.

A few summary statistics for the sector are shown in Table 1, and the most immediately striking facts are the lengths of the pipeline/mains networks and the large numbers of treatment works that are scattered across the country.

Water abstraction

According to broad brush figures provided by the NAO[1], about 8,000 megalitres of water a day are used by households in England and Wales, and approximately the

[1] *Environment Agency: Efficient in water resource management*, National Audit Office, 2005.

same volume is provided for agricultural and industrial processes through the public supply system. Power generation accounts for another 16,000 megalitres a day from direct abstraction, and industry and agriculture use some 4,000 million litres a day from direct abstraction from rivers and groundwater.

Table 1. Water supply & infrastructure

	England & Wales	Scotland	Northern Ireland
Population (millions)	52.57	4.84	1.70
Water supplied (megalitres/day)	15,922	2,332	619
Number of companies	26	1	1
Water treatment works	1,301	333	65
Length of mains (km)	335,500	47,000	26,500
Wastewater received per day (megalitres)	10,000	864	364
Length of sewers (km)	309,831	48,951	14,500
Wastewater treatment works	6,362	1,826	1,124

Source: Water UK

Thus, less than half of the total volume of water abstracted passes through the public supply system and, of that, about a half is for household use (see Table 2).

Table 2. Public water supply in England and Wales, megalitres per day

Household use	7,756	52%
Non-household use	3,500	23%
Company leakage	2,545	17%
Customer leakage	873	6%
Other	319	2%

Source: Ofwat

The supply chain

The most immediate distinguishing features of water services are associated with the process of abstracting raw water, which may be from natural sources such as rivers, lakes and aquifers, or from man-made collection points such as reservoirs. Subject to ecological constraints, water sources are replenished/renewed naturally, which is rather unlike what happens when, say, gas is extracted and gas fields become depleted.

After abstraction, water is transported to works where it is treated to remove both biological and chemical contaminants before being distributed to end-users through a network of mains. The sector also encompasses wastewater activities which include the handling of sewage, which is returned to the system via sewerage pipes, other domestic wastewater, and rain water that flows into storm drains as surface run off. Finally, there is disposal of the sludge that remains after the sewage treatment processes are complete.

Some companies operating in the sector are responsible for the supply of both water and wastewater services, others for the supply of water only. There is therefore ownership separation between wastewater activities and water supply in some parts of the country, but not in others.

Networks

Water and sewage transportation and treatment has the broad features that properly lead to its characterisation as a network: a set of connectors linking a set of nodes, through which something flows. However, water and sewerage networks have their own distinctive architectures/topologies, some of whose features have particular significance for the analysis of network operations and development.

For example, sewerage networks have the feature that the flows start from myriad individual locations and collect together at nodes; unlike the more familiar pattern of say electricity or gas distribution where the flows are from a relatively small number of sources to a large number of sinks. More significant in its policy implications, the regional and local networks are not interconnected by any sort of national grid.

There are, however, interconnections which allow for bulk transfers of water between some adjacent networks, including (and this is another distinctive feature of water networks) by making use of natural features such as rivers (which can also serve as 'connectors' within local networks).[2] Interconnection issues are therefore potentially of very major significance for network development.

[2] The closest comparators in energy are the interconnectors that link the UK electricity and gas transmission systems to networks in France, Belgium and Holland. These links now play a central role in wholesale energy markets, and they provide a first indication of the kind of pivotal role that bulk water transfers (through interconnectors) could play in facilitating wholesale water trading.

1.2.2 Competition or monopoly?

At the time of privatization the prospects for the development of competition in water services looked relatively limited, at least in comparison with some of the other sectors covered by the UK privatization programme; and that view of the sector has been widely shared by policy makers around the world. Times change, however, and a number of developments over the past twenty years provide grounds for believing that current UK re-assessments of policy are warranted.

First, there is the experience in other sectors. When British Gas was privatized in 1986 there was a clear intention to facilitate the development of competition in supplies to large end-users – indeed the market had been nominally opened a few years earlier by the Oil and Gas (Enterprise) Act – but there was no intention to open up competition in the residential market. By the time of electricity privatization in 1990, retail competition in the residential market was considered feasible, although the projected roll-out in electricity was planned to occur eight years out from flotation (i.e. not quickly). Full retail market opening was completed in 1998 in gas, and in 1999 in electricity, twelve and nine years after the first flotations respectively.

This shift in policy toward promoting competition right across the retail energy market did not come out of the blue. It was closely related to a second development in the background economic context, namely the reduction in the transactions costs associated with competitive market arrangements made possible by major advances in information technology (IT). Because transactions costs were high, it had previously been considered unrealistic to contemplate competition involving large numbers of end customers. This changed with the advances in IT that have occurred over recent years. Even with those advances, however, the transactions costs involved have been, and are, significant.

The third important development that has given rise to a case for policy re-assessment has been the enhanced priority given to environmental matters in public policy. Although there is a school of (non-economic) thought that believes that the pursuit of environmental objectives implies that competitive processes tend to become less appropriate mechanisms for resource allocation, we are of the view that precisely the opposite is true, for two main reasons, one static and one dynamic:

- If, as is increasingly claimed by bodies such as Defra, the Environment Agency and the NAO, water is a scarce resource in England, the current, heavy reliance on what are, in effect, central planning mechanisms for allocating the resource must become increasingly questionable. Economic history indicates that central planning mechanisms have a very poor track record in efficiently valuing and allocating scarce resources.

- The rise of environmental issues also implies an economic policy context characterised by uncertainty and change. New problems are presenting themselves, much is unknown, and much awaits discovery. The comparative advantage of competitive processes (relative to centralised, planning alternatives) tends to be at its greatest in circumstances of uncertainty and change, where there are premia on discovery, innovation and flexibility/ adaptability.

Currently in the England and Wales, the pressures for the adoption of a more pro-active approach toward the development of competition in water services appear to be associated with the first of the above developments. Thus, for example, the Report of the House of Lords Select Committee on Regulators (2007) was highly critical of Ofwat, largely on the basis of comparisons with competitive developments in other regulated sectors.

This focus – based upon a perceived failure to afford competition a fuller role in the water services sector, closer to, but not necessarily as great as, its roles in other regulated sectors – can, however, lead to a rather narrow "definition of the issues/problems" to be addressed; and we think it would be unfortunate if this were the only way of framing current reappraisals of policy.

The second and third developments outlined above – advances in IT and the increasing policy priority given to environmental issues – suggest that there is merit in a broader approach, which considers the prospects for competition across a wider spectrum of alternatives. Such a broad approach can take in questions such as whether or not the role of competition is necessarily limited by the industry's structure, or by particular public policy objectives, and, above all, it can address issues such as the potential for competitive processes to be used much more effectively than hitherto in the environmental arena.

More than this, and as will be argued later, there are strong grounds for believing that the commitment of considerable resources to the development of competition in parts of the water services chain downstream from raw water abstraction, including via reform of access arrangements for existing water and sewerage networks, would be at serious risk of constituting another false start in this policy area, if it were not accompanied or preceded by the introduction of enhanced processes for the valuation and allocation of raw water abstractions.

At a very basic level of economics, the risk should be obvious from the fact that a water network moves water from A to B, and hence the value of the connection between A and B is inextricably linked to the difference in the value of water at location A and at location B. If, therefore, there are distortions in these locational, value-relativities (for raw water), the effects can be expected to include distortions in network operational and investment decisions, and in end-usage decisions by water consumers. There is no general reason why downstream competition might be expected to mitigate the adverse effects of distorted water valuations, and it could actually magnify them.

This is clearly not what public policy would want to achieve through the promotion of greater competition, and it is therefore the broad approach to "definition of the issues/ problems" that we will adopt in what follows. We regard the point as particularly important because in the cases of energy and telecoms market liberalisation there was no equivalent to the upstream 'administered price' regime that governs water abstractions. A narrow approach to competition issues in water services would ignore this critically important aspect of the factual context, and would thereby introduce (avoidable) risks of adverse unintended consequences (which are frequently associated with the neglect of relevant contextual factors).

PART I

COMPETITIVE PROCESSES AND POLICY PRINCIPLES

2. COMPETITION: ITS MEANING, FORMS AND PROPERTIES

2.1 Concepts of competition

2.1.1 The meaning of competition

Since the task is to address the prospects for competition in the water services sector, it will be helpful first to consider the meaning of the term 'competition'. According to the New Oxford English Dictionary, competition is defined as:

> *"the activity or condition of striving to gain or win something by defeating or establishing superiority over others engaged in the same attempt."*

An authoritative economic definition is provided by Professor George Stigler in the New Palgrave Dictionary of Economics:

> *"... a rivalry between individuals (or groups or nations), and it arises whenever two or more parties strive for something that all cannot obtain."*

In *Market Investigation References: Competition Commission Guidelines* (June 2003), the Competition Commission (CC) takes the view that:

> *"... the Commission sees competition as a process of rivalry between firms ... seeking to win customers' business over time. This rivalry may occur in a variety of ways."*

Possibly unusually for an economic term, therefore. there is no fundamental difference in the meaning of 'competition' in (a) ordinary language, (b) technical usage in economics, and (c) the enforcement of competition policy.

However, as has often been pointed out in economic literature, there can be a tension between this basic meaning of 'competition' , which is cast in terms of behaviour and process (*"a process of rivalry"*), and some of the simplifications to be found in parts of economics, which tend to suggest that competition is a 'state' (e.g. 'perfect competition', which is a state of the world in which competition in the process sense is absent – firms and consumers simply 'take' prices and make their decisions accordingly, on an individualistic basis, without direct reference to others).

The relationships between competition itself and some of the simplified models used in economics – most usually for purposes other than detailed competition

assessments, including for establishing foundations for macroeconomic analysis[3] – have been lucidly covered by a number of writers[4], and they need not detain us here. Of more importance is the point that, when considering policy issues relating to competition, a risk to guard against is over-reliance on frames of reference built around static concepts that relate to economic states in which actual competitive processes have come to an end. It is always well to remember that competition is a process, and that the development of competitive markets is also a process.

Starting, as we have done, with the basic definition of competition serves as a reminder of two important points:

- Rivalry is a very general concept, and it is meaningless to talk of its implications and effects in abstract, without reference to questions such as: *who is competing with whom, how, for what, in what arena/context, and according to what set of rules?* Thus, there may be competition between two groups of eleven men or women, but that tells us little about what to expect until we know more, such as whether they are playing football, hockey or cricket. As the Competition Commission Guidelines say, *"... rivalry may occur in a variety of ways."*

- Given this dependence on context, there can be no presumption that competition is generally a Good Thing. The political situations in Iraq and Afghanistan might reasonably be described as intensely competitive – there are certainly intense rivalries – but such a level of intensity is not necessarily desirable. In the limit, Hobbes's state of nature is characterised by a highly competitive *bellum omnium contra omnes*, with the result that life therein is "nasty, brutish and short", leading to the argument that, compared with this, a monopolistic and none-too-delicate *Leviathan* is preferable.

What these points lead to is the conclusion that competition can only be considered a means, and not an end. It is a means that, from experience, has beneficial properties across a wide range of economic contexts – which is why the domain of competition law is so broad – but that domain is not unbounded, and some of the most challenging policy issues occur around its boundaries.

2.1.2 Forms of competition

Answers to the questions of who is competing with whom, how, for what, in what arena/context, and according to what set of rules, define different forms of competition. The number of possible, different forms of competition is vast, but there have been some attempts to construct simplified typologies. A good example is the

---

[3] *"It would not be easy to defend macroeconomists against the charge that for 40 or 50 years they have investigated competition primarily under assumptions which, if they were actually true, would make competition completely useless and uninteresting."* F. A, Hayek, "Competition as a Discovery Procedure", *Quarterly Journal of Austrian Economics*, Fall 2002. Whilst true, what Hayek does not mention is that most macroeconomists have not been concerned to 'investigate' competition, but rather to work with simplifications that might aid the investigation of other phenomena, such as the level of employment or the rate of inflation. Whether or not the simplifications help rather than hinder in this rather different exercise is another matter.

[4] George Stigler's article in the New Palgrave Dictionary of Economics is a case in point, as is John Vickers, "Concepts of Competition", *Oxford Economic Papers*, 47, 1995.

work of von Weizsäcker, who distinguishes between three different levels of competition: in consumption, in production and in innovation respectively.

Competition in consumption is close to the Hobbesian state of nature in that it assumes there are no property rights (such rights being a 'monopolistic restriction') in goods and competition takes the form of 'grab what you can'. Manifestly, such competition is undesirable, and property rights and their enforcement improve matters by restricting it. Given property rights in goods, however, much more beneficial competition can emerge since, among other things, such property rights provide incentives for production. Thus, restricting competition at the level of consumption serves to promote competition in production, an illustration of a common phenomenon whereby more limited competition in one dimension of rivalry can serve to increase the intensity of rivalry/competition in other dimensions.

A more intuitive example of the possible trade-offs occurs when restrictions on competition in production are introduced by way of intellectual property rights (IPRs), which can be used to prevent rivals in production from supplying a particular product or using a particular method of production. The point of IPRs is to provide enhanced incentives for research, development and innovation, which will tend to increase rivalry/competition in R&D and innovation by increasing the potential prizes for success. The value of that for which the rivals are competing is increased – there is more at stake – and rivalry will, other things equal, tend to be more intense.

Another, general way of thinking about different forms of competition is based on the distinctions in economics among *allocative, productive, and dynamic efficiency*. Roughly speaking, allocative efficiency means that prices reflect marginal costs of supply, productive efficiency means that costs are minimised, and the more nebulous concept of dynamic efficiency refers to the capacity for growth in consumer welfare over time.[5] These distinctions were important, for example, in the *Albion Water* case before the Competition Appeal Tribunal, and have also featured in policy decisions relating to competition in other regulated sectors.

To illustrate, a very broad question that arises in a number of different contexts, including water services, is whether or not competition should be allowed to develop in ways that will erode geographic cross-subsidies in network industries. Since costs-to-serve can be quite sensitive to location, competition that improves allocative efficiency, by driving prices toward marginal costs, may have the accompanying effect of leading to quite significant differences in the prices paid for the same physical service (electricity, water, gas, postal delivery, etc.) by end consumers at different locations.

In the past, when such differentiation in prices was judged politically or socially unacceptable the policy response was frequently to suppress competition in its entirety. The establishment of franchised, private monopolies, or of publicly owned industries protected by statutory entry barriers (e.g. some of the pre-privatization public corporations in the UK), are cases in point. In other situations, competition has been allowed but regulatory constraints have been placed on the rate at which tariffs

[5] It is a more nebulous concept because the economic analysis of market dynamics has a much less settled analytic framework than has static theorising.

can be 'rebalanced' – an approach illustrated by post-privatization arrangements in telecoms whereby BT could continue to run a very substantial 'access deficit' resulting from 'unbalanced' or non-cost-reflective line rental and call charges.

As the IPR example shows, there is no general objection, at least on grounds of economic efficiency, to *all* limitations of competition. What matters is the overall balance of competition, or the overall balance of the forms that rivalry takes in a particular context. Further, the appropriate balance will depend in part on the potential benefits from different aspects or types of rivalry/competition: it would obviously be unwise to restrict competition in dimensions that might be expected to product large benefits in order to strengthen competition in dimensions were the potential payoffs appear relatively limited.

2.1.3 Competition and discovery

In a recent essay[6], John Kay said the following about the performance characteristics of competitive markets:

> *"If the partial genius of market economies lies in their capacity to achieve co-ordination without a co-ordinator, the greater genius lies in their ability to innovate and adapt in an environment of uncertainty and change."*

This reflects old wisdom – more than a century and a half earlier J.S. Mill had spoken of competition being *"... more propitious to the progress of improvement than any uniformity of system"* – but, as Kay acknowledged, the torch bearer for this critically important insight in the twentieth century was Friedrich Hayek, who characterised competition as a *discovery process* or *discovery procedure*. The central strands of the Hayekian version of the argument can be summarised as follows:

- If anyone actually knew everything that economic theory designated as "data", competition would be a highly wasteful method of securing adjustment to these facts.

- Fundamentally, the economic case for competition is based upon recognition of a lack of knowledge about the essential circumstances that determine the current and future behaviour of competitors.

- Competition is a process in which things are discovered which, if the process did not exist, would remain unknown or would not be used.

- The process is important only because and insofar as its outcomes are unpredictable and on the whole different from those that anyone would have been able to strive for at the outset (which also implies that its beneficial effects necessarily tend to frustrate some intentions and expectations).

[6] John Kay, *The failure of market failure*, Prospect Magazine, August 2007.

- Once discovered (typically experimentally) and used, economically valuable information (e.g. from successful innovation) tends over time to be revealed to others, who can themselves then make use of it for their own purposes.

- It is impossible to assess the likely discovery performance of competitive processes with any precision, but experience and history indicates that they are highly effective in a very wide variety of different circumstances.

These are hard lessons because they require recognition of the limits of knowledge and (most difficult of all for many policy makers) recognition of the limits of control over outcomes. They are, nevertheless, the intellectual foundations of by far the most persuasive economic case for competition[7]; and, like much good theory, they have proved to be highly valuable guides in the practical business of policy making.

2.1.4 Competition and regulation

Although the notion of competition as a discovery process is a general idea, it has a number of fairly immediate implications for policy in regulated sectors of the economy such as water services. The first of these is that regulators of monopolies are likely to have to ply their trade on the basis of relatively little information/ knowledge.

However, that deficiency in information does not derive principally from the kind of asymmetries of information beloved of economic theorists – for example, where regulated companies know their own costs, but the regulator does not – but rather because, in the absence of competition, the information discovery process is likely to be much less effective across the sector as a whole. *The regulated monopoly will also tend not to know very much about aspects of its own cost structure or of its customers' preferences, because it has no very strong reason to acquire information about those things – its existence and current shape will likely not depend on having and using such knowledge.* The problem is not so much one of asymmetric information, but rather one of general ignorance.

Second, recognition of the significance of discovery has potentially major implications for the kind of trade-offs associated with determining the overall balance of competition, involving considerations of allocative, productive and dynamic efficiency. For example, discovery does not just take place at a level of competition that corresponds to R&D and product/process innovation: *discovery takes place at <u>all</u> levels of economic activity*.

In fact, the great bulk of discovery involves what might be regarded as quotidian things, such as what it is that particular groups of consumers want, how to get people working well together in teams, etc., rather than, say, about the development of a new, blockbuster drug. Put another way, it involves what might be called idiosyncratic knowledge/information, in contrast to universal knowledge/information of a kind that is to be found in textbooks, encyclopaedias, and school/college syllabi.

---

[7] There are, of course, other, non-economic reasons why competitive markets might be favoured, the most important of which are to do with promoting and sustaining liberty (or economic freedom), considered as an end in itself.

To give a concrete illustration of the implications of this second point, consider the question of whether to seek to promote a particular form of competition in a network industry such as water services which (form of competition) has the characteristic that it would not undermine geographic averaging of prices. In static terms it might be argued that there would be very little loss of efficiency, on the ground that there would be little relocation in the event of de-averaged charges. Another way of putting this would be to say that competition would add little positive in the relevant context, since all it does is to unravel existing cross-subsidies without having any significant behavioural effects on consumers.

What this misses is that, in the absence of competition, knowledge/information about the relevant costs, and therefore about the prevailing levels of cross-subsidies, may be very poor. The introduction of competition provides reasons for suppliers to take a much closer interest in the fine detail of their cost structures and, as a result, it may lead to the discovery that the cross-subsidies are actually rather different from what they have been presumed to be – a type of outcome that can be seen in the gradual re-evaluation of the 'costs' of universal service obligations in sectors such as telecoms.

Whether or not the potential economic value of better information on costs is judged sufficient to change a policy decision in relation to the favoured 'balance of competition' will depend upon the relevant context; and, for reasons given above, this will have to be a broadly based judgment based on general experience, since there is typically no realistic way of valuing unknown, yet to be discovered information. Assessment of the "prospects for discovery" is, nevertheless, a matter to be taken into account, and an important matter at that.

The discovery properties of competitive processes provide perhaps the most compelling, although not the only, rationale for the current policy wisdom in the UK, that where competition is feasible, regulation of outcomes (e.g. price control) is generally a second best option. It is second best in large part because of its poorer performance in the acquisition, processing and use of economically relevant information.

2.1.5 The rules of competition

As discussed, competition means no more than the existence of rivalry, and the who, and the for what, and the how, and the in-what-arena questions concerning rivalry can only be answered by reference to a specific context. In the example already given – which vividly illustrates the centrality of the 'Rules of Competition' (RoC)– the rules of association football, or of hockey, or of cricket will have a very strong influence on the effects of rivalry between two groups of eleven people. Further, the fine detail of the RoC can sometimes have major impacts on outcomes, an example being the effects of the offside rule in association football.

The RoC are a key part of the factual context that determines the likely properties of competitive processes. In economic life, the RoC include laws and regulations, but

also conventions and understandings that might be shared by market[8] participants. Although, for reasons given, regulators and other policy makers cannot determine the specific outcomes of competitive process – that is *the illusion of control* – they can have a strong influence on the forms of economic rivalry, and hence on the *general* effects of such rivalry.

Whereas Adam Smith's metaphor of the invisible hand – used in referring to the proposition that pursuit of self interest in competitive markets tends to lead to promotion of the public interest – is often contrasted with the visible hand of direction (whether the instructions are issued by a government department, or a regulatory agency, or by a manager in a business organisation), the RoC might be described as *the forgotten hand*. They help determine whether or not pursuit of self interest in competitive situations leads to the promotion of the general interest or to rather less desirable outcomes, of which the Hobbesian state of nature is a limiting case.

2.1.6 Discovery of rules of competition that work well

The processes by which rules of competition and market governance are established and enforced are themselves properly described as regulatory processes, since the relevant rules and conventions – whether established/enforced by public bodies or by private 'agreement' – will 'regulate' the relevant competitive process.

It is important, however, to distinguish between this kind of regulation of processes, via rule-making and enforcement, and regulation of economic activity that is directed at achieving specific outcomes in relation to economic variables (e.g. price control, an inflation target, an unemployment target, etc.); and it is unfortunate that much public debate on regulation fails to make this distinction. When, as above, we talk of regulation being second best to competition, we are referring to regulation aimed at controlling or influencing market outcomes. In this context, regulation and competition are *policy substitutes*.

On the other hand, turning to rule-making (regulation of processes), we find that 'regulation' and competition are *policy complements*. Good market governance tends to be conducive to competition and market discovery; competition, by promoting information discovery, tends to be conducive to better rule-making.

At some level most people recognise these distinctions, but it is surprising how little recognition there sometimes is in economic policy debate of the inextricable connections between competition and the RoC. No sane football fan would call for the abolition of the offside rule on the ground that there is too much regulation. The public's approach to the rules of association football is more sophisticated than that, even if its approach to the detail of enforcement of the rules by referees may not always reach the same level.

---

[8] Markets can be regarded as social institutions 'defined' by the relevant laws, regulations, rules, conventions and shared understandings. Thus, a town market might, by convention, be a weekly event, subject to local bye-laws and regulations, and governed by general law concerning trading, contract, property rights, etc. Markets are the institutional arenas/environments in which competitive discovery processes take place.

Since it is impossible to predict the outcomes of competitive processes with any precision, *a fortiori* it is impossible to predict the impacts, in terms of expected outcomes, of changes in the RoC.[9] The evolution of RoC and their enforcement is therefore itself a discovery process, characterised by the application of broad judgments and principles, and, to an even greater extent, trial and error experimentation. And clearly it is a discovery processes that is inextricably entangled with the development of competition itself.

It seems to us that these points are obvious once stated, but that they are worth stating here because they are so often neglected in policy discussion. Looking back at the development of competition over the last ten to fifteen years or so in sectors such as energy and communications, it becomes clear just what a critical role the development of the necessary rule-books has played. The advances made in the conduct of public policy have not just been about the abolition of statutory entry barriers (formal market opening), for example; or simply about the development of more sophisticated frameworks of statutory regulation. In energy, codes of various types, setting out rules for access to and use of network facilities and services, have been very important, as have the rule-books of (privately owned) exchanges for the trading of electricity and gas.

The success of liberalisation in the UK can be interpreted as resulting from an effective interaction between the rule-making processes and the activities that those processes govern (the production, transportation and supply of the relevant commodities). Starting from what can only be described as a poor base in terms of available information (an inheritance from publicly owned monopolies), experimentation and discovery (in markets and in rule-making) has yielded steadily better information, and led to sequential adjustments that reflect that better information.

If competition is to make a bigger contribution in the water sector, this is the kind of evolutionary process that will need to occur, although the precise developments can be expected to reflect the specific characteristics of the sector.

2.2 Immediate post-privatisation forms of competition in water services

It would be wrong to think that to date there has been an absence of policy initiatives to develop competition in the water services sector. Privatization of water companies in England and Wales was accompanied by pro-competitive measures, and there have been further developments since then. Today's policy questions are therefore to do with whether the roles of competition should be extended further and, if so, how and to what extent, not with whether or not competition has any role to play. They are questions about possible next steps, and in answering them it is clearly relevant to consider where past steps have led, and what can be learned from them.

Some of the history of the development of competition will be discussed in later sections, but, to illustrate some of the different forms that competitive processes can

[9] A corollary of this is that the kinds of criteria advocated for use in regulatory impact assessment are impossibly utopian in contexts where regulation is focused on RoCs and market governance.

take, three general forms that have existed since privatization can be noted at this stage.

2.2.1 Capital market competition

While the privatization of a monopoly does nothing *per se* to change competitive conditions in the relevant product/service markets, it does fundamentally change the position of the undertaking in capital markets. One of the more important of these changes is that, subject to the proviso that the process is not blocked by the establishment of 'golden shares' or other policy measures with similar effects, privatization implies an element of *rivalry for the control of the undertaking*. This is sometimes referred to as competition in the market for corporate control or, alternatively, by the more general term *capital market competition*.

Although the transactions costs involved in the process may be high, it nevertheless remains the case that, if some other company or individual believes that the existing management of an undertaking is not achieving attainable levels of business performance, it can challenge the incumbent management for control of the undertaking, for example by purchasing a controlling stake in the equity of the company. Alternatively, in different circumstances, the challenge to an existing management team may come as a result of financial distress, in which case it may be bond holders, rather than equity holders, who play the central roles.

The competitive challenge may be motivated by a number of different, possible. perceived sources of financial gain: lower operating costs, lower capital expenditure, lower financing costs, market power, more effective regulatory strategies, etc. To the extent that they are realised, some of the subsequent changes in performance can be expected to have beneficial implications for end consumers, for example as the regulatory system gradually translates lower costs (e.g. from productivity gains, lower costs of capital, etc.) into lower allowable prices/revenues. Others, such as increased market power, are explicitly policed by competition policy in general, and by mergers control policy in particular.

The most awkward aspects of capital market competition for sectoral regulators to handle are those in which the rivalry in relation to the control of companies is, at least in significant part, about competition to influence regulatory outcomes. This motivating factor can have positive implications for public policy objectives – e.g. when a company shifts from a strategy of trench warfare to what might be called a process of 'constructive engagement' with a regulator – but there are also contexts in which the effects are generally negative.

It is a fact that, wherever discretionary public policy decisions can have significant implications for the financial returns of companies, there will tend to develop a type of competition aimed at influencing those decisions. At a more general level, the issue is that of *rent transformation*. Wherever an economic system creates economic rents there will be rivalry/competition for those rents. Government is a very major source of rents: hence, we see vigorous competition to influence public decisions (politics is a competitive business).

Competitive politics has much to be said for it in general, but at the micro level of regulation there is the risk that it will absorb real economic resources, and therefore have real economic costs, without necessarily producing benefits that are proportionate to those costs – as, for example, when the capital market competition is about the possibilities for creating rents by inducing policy measures to restrict markets or by seeking to induce a *higher* regulated price via adjustments of the financial structure of a company, rather than about better serving customers or increasing productivity.

2.2.2 Franchising and contracting out

The 1980s saw the development of considerable interest in 'contracting out' approaches to public service provision, and the very fact of privatization of a regulated monopoly, coupled with the adoption of price cap regulation, can be said to have provided a stimulus to this type of competition by providing stronger financial incentives for cost reduction. That is, post-privatization companies in the water sector had significant incentives to organise more intense 'competitions' for inputs, and acquired the freedom to do so at any business level of their own choosing.

Indeed, it is possible to adopt this approach at the level of a monopolistic undertaking as a whole, via the introduction of competition <u>for</u> the monopoly franchises themselves. The French water services sector approximates this model, and it is familiar in the rail sector in the UK in the form of the bidding contests by train operating companies for passenger rail franchises. The tender process for running the National Lottery is another example.

The franchising approach has attracted considerable theoretical interest in economics[10], in particular because of the issues raised when specifying the criteria by which the successful bid is determined. Thus, if prices are unregulated, awarding the franchise to the highest financial bidder will do nothing to secure allocatively efficient prices, though it would tend to capture any monopoly profits for the public sector.[11] On the other hand, awarding the franchise to the lowest price bidder (i.e. the bidder who commits to supplying at the lowest price(s)) might lead to incentives to cut quality, and the relevant contract might be difficult to enforce in market circumstances in which the tendered prices turn out to be infeasibly low.

These last points draw attention to a fundamental characteristic of franchise bidding or contracting out: <u>*one*</u> buyer 'designs' the competitive process, and subsequently monitors and enforces the contractual arrangement. Where this is done for relatively well defined inputs, to be used in producing well established outputs and involving relatively modest levels of capital expenditure, it tends to raise no great difficulties. These are normal, commercial, procurement activities.

However, the wider the scope and the greater the complexity of the procurement exercise, the more closely it comes to resemble a traditional regulatory process. For example, where the franchise is for a monopoly business as a whole, there might need to be specification of what outputs are to be supplied, of what qualities, and at what

[10] See J. Vickers and G. Yarrow, *Privatization: An Economic Analysis*, MIT Press, 1988.

[11] The latter was, of course, much the more important of these considerations in the case of the National Lottery.

prices. Once the contract is struck, it will need to be 'administered' – which involves performance monitoring, clarification and interpretation of the agreements, resolution of disputes, etc. – in an economic environment that might well be subject to change, and therefore in which initial contractual terms may become dated and inappropriate in one way or another.

The underlying limitation in all this is that, in the contexts of interest here, there continues to be a monopoly bottleneck in the supply chain. The fact that the context is, in effect, a monopsony indicates that outcomes may well be different from cases in which the holder of bottleneck control is a supplier, but it does it not indicate that monopoly problems have been overcome, as becomes clear once some basic questions are asked. For example:

- How does the regulatory 'designer' of the competition discover information as to what it is that end consumers want, and what are the incentives for such discovery?

- What can be said about information and discovery incentives in relation to the procurement activity/process itself (as distinct from in relation to the thing procured)?

- Isn't rivalry in procurement itself an important aspect of competitive processes, and isn't it absent in the type of franchise bidding arrangements under discussion?

One way of characterising the franchise bidding approach is to say that it involves the establishment of 'one-sided' markets. This terminology captures the central point that, whilst competitive incentives are strong on one side of the market, they are much weaker on the other side of the market. In consequence there is an unbalanced aspect to the discovery processes which can be expected to be limiting in its effects.

2.2.3 Yardstick competition

Yardstick competition refers to a situation in which rivalry among companies is induced even though companies do not interact directly by competing to supply customers. In a regulated sector such as water, the idea is that the regulator can evaluate performance information from similar, regional monopolies, and base price determinations upon that information in a way that provides greater rewards to companies that exhibit relatively superior performance.

It is appropriate to use the word 'competition' since a degree of rivalry is created by the approach. If comparator companies are improving performance, then a supplier that is not improving performance at a comparable rate will see financial returns worsen. Similarly, a company that is performing better than average should see its financial returns improving. By linking returns to *relative* performance (performance relative to 'rivals'), this 'incentive regulation' approach is, in principle, capable of replicating a key characteristic of competitive markets.

It is natural for regulators to seek to make use of any information that might cast light on price determination decisions, and, where it is available or can be acquired at low

cost, they will tend to do so. In one sense, therefore, the use of yardstick regulation, and hence the existence of yardstick competition, is ubiquitous wherever a regulatory agency is responsible for oversight of a number of regional monopolies. The more substantive policy issues, therefore, tend to revolve around inter-related questions concerning the extent to which the approach can be formalised and the degree to which rivalry can be stimulated.

Yardstick regulation shares with franchising/contracting out the characteristic that it relies upon the performance conduct of a monopolistic entity, in this case a price regulator. Just as the 'procurement body' designs the competitive framework in the cases of franchising or contracting out, so the regulator designs the incentives framework for yardstick regulation/competition. Like procurement, incentive design is an economic activity/function with its own skill set and know how, and it would be contrary to the underlying rationale for wanting to promote competition simply to assume that it will be well conducted by a monopolistic agency.

The problems are compounded by the fact that, as a public body, a regulator seeking to rely heavily on yardstick regulation faces stringent procedural constraints on the ways in which relevant information is used – constraints that flow from the much wider recognition that the exercise of public authority is itself a monopolistic activity, and one that is potentially subject to abuse. In the face of complex information, therefore, a regulator cannot, in setting prices, simply proceed on the basis of best guesses as to which companies merit more favourable settlements than the average, and which companies merit less favourable settlements. The necessary judgments need to be reasoned and capable of objective justification. Thus, although competitive markets make extensive use of comparative information on a day-by-day basis (as, for example, when the valuations of companies on stock markets are determined), public regulation cannot replicate the informal, experimental and indeed frequently speculative ways in which this is typically done *in circumstances where there is competition in the assessment exercises themselves*.

Greater formalisation in the use of information implies that a lot of information will necessarily be lost – because most information is of an idiosyncratic nature – leaving awkward questions concerning the extent to which a regulator can rely on the (typically small) subset of information that is capable of greater formalisation for purposes of performance comparisons. How confident can a regulator be in concluding that company A has performed better than company B on the basis of formalised, quantitative comparisons of a limited set of variables, and on the same basis determining that prices should be set to allow A a higher return than B? Might it not be that the regulator has missed some particular, idiosyncratic features of the cost and productivity data? And if so, might the lower return allowed to B be damaging in terms of its impacts on incentives to invest and innovate, which is opposite to the effects that yardstick competition is intended to have?

Like franchising, yardstick competition can not really tackle the fundamental problem that monopoly, at whatever point in the chain that it arises (supplier, buyer, regulator), is typically characterised by poor discovery properties. Information is relatively limited and/or its use is restricted. Thus, whereas yardstick regulation is in one sense ubiquitous, its utility (for regulatory purposes) is highly constrained. Notwithstanding

appearances to the contrary in some economic models[12], in practice it is not at all a good substitute for actual competition in the market (in circumstances where the latter might be feasible).

[12] The theoretical models tend, as models do, to abstract from many of the informational and procedural difficulties that confront regulators in practice.

3. PRINCIPLES-BASED POLICIES

3.1 Policy principles

The post-privatization development of sectors such as water, energy, and telecoms has been characterised by an extended process of learning and discovery in policy making, as the institutional arrangements and 'rule-books' to support liberalised markets have been developed. As reflected in the title of at least one relatively early paper on the developments[13], much of the policy making activity has been experimental, not least because the UK, being a pioneer in the relevant policy areas, was not able to draw on large stores of previous experience. Inevitably, therefore, there has been a very substantial 'trial and error' element in policy development: which is in no sense a criticism, not least because the vast bulk of human knowledge has been acquired in this way.

However acquired, the UK's recent experience of utility regulation is now available to inform policy development going forward. Thus, although experimentation and trial and error can be expected to continue to play major roles in the process of discovering what works well and what doesn't work so well, this experience should at least expedite the learning and discovery process. What follows, therefore, is a distillation into a few principles of some of what has been learned.

3.1.1 Regulatory know how

In consequence of the experimental, trial-and-error learning that goes on in regulatory policy development, much of the knowledge acquired takes the form of what can reasonably be labelled 'know how': experience, skills and information pertaining to policy development and enforcement that is not easy to formalise and write down, and hence not easy to transfer to others via, say, books and papers. Because of the absence of formalisation, it is all too easy to fail to recognise the significance and value of know how, and therefore an elementary principle of good regulation is simply to recognise its existence and its value/significance.

One part of this recognition lies in the appreciation that the rule-making and institutional developments surrounding multi-user networks have substantive legislative and judicial elements. The relevant developmental skills are therefore not necessarily closely similar to those most appropriate to executive and administrative tasks – a disjunction that can give rise to certain problems for regulatory agencies that are administrative in general character.

The issue here is not a newly identified one. Writing of the regulatory agencies that were developed in the United States long before the UK's entry into this policy area at the time of the first utility privatizations, Professor Daniel Spulber has said:[14]

> *"The dilemma faced by Congress in establishing regulatory agencies is that a dual purpose is envisioned. Regulatory agencies must be accountable to the Congress or the Executive and represent an exercise of*

[13] J. Vickers and G. Yarrow, *The British Electricity Experiment*, Economic Policy , 1991.
[14] D.F. Spulber, *Regulation and Markets*, MIT Press 1989.

> *congressional or executive power. However, it is desired that the regulatory agencies proceed fairly, that they accord individuals the due process of law, and that their decisions are consistent with judicial review. Unfortunately, achieving these two purposes within a single agency may be inconsistent or problematic at best."*

There is no easy resolution of this dilemma, although once again simple awareness of its existence may itself represent significant progress. A given regulatory agency, and *a fortiori* a given set of agencies, making policy for a given sector will need to encompass different skill sets and different know hows. Developing and promoting competitive market arrangements in circumstances where such arrangements have not previously existed is one of those skill sets.

3.1.2 The centrality of context and the factual matrix

Economic evaluations of regulatory policy issues commonly make reference to 'models' (of competition, of markets, of regulation), but we think it is better to think in terms of principles that can be used when analysing particular issues in particular contexts. The reason for this is that the issues and context represent the reality, and economic models are intended to be simplified representations of that reality, often very massive simplifications. A tendency to focus on modelling – which can be encouraged by the fact that modelling tends to be much less resource intensive than detailed factual investigation of a specific economic context – can lead to an over-abstract approach to policy making that fails to spot the significance of key aspects of the factual reality. Indeed, the model can come to be confused with the reality. Joseph Schumpeter, a significant figure in the history of economic thought, called the tendency toward over-abstraction, and in particular the tendency to draw very strong policy conclusions from limited empirical input, the 'Ricardian Vice', after the early 19th century economist, David Ricardo.

As is generally acknowledged in the Courts and in those parts of economic analysis that have avoided the Ricardian Vice, the same principles applied in different contexts can lead to quite different implications for economic policy decisions. As Sir Christopher Bellamy has put it, in a lecture on the work of the Competition Appeals Tribunal[15]: "Context is everything; circumstances alter cases." Sound policy development is consequently generally grounded in an appreciation of the specifics of the relevant context.

In general, the significance of context for policy analysis and conclusions implies that the safest way of proceeding is, in effect, to develop bespoke economic models for the specific, circumstances at hand. This is what we mean in talking about applying principles to a factual context. Thus, for example, in the particular case of the water sector, policy analysis needs to take account, among other things, of the specific characteristics of water networks and of what is currently a rather distinctive regime for water abstraction, which does not produce an economic valuation for the basic commodity itself (water).

---

[15] Sir Christopher Bellamy, *The Competition Appeal Tribunal – five years on*, in Colin Robinson (ed), *Regulating Utilities and Promoting Competition, Lessons for the Future*, Edward Elgar Publishing, 2006.

This is not to say that policy experience in other sectors, with different types of networks and with different production technologies, is not valuable. To the contrary, it is such experience that is typically embodied in the policy principles to be applied; for example the principle of identifying naturally monopolistic activities and focusing price regulation on those activities. In relation to this natural monopoly example, the relevance of context, or of the specific factual matrix, resides in the process of identifying where the *actual* boundaries of the natural monopoly are. Thus, for example, it cannot simply be assumed that a treatment works embedded in an area water distribution network will have an economically similar relationship to that network as does a power station embedded in an area electricity distribution network. More would need to be known about the specific characteristics of the relevant networks and technologies before such view could be safely taken; or, put another way, that is a conclusion that may or may not be true, depending upon circumstances, and it is not something that can simply be assumed (as might tend to happen in an overly abstract approach).

3.1.3 Approaches to assessing 'prospects for discovery'

As explained above, the chief advantages of competition over other methods of allocating economic resources lie in its dynamic properties, particularly its capacity for acquiring, processing, and transmitting what in most economic markets and sectors, amount to vast quantities of information ('discovery'). Given the obvious difficulties in placing a valuation on as yet unknown information, it is not realistic to think that it is possible to draw up any very precise and reliable balance sheet of the costs and benefits to be expected from the introduction of competition into an area of economic activity where it has previously been absent. Some form of assessment is required, however: markets have transactions costs (one manifestation of which is the existence of natural monopoly), and it is fairly obvious that it would be poor public policy to try to create a competitive market for every conceivable economic activity.

Remembering that introducing competition means introducing rules and institutions, the kinds of assessment required are those familiar from legislative and judicial deliberations when new law is being made. That is, they are relatively broad judgments based on broad experience. Since the issues concern unknown effects, and the discovery of unknown effects, there is also an unavoidable element of experimentation.

3.1.4 Accounting values vs economic values

Regulation of networks necessarily relies heavily on accounting information that records past/historic transactions.[16] This information includes, for example, outgoings that can be categorised as operating expenditure, or valuations of assets that are based upon depreciated values of past capital expenditures, including where asset values are adjusted for general inflation.

[16] The modern equivalent asset (MEA) approach to asset valuation is arguably less backward looking since it focuses on current costs of asset acquisition/construction. However, what is being valued is something similar to that which already exists, with similar productive capacity, and those things are given from the past. In any event, at any point of time, MEA values are typically different from economic values.

Economic decisions, including public policy decisions, are, however, forward looking in nature, involving assessments of possible future implications of choices made today. The costs that are relevant for such decisions are, therefore, forward looking costs, or economic costs – and asset values that might be relevant for decisions should also be estimated on a forward-looking basis.

The different concepts each have their own particular uses, and, once again, what is initially important in considering prospects for competition in the water sector is that the distinctions and differences be recognised. An immediate example concerns the value of raw water, at the point of abstraction. Accounting costs can be measured as the costs incurred by the Environment Agency (EA) in running the abstractions regime, which are currently reflected in the charges made by the EA for water abstractions. On this measure, water is a relatively low value commodity.

The cost of water on a forward looking, economic basis may, however, be much higher. For example, water may have a scarcity value based upon limitations imposed on abstraction levels for environmental reasons of one sort or another. In that case, the economic cost of water will reflect that scarcity value since, if a decision is made to increase water usage for a particular activity, the future 'costs' imposed will include the implied loss, in conditions of scarcity, of the value of the water in its alternative uses (what is generally referred to as its opportunity cost).

A second example concerns the valuation of network assets. Currently the aggregated regulatory asset value (RAV) of water companies operating in England and Wales is around £39 billion, whereas the replacement value is estimated to be around £228 billion. Although the latter is not an 'economic value' (see footnote 16) figure, the size of the difference between the two numbers is strongly suggestive of circumstances in which there may be large discrepancies between the economic valuation of certain network assets and what is written down in the books.

3.1.5 Average costs vs incremental costs

A related cost distinction is between average cost – the total cost of a supply activity divided by the volume/level of the product or service supplied – and incremental cost, defined as the per-unit cost of supplying some quantum of additional volume (when the quantum is small, the relevant concept is referred to as marginal cost).

In network regulation, average cost, including the cost of capital, is the concept that drives the overall level of allowed prices or revenues. On the other hand, within this 'regulatory settlement', differences in incremental costs are often reflected in the structure of charges for use of network. This distinction between the *level* and the *structure* of charges can be of critical importance, since, as has been discovered in the energy sector, it is possible to introduce reforms in the determination of relative charges for network services without losing the confidence of capital markets, provided that the overall regulatory settlement (based on the *average* charge level) is 'held intact'.

Like for all economic cost concepts, the estimated level of incremental costs depends upon the time horizon over which they are calculated. Short run incremental costs are the costs of supplying extra output over a relatively limited time horizon, and may be

very low (in relation to average costs) in circumstances where there is excess capacity in the relevant parts of the network. Long-run incremental costs (LRICs) are estimates of the costs of providing extra output over longer time periods, and therefore typically include some or all of the relevant capital/capacity costs. Variants of LRIC pricing are influential in determining the structure of charges for use of the high-voltage electricity grid and for use of the high pressure gas pipeline system in Great Britain. However, LRIC approaches have been most widely adopted in the telecoms sector, not only in the UK but also in many other jurisdictions.

Perhaps the principal problem associated with LRICs is their subjectivity, since, in effect, they require long-term forecasts of the cash flows that would be triggered by provision for sustained, incremental demand; and it should go without saying that long-term forecasting of expenditures is not an exercise in which any great precision is to be expected. Subjectivity raises problems for regulatory policy, whose success depends upon creating an environment of predictability and 'certainty' that will be conducive to capital investment.

The problems here lie less with discouragement of capital investment in the network itself, but rather with investments by network users. As just indicated, the network owners' returns on incremental investment will be determined by the overall regulatory settlement, whereby a cost of capital is allowed on the regulatory asset value, and this settlement can be held intact as LRIC based relative charges are varied. On the other hand the structure of charges may be a matter of considerable importance for those investing in commercial activities that make use of networks – as, for example, when investing in projects related to the development of a new water source, at a specific location.

In other sectors, the issue has been addressed by what might generically be labelled 'simplified procedures'. Rather than attempting full, forward looking appraisals of costs, methodologies have been developed that, in effect, incorporate more mechanistic, rule-based approaches to cost estimation, which may or may not incorporate elements of accounting approaches (e.g. via allocation rules for fixed or common costs). The idea here is (a) to introduce calculation methods that might be expected to better reflect LRICs than would, say, an averaged accounting approach, but which do not lay claim to any pretence of great accuracy and (b) to provide network users with greater certainty if forming expectations, via reliance on relatively stable procedural rules and methodologies.

3.1.6 Proportionality

In the UK the pursuit of the Government's better regulation agenda has been crystallized in five principles: accountability, transparency, consistency, proportionality, and targeting. The first two are self explanatory. The third, consistency, is critical in regulated sectors of the economy, since consistency and predictability in decision making contribute to greater regulatory certainty and to higher investment. Most UK sectoral regulators, including Ofwat, tend to score highly on this count in international comparisons of regulatory regimes.

Proportionality and targeting (to be discussed in 3.1.8 below) have tended to pose more severe challenges to regulators. In relation to proportionality, the difficulties are

partly linked to the rather loose interpretations that can be applied to the term. Some practitioners interpret it as coterminous with strict cost-benefit analysis – an interpretation that, for all intents and purposes, has the effect of rendering the term non-operational, at least where competition issues are involved. Even where the term is used in a more appropriate way[17] – meaning something looser such as 'make sure that costs are not in a different, more elevated ballpark than benefits' – it generally requires further clarification when it is applied to a particular set of policy issues.

In relation to the assessment of prospects for the development of competition in water services, there is one, high-level clarification or distinction that is helpful in thinking through the issues:

- Proportionality may refer to the broad relationship, at a general policy level, between the potential benefits that might be achieved by policy changes on the one hand and the resources devoted to policy development activities on the other hand. For example, it might be said that, to date, the prospects for benefits from competition in water services have been viewed as rather limited, and that this perception has served to justify, on grounds of proportionality, a relatively muted (compared with other sectors) approach to the development of competition.

- For a given policy approach or strategy, proportionality may refer to the relationship between resources devoted to implementation and enforcement and the effects of different implementations and enforcement levels. For example, at one end of the spectrum of possibilities for developing competition might lie elaborate schemes of arrangement for how the market might work, involving substantial transactions costs. At the other end of the spectrum might lie much simpler arrangements with lower transactions costs, but perhaps with more limited discovery capacities. In that case, one natural question is whether the extra costs of more elaborate arrangements are disproportionate in terms of the possible extra advantages that they might provide.

It is for violating this second type of proportionality that UK sectoral regulators are most frequently taken to task.

3.1.7 Sequencing, priorities and information

Whilst the outcomes of competitive processes are difficult to forecast by virtue of the fact that new information can be expected to be discovered along the way, the implications of such uncertainty for competition assessments are less dramatic than might at first sight appear. Decisions occur within a given policy history, and it is rare that large numbers of things can be changed at once. Rather, the policy questions

[17] By more appropriate is meant that the approach can be expected to be more effective. Duly applied, the proportionality principle focuses policy assessment on the task of weeding out very bad proposals, rather than diverting undue effort into the evaluation of close-calls. One of the major weaknesses of the (monopolistic) public sector is that very bad projects tend to have a much longer life expectancy than they would in more competitive conditions. Elimination of a relatively small number of very badly performing projects and policies could, therefore, be expected to have a very material effect on public policy performance overall.

tend to be concerned with what might best be done next, in a context of constraints where only some things can be done. That is, as in relation to legislation more generally, there is a question of priorities.

Attention to issues of discovery when assessing priorities can be of considerable assistance in improving the *sequencing* of policy development. Simple questions like *What don't we know? What might we learn? Is what we learn likely to be of economic value?* are important, even though none of them can be expected to have any precise answer.

Consider the question *What don't we know?* This can be asked about various stages of the water supply chain, and even rough and ready answers are illuminating. For example:

- At the top end of the supply chain, we don't know very much at all about the economic value of raw water, including about locational and temporal (seasonal and time of day) variations in its value.

- Further down the chain, we don't know much about the *economic* value of some of the major assets that are deployed, for example pipes transporting water from one location to another – and one, but not the only, reason for that is that the differences in the economic value of water at different locations remain undiscovered (the first bullet point).

- Travelling further downstream to retailing, we don't know what the effect of fully opening up the residential market to competition on retailing costs would be – better discovery could be expected to bring unit retailing costs down if other things were equal, but competition would likely introduce rather higher marketing costs than are currently incurred.

The questioning could be continued for sewerage and sewage treatment activities, but the above should be sufficient to make the point. What is clear, in seeking to answer the questions, is that there is what might be referred to as informational poverty in the sector, which is exactly what is to be expected (from general experience) in monopolistic conditions, including the monopolistic arrangements of the water abstractions regime.

It is, we think, also clear that some aspects of the discovery that might be anticipated in the event that competition were promoted at these various stages of the supply chain are more fundamental and far reaching than others. Specifically, discovery of the economic value of raw water appears to be of particular significance, since spatial and temporal variations in this number have implications right across the supply chain, including for the level and pattern of investment in infrastructure/network assets and for demand management. Very roughly, development of a better discovery process for the value of raw water can be expected to trigger better discovery at both network and retail levels. We will return to these points in later sections.

3.1.8 Unbundling and targeting

Central to liberalisation in the UK has been the notion of unbundling, whereby previously combined economic activities have been identified as distinct from one another and, for policy purposes, addressed separately. The most familiar, 'macro' example has been the unbundling of utility networks from the various activities that make use of those networks, associated with the recognition that different rules of competition (including rules that prevent competition, as in the Scottish legislation concerning use of Scottish Water's network) are warranted for the different activities.

In effect, this is an exercise in better policy targeting, the first stage of which is what might be described as 'conceptual unbundling', in which the relevant regulator or policy authority recognises the relevant distinctions and their implications for policy development. The process of policy development for a more disaggregated set of economic activities can be referred to as 'regulatory unbundling' (although there is a case for simply calling it clear thinking), and it is, in our view, a critically important aspect of the detailed conduct of regulatory policy.

3.1.9 The relevant counterfactual(s)

In any assessment of the advantages and disadvantages of adopting a given policy approach, it is important to ask the question *compared with what?* Clearly, the assessment of any particular approach will depend on the alternatives, or counterfactuals, against which it is being compared. When assessing impacts that might be associated with developments to the competitive environment in the water sector, therefore, it is necessary to consider the relevant counterfactual or counterfactuals.

A standard approach, and one that is routinely recommended in Impact Assessment guidance, is that potential policy options be assessed against a "do nothing" baseline. However, whilst the do nothing counterfactual is clearly a relevant counterfactual to consider when assessing potential developments in competition, it is not the only one. Indeed, in many respects it is not obviously the most relevant counterfactual. This follows from the fact that making efforts to increase the role of competition in the water sector represents one potential option (or more accurately, a whole set of potential sub-options) that could be adopted *as a response to perceived, underlying policy problems/challenges*. It is not, however, the only potential option. Depending upon the perceived 'problem', other options might rely upon the further development of current reliance on central planning and administrative procedures.

The point here is that a lack of competition in relation to any particular aspects of water services is not the underlying policy 'problem' to be addressed – a statement that follows from the earlier point that competition is most appropriately seen as a means, not as an end in itself.

These points about counterfactuals are relevant when considering costs that might be associated with the development of revised rules of competition. In particular, contemplation of a third party competing with an incumbent to undertake a set of activities that had previously not been open to competition typically gives rise to an immediate requirement for the specification of new 'market' rules and procedures.

For example, it becomes necessary for the terms upon which the new entrant can access a given network to be specified.

Of course, the ongoing operation of the network ahead of entry will have already been based upon a whole range of guidelines and procedures that were employed internally by the relevant incumbent. When entry is contemplated, however, there is typically a requirement for a greater degree of 'contractualisation', since the incumbent's internal mechanisms for addressing the issues will no longer suffice. Liberalisation of particular activities has therefore typically been accompanied by considerable activity associated with the definition and specification of appropriate access terms and conditions.

Some care is needed, however, when assessing the costs of such activity. The process of contractualisation, developed to facilitate competitive entry, involves a great deal more attention being devoted to the manner in which particular sets of activities are undertaken. However, a more intense level of specification and scrutiny of network activities is also a standard regulatory development, even in the absence of any attempt to introduce competition. It may be, therefore, that not all of the recorded costs are properly attributable to market opening requirements.

3.2 Policy objectives and their implications

3.2.1 Avoiding false oppositions

In the context of considering prospects for competition in the water services sector, public policy objectives have been most clearly stated in the consultation document *Extending opportunities for competition in the water sector in England and Wales*, issued by Defra and the Welsh Assembly Government in July 2002. In specific relation to competition, the first paragraph of the documents states that:

> *"The Government believes that the properly managed development of competition in the water industry in England and Wales is desirable as this should lead to greater efficiencies, keener prices, innovation and better services, to the benefit of customers. The Government also believes that competition must be balanced against its wider objectives to protect public health, protect and improve the environment, meet the Government's social goals, and to safeguard services to customers."*

Similar points are repeated at paragraphs 9 and 10, giving more detail as to the nature of the 'wider objectives':

> *"The Government believes that increasing the opportunities for competition in the water industry in England and Wales can bring benefits to customers through keener prices, better services, innovation and improved efficiencies. However, competition is not an end in itself and the potential benefits must be balanced against the Government's wider objectives for the water industry, which are:*
>
> - *to protect public health;*

- *to protect and improve the environment; ensuring that the industry can continue efficiently to finance and deliver continuing water quality and environmental improvements with minimum impact on customers' bills;*

- *to meet the Government's social goals, including affordability of water supplies for households, protecting vulnerable groups, the interests of customers in rural areas, and the disabled and pensioners; and*

- *to safeguard services to customers, by sustaining an industry that can provide water efficiently with the highest levels of customer service; and with an effective emergency and drought regime to ensure that supplies are always available where needed.*

As part of its sustainable development agenda, in formulating these proposals the Government is keen to ensure that public health, the environment and wider social policies are not compromised. It is also important that water supplied for domestic purposes remains acceptable to consumers in terms of taste, odour and appearance."

There is some lack of clarity in these statements. The first speaks of 'balancing' competition against 'wider objectives', as if competition were itself a broadly similar objective, whereas the later statement identifies competition as a means, not an end, and then refers to balancing the 'potential benefits' of competition against 'wider objectives' (rather than against the 'potential benefits or costs' of alternative policies directed towards those objectives). A major difficulty with the first formulation is that it suggests that there is a necessary opposition or conflict between the development of competition and 'wider objectives'. In our view such a formulation is both unhelpful and unfounded.

A less confusing way to frame the relevant policy issues is to accept that competition/ rivalry is indeed a means and not an end, and then go on to recognise that the effects of competition/rivalry will depend upon the rules of competition/rivalry and the specifics of the relevant factual contexts. Since there are choices to be made as to the RoC and, more broadly, as to the coverage, shape and institutional arrangements of new markets that might develop, it is appropriate that wider public policy objectives be taken into account when those decisions are made.

3.2.2 Identifying key policy questions

By recognising competition as a means to the achievement of a range of potential objectives, two central, related questions can be asked in connection with the relationship between competition and the achievement of 'wider objectives', in the sense referred to above:

a) To what extent do the policy approaches adopted for the achievement of wider objectives give rise to appreciable restrictions and/or distortions of

competition that are unnecessary/not indispensable for the achievement of those wider objectives?; and,

b) To what extent could competition be expected to provide for more effective ways of achieving wider objectives (such as objectives related to environmental protection)?

In question (a) the focus of attention is not on the achievement of wider objectives. Rather, the question concerns the extent to which the specific policies adopted in pursuance of, for example, social and environmental objectives *unnecessarily* frustrate the extent to which competitive processes can be expected to give rise to "*keener prices, innovation and better services, to the benefit of customers*". Unnecessary restrictions of competition signify that there are more effective ways of pursuing wider objectives.

In question (b) the focus shifts instead to the achievement of 'wider objectives', and the extent to which competition might actually provide a means of better achieving those objectives (in addition to other benefits that might arise from "*keener prices, innovation and better services, to the benefit of customers*"). That is, social and environmental objectives (for example) need not simply be a source of constraints on competitive processes aimed at the achievement of other objectives; competitive processes can – at least potentially - better facilitate the achievement of those objectives. Thus, the extent to which different institutional arrangements might be expected actually to promote the achievement of wider objectives merits particular consideration.

A number of issues that arise in the posing of these related questions are considered below.

3.2.3 Necessity/indispensability

The key point highlighted by question (a) above, is that wider objectives can be potentially met through a range of different approaches, but the effect of those different approaches on competition will not be equivalent in each case. Thus, this question is concerned with the potential for some policy approaches adopted in the pursuit of wider objectives to be less restrictive of competition than others. In terms of competition policy, it is important that when pursuit of wider objectives gives rise to the implementation of policies that might serve limit competition, the restrictions are no more than is necessary (indispensable) for the purpose of achieving the objectives.

This necessity/indispensability principle gives some priority to competition, and it is built in to EU and UK competition law, for example in Article 81 of the European Treaty and Chapter 1 of the UK Competition Act. The simplest rationale for it is in terms of the discovery properties of competitive processes discussed above, which allow of no easy quantification of their potential benefits. In effect, the principle serves as a reminder to policy makers not to impair dynamic learning processes in pursuit of some immediately perceived advantage, unless that advantage is great and the impairment is unavoidable.

3.2.4 Competition as a means of achieving wider policy objectives

Viewing competition as a discovery process, there is no reason in principle why competition/rivalry cannot be effective in discovering better/more effective/more efficient ways of promoting public health, protecting and improving the environment, improving water quality, protecting vulnerable groups, and promoting service quality and security of supply; and there is every reason, from experience, to believe that competition can contribute significantly to the attainment of such objectives. What is required is discovery of RoC that will channel rivalry in appropriate ways.

There is one health warning to be given at this point, however. It might be thought from the above argument that rules of competition can be set so as to achieve desired outcomes or targets; but they can't. Competition will produce new, unanticipated information, and a target-driven approach to policy would require constant adjustment of the rules to take account of the latest discovery. However, rules that are subject to constant change are no rules at all: they do not provide the required degree of stability/certainty to be able to fulfil their roles as co-ordinating mechanisms. And the highly adverse consequences of instability and arbitrariness in public policy were understood long before their re-discovery in the context of nationalized public utilities.[18]

This identifies an awkward and difficult trade-off that necessarily confronts public policy. In encouraging, facilitating and in some cases promoting the development of new markets, regulators and other policy makers are required to be innovative and to engage in a discovery process (trying to find appropriate and effective market rules). On the other hand, there is a premium on regulatory certainty, and on avoiding instabilities in the rule-making process.

Wider public policy objectives therefore pose a challenge for liberalisation in that, whilst it is possible to see that rules of competition and of market governance can be developed that will enable competition/rivalry to make effective contributions to the achievement of those objectives, some of the issues are new, and the development of detailed, rule-making 'know-how' is still in its infancy. This is particularly true of environmental issues.

Given that (a) the role of competition/rivalry in the water services sector has to date been relatively limited and (b) environmental issues are steadily increasing in relative

[18] Adam Smith, for example, made some of the points in his discussion of the principles of taxation: *"The tax which each individual is bound to pay should be certain, and not arbitrary. The time of payment, the manner of payment, the quantity to be paid, ought all to be plain and clear to the contributor, and to every other person. Where it is otherwise, every person subject to the tax is put more or less in the power of the tax-gatherer, who can either aggravate the tax upon any obnoxious contributor, or extort, by the terror of such aggravation, some present or perquisite to himself. The uncertainty of taxation encourages the insolence and favours the corruption of an order of men who are naturally unpopular, even where they are neither insolent nor corrupt. The certainty of what each individual ought to pay is, in taxation, a matter of so great importance, that a very considerable degree of inequality, it appears, I believe, from the experience of all nations, is not near so great an evil as a very small degree of uncertainty."* In relation to business decision making, the mischief lies in a frustration of the capacity to form stable expectations in the face of perceived potential for arbitrariness in the exercise of market governance functions, a particular form of abuse of monopoly power.

significance, there is clearly a risk that failure to understand the significance of RoC, of the variety of potential rule-books that could be developed, and of the potential sensitivity of subsequent market developments to variations in the rules, could lead to false starts in policy development. Although subsequent adjustments would be possible, the potentially adverse implications for regulatory certainty and credibility are such as to indicate that it is worth devoting significant effort at the outset to get the rule-making process off to a good start, and heading in the right sort of direction.

An Irish proverb might be useful here:

Tús maith, leath na hoibre

A good start is half the journey.

4. REGULATORY AND COMMERCIAL UNBUNDLING

4.1 Regulatory unbundling

4.1.1 Regulatory unbundling as a priority activity

Recent discussion of 'unbundling' or 'separation' issues in regulated sectors of the economy frequently tends to focus itself quickly on to questions of accounting, or business, or ownership separation, with current EU debates on the 'Third Package' of energy market reforms – which encompass various degrees of separation between high voltage transmission of electric power and other activities such as electricity generation – being a case in point. However, where privatization led to vertically integrated utilities, as in gas and in telecoms, experience suggests that prior 'regulatory unbundling' was a key element in the subsequent development of markets.

By 'regulatory unbundling' we mean a process by which regulatory supervision itself comes increasingly to recognise the distinctions among various activities undertaken by utilities, and responds to those distinctions in the way in which regulatory controls are applied. A simple example is provided by third party access charges for use of the network of a vertically integrated incumbent utility. Regulatory unbundling implies recognition that retailing and the provision of network services are distinct activities that merit distinct regulatory policies and controls. Thus, a first step to regulatory unbundling might be the imposition of separate price controls on the relevant network and retail activities.

Whilst in theory this might appear to be a relatively trivial point, with limited implications in a situation where both the network and retail markets remain monopolised (why should it matter whether or not there are separate price controls for different activities when all activities are monopolised?), it has nevertheless proved in practice to be an important step in the development of more liberalised markets. Thus, if retail markets are to be open to competition either in whole or in part (i.e. to large customers only), eventual abolition of retail price controls must clearly be in contemplation. The structure of price regulation must therefore be such that retail price controls can be gradually removed, leaving only price controls governing (monopolistic) use-of-network services; and that process is made much easier if there are separate price controls to begin with.

Moreover, once policy thinking focuses on the processes and the developments that lie ahead, it should become obvious that, for Ofwat at least, it is the network price control that requires the lion's share of regulatory attention. Use of network services are typically the more enduring monopolies, and network activities of one kind or another tend to be where most economic value is added. Thus, one of the important early tasks to be addressed is to arrive at appropriate capital asset valuations and allocations for the purpose of setting differentiated price controls for use of networks; and, as indicated earlier, this should not just be a matter of making relatively mechanistic accounting allocations: if matters are to progress smoothly, it is advisable to address economic valuation issues at this early stage.

One reason for the importance of considering economic valuation issues is that, as competition develops in particular areas, issues of stranded assets might occur. A company could then ask for adjustments to the regulatory asset values in remaining monopolised businesses, and the issues arising could cause problems and delays that impair market opening. Early determinations of capital valuations and allocations that better approximate economic realities can prevent the worst of later, stranded asset problems.

Disaggregated price controls that cover those markets that are in the process of being opened to competition represents a much more *transitional* form of regulation, and a lighter-handed approach is therefore generally warranted, consistent with the original rationale for RPI-X put forward by Professors Beesley and Littlechild. In these circumstances, price caps may simply be precautionary in nature, set with an expectation that competition will, in the event, lead to lower prices (i.e. to non-binding caps), but nevertheless retained, perhaps with sunset provisions, in case initial regulatory assessments about the time-frame for developing competition prove over-optimistic.

The practical import of these points is illustrated by the history of 'retail-minus' approaches to the determination of access prices based on the efficient component pricing rule (ECPR), not just in the UK but worldwide. The ECPR, and retail-minus more generally, represents a 'bundled' regulatory approach in which regulation itself establishes a tie between a retail price and a wholesale price or a use-of-network price.

The approach was initially designed for circumstances in which access to a network is a relatively peripheral/isolated event, rather than as something that is to be routinely provided in order to sustain distinct markets (e.g. at retail); which is perhaps why the linkage/bundling aspects of the approach did not immediately attract the suspicions that, under competition law, would tend automatically to fall upon a dominant firm that was, of its own volition, seeking to link prices in two distinct markets in this way. Retail minus has also proved useful in circumstances where network or wholesale price regulation is itself transitional, because for example of developing network competition, as has happened in parts of the telecoms sector. In the latter case, the case for retail minus is basically one based on administrative expediency and proportionality: if network or wholesale competition is developing, and hence if a better value discovery process is on the horizon, it may be judged disproportionate to devote significant regulatory resources to achieving greater precision in cost estimations and allocations for the relevant network or wholesale services.

Regulatory bundling (embodied in retail minus approaches to price setting) is, however, inappropriate when liberalisation is in contemplation (except perhaps where it is done as a once-and-only determination to kick-start a process, which appears to have been how it has been used in Scotland by WICS). The structure of the price control in such circumstances is much better based on a forward look at where liberalisation might lead to, even allowing for all the uncertainties and approximations that such a forward assessment will entail. Once this exercise is undertaken, it should be clear why *basing a monopolistic network or wholesale price on a calculation that starts with an increasingly competitive price in another, distinct market, is to get things the wrong way round.* Monopoly regulation should start from cost conditions

in the monopoly activities; regulated network charges will become retail costs; and retail prices will (over time) come to be determined by competition, against the given network costs. *Assessments of retail costs should play no role in the determination of wholesale or use-of network prices.*

As the CAT concluded in the *Albion Water* case, worldwide experience reveals a uniform lack of success with the 'bundled regulation' approach embodied in the ECPR, however neat the underlying economic theory may be.

4.1.2 Examples of regulatory unbundling in other sectors

From a number of possible illustrations of regulatory unbundling in other sectors, we will focus on just a few, drawn from the energy sector, each of which, for slightly different reasons, might be helpful in thinking about the development of regulatory policy in the water sector.

Regulation of Regional Electricity Companies (RECs) post-privatization

The major activities of the RECs were threefold: (a) the regional/local distribution of electricity, (b) the retail supply of electricity, and (c) generation of wholesale/bulk electricity at smaller power stations 'embedded' in distribution networks. At privatization, the first activity was perceived to be an enduring natural monopoly, the second as an activity that, over a period of years, would be gradually opened to competition, and the third as an immediately competitive activity (the wholesale power market was not initially subject to price control, although Offer did later negotiate temporary restraints on prices for a short period). The resulting, 'unbundled' regulatory approach was based upon:

- price/revenue controls over charges for use of distribution networks,
- separate controls on retail prices to smaller loads, which were first loosened and then removed (in 2002) as competition developed, and
- deregulation of embedded generation.

Subsequently there was considerable development of both business and ownership separation (unbundling) among these activities, some of it prompted by regulation (aimed at preventing cross-subsidisation and distortions of competition) but much of it done at the discretion of the firms themselves, who found it commercially advantageous in a policy environment in which regulatory policies were themselves unbundled/disaggregated.

Underground Gas Storage

The case of gas storage follows along similar lines, although it has some interesting and distinctive characteristics of its own. A separate price/revenue control for storage activities was introduced in 1997, at a time when British Gas enjoyed a monopoly in the activity but when it was recognised that there was potential to develop a competitive market in storage.

Within two years, the revenue control was removed for British Gas's underground storage facilities at Hornsea and Rough in return for a commitment, from BG, to make rights to use all capacity at the facilities available for auction. The rationale for this was that monopolistic pricing necessarily required some withholding of capacity from the market, and a commitment to sell rights to the use of all capacity therefore eliminated the requirement for price controls.

Interestingly, British Gas had already introduced auctioning of capacity at Hornsea, the smaller and more flexible of the two storage facilities, before deregulation because, at cost-based regulated prices, there was excess demand for its use (in the prevailing demand conditions, the facility could command competitive scarcity rents). In contrast, at regulated prices there was considerable excess capacity at the (less flexible) Rough facility.

Even in monopolised, regulated conditions, therefore, market pressures were already forcing a rebalancing of prices and, by implication, pointing to substantial divergences between economic asset values and regulatory accounting valuations, one divergence being positive and the other negative. Within the overall price control Hornsea prices, determined by BG's self-chosen auction, were increasing and the excess of revenue over regulatory costs attributed to Hornsea was being used to reduce prices at Rough.

Notwithstanding this latter downward adjustment, storage demand was such that there remained significant unused capacity at Rough, and, in fact, even though it was a monopoly supplier of storage services, BG was unable to recover revenues at the levels allowed by the disaggregated storage price control. The Rough facility therefore tended to be viewed in the industry as a partially stranded asset.

In this context, it was always expected that auctioning all available capacity at Hornsea and Rough would lead to downward adjustments in storage prices overall, at least for an initial period of years. In the longer term, however, the absence of price controls offered at least the prospect of higher rates of return on capital than would be allowed by standard, monopoly regulation, reflecting scarcity rents in circumstances where the demand for storage might increase substantially – increased demand for gas storage was anticipated as output from higher swing gas fields in the North Sea declined as a result of depletion. In the event, the evolution of storage prices was broadly along the lines anticipated, with an initial, sharp fall followed by strong growth. On the business side, BG/Transco separated out the storage business from its other network activities before selling it to Dynergy, who later sold the Hornsea facility to Scottish and Southern Energy, and the Rough facility to Centrica. Thus, there is now ownership separation between the underground gas storage facilities and the gas pipeline network, although that outcome was determined by commercial decisions, not by regulatory diktat.

What was not expected at the time of deregulation was that the way in which the utilisation of the Rough storage facility, previously regarded as an inflexible, partially stranded asset, changed. Whereas Rough had been developed for seasonal storage purposes, with gas injected in summer and withdrawn in winter, companies purchasing capacity rights started to use it in a much more flexible way, injecting and

withdrawing gas over much shorter time periods, reflecting relatively short term variations in gas prices.

Here it can be seen how different strands of a disaggregated/unbundled regulatory policy can come together. At around the same time as gas storage deregulation, Ofgem and Transco were jointly promoting an on-the-day commodity exchange for hourly gas trading, the first of its kind in Europe. This provided better value discovery for gas over relatively short time periods of hours, days, weeks, rather than months or years, which in turn provided incentives for better utilisation of the Rough storage facility (and, by implication, better discovery of that facility's value). That is, network utilisation was improved in part due to competitive developments in the wholesale commodity market.

In all likelihood, none of the above could have happened so quickly if the storage price control had not been unbundled from the general price control. Suppose, for example, that users of the Transco system had been offered a retail minus tariff in the event that they secured their storage requirements from a competitive storage facility. Since competing facilities were largely at the development stage, there would likely have been all sorts of arguments and delays surrounding the regulated margin. Should it be based on contemporaneous avoided costs, which, given excess capacity at Rough, would be low, and would have led to a margin squeeze? On the other hand, if a fully allocated cost deduction had been made, it could be argued that regulation was providing artificial incentives for entry in conditions of excess capacity. The scope for delay could have been considerable.

Gas transportation charges and price control revenue allowances

The above examples involved situations where the regulatory unbundling related to distinctions among parts of the relevant businesses that undertook different types of activity. However, the term 'regulatory unbundling' can also be used to refer to situations where regulatory provisions that govern revenues are partitioned and treated separately. A standard and important form of such financial unbundling concerns the distinction between the *level* and the *structure* of relevant charges.

A key advantage of clearly distinguishing between the level and structure of charges is that it can allow for different policy objectives to be addressed in different ways. Thus, the gas transportation price controls have been primarily focused on the determination of the total level of allowable revenue that can be recovered. For these settlements, the standard building blocks approach to price controls has been used with the Regulatory Asset Value updated at each control, and allowances for depreciation and return on capital provided (together with allowances related to operating and capital expenditure forecasts). Thus, the determination of the appropriate level of allowable revenue is based on accounting costs, and is assessed in what is now a fairly well understood and stable manner.

The stability of the process by which the level of allowable revenues has been determined stands in marked contrast, however, to the numerous major changes that have been implemented that have affected the *structure* of gas transportation charges. The most striking innovations have related to the introduction and development of auctions for the provision of entry capacity for the gas transportation network.

Auction processes were introduced in a context of recognised scarcities, and have been developed in circumstances of considerable uncertainty with respect to where on the network additional gas supplies might be introduced in the future. Notwithstanding a number of limitations, the auction processes have thus had an important information discovery role, and have been intended to provide better information and signals to market participants with respect to the economic value of entry capacity at different parts of the gas network.

Perhaps the key point of potential relevance to the water sector is that attempts to improve the revelation of market values can be isolated from at least some price control issues. This is important for at least two major reasons:

- Although there may be significant uncertainty associated with the processes of value discovery introduced within the charging arrangements, this uncertainty need not affect overall revenue allowances; and,

- The economic value of a scarce resource can be revealed without charges to consumers increasing on average.

Whilst the example given here relates to network capacity, in principle, a similar approach could be adopted for the revelation of resource scarcity in a water context. One issue that can arise in such contexts, and that has arisen in the case of entry capacity on the gas network, is that substituting a process of revelation of market values for what was a previously administered price can potentially result in an over-recovery of revenue – that is, the revenue recovered from charges exceeds the level of revenue allowable under the price control agreement (and there were some very substantial revenue over-recoveries in the gas entry capacity auctions). Such a situation creates a need for the downward adjustment of other charges so as to effectively return the over-recovered amount.

Finally, it can be noted that this adjustment can itself also be treated as a distinct unbundled exercise. It raises a number of detailed issues including the net distributional effects of the different charge levels that will have applied, and the extent to which the approach to revenue recovery adjustments can distort initial valuation incentives. That is, the over-recovery generates the need to determine how the revenue position of the incumbent should be brought back into line with the price control allowance in a manner that is least distorting and best satisfies relevant objectives (including with respect to distributional effects).

Network Manager/System Operator incentives

The above revenue over-recovery discussion was presented in a context where the incumbent would be neutral to the level of revealed market value (since, any recovered revenue would be fully adjusted so as to bring it in line with the price control allowed revenue level). However, it is notable that the gas transportation price control has been developed over time so as to provide Transco/National Grid with incentives to release incremental capacity (that is, capacity over and above defined output commitments).

Thus, whilst Transco's/National Grid's revenues were protected against major changes in market valuations of entry capacity, the potential for some gain to arise – over and above price control allowances – has been provided for in situations where the Company effectively makes available additional capacity in response to an identified market demand signal. This arrangement allows the incumbent to benefit to some extent when it has been shown that more capacity could be made available than might otherwise have been planned for/anticipated. Such revealed information can feed into future price control assessments, but the mechanisms used allow for some part of the benefit of this to be kept by National Grid in the interim (consistent with the standard price control approach to lagged adjustment following information discovery, for example, with respect to potential efficiency savings).

Clearly, where some part of the revealed market value of a scarce resource can be retained by an incumbent, then, other things equal, this will tend to raise the total level of revenue to be recovered from consumers in the shorter term. Importantly, however, the extent of this exposure can be explicitly defined (for example through the use of caps in incentive arrangements), and the distributional consequences can be explicitly managed through the design of the charging mechanism. In the longer term, it is to be expected that enhanced supply incentives will, via improvements in supply-side performance, feed through into consumer benefits in the usual ways.

4.2. Commercial unbundling

Regulatory unbundling is an important priority step in the early stages of the development of competition. In some cases of sectoral liberalisation it has been accompanied by a degree of mandated commercial unbundling; in other cases commercial separation of products/services or activities has tended to occur later in the liberalisation process, often at the initiative of regulated companies themselves as they respond to changing incentives and to opportunities created by competition.

Four general forms of commercial unbundling can be identified, the first of which refers to products/services, the second to a specific business activity (accounting), and the other two to what might be termed 'organisational unbundling':

- Unbundling of products/services, which may involve either the introduction of a new product/service – as when, for example, a monopolistic network is opened up to third parties for the first time, and hence when 'access products' are first made available – or when existing products/services are supplied in more disaggregated ways.

- Accounting separation which, when required by regulation rather than developed simply for business reasons, requires a company to develop and periodically submit separate accounts for the distinct regulated activities that it undertakes.

- Operational or functional separation which involves the different activities of the firm being conducted by separate business units which are clearly distinct from one-another.

- Ownership separation which occurs when separate, unrelated corporate entities undertake the different activities.

Clearly, however, the dividing lines between alternative, organisational arrangements are not hard and fast: there are degrees of separation. For example, different business may be distinct legal entities (i.e. distinct companies), and therefore more than just different business units, but they may nevertheless be part of a single corporate group, under common ownership.

4.2.1 The rationales for accounting separation and organisational unbundling

Product/service unbundling issues are closely linked to trade-offs between greater customer choice and competition on the one hand and potentially higher transactions costs on the other, and they have received extensive analysis in competition law. Since detailed coverage of the relevant matters is to be found in legal textbooks and works of reference, the focus here will be on the other aspects of commercial unbundling.

When mandated by regulation, the different 'forms' of commercial separation tend to be addressed at one or both of two, principal policy problems:

- First commercial separation to some degree or other may be used to support regulatory unbundling. The most familiar example of this occurs when only part of the value chain is regulated, and when the regulator is seeking to set prices for the regulated activities. In such circumstances there is a requirement to identify the relevant costs-to-serve, and to ensure that cost padding does not take place via, for example, excessive attribution of costs to regulated activities (rather than to unregulated activities). Some degree of commercial separation may be seen as appropriate *to provide better information to the regulator for the regulator's purposes*.

- A second rationale for separation requirements is to address actual or potential problems of discriminatory behaviour by a regulated firm which also has business interests in competitive activities that are economically related to its core monopoly. More specifically, the policy concern tends to be that the incumbent, regulated firm may have *both the ability and the incentive/ motivation* to act in a discriminatory and anti-competitive way in setting the terms and conditions for third parties, with whom it may be competing in related markets (e.g. in retail markets), to gain access to its network assets or services.

  In simple terms, where the incumbent firm operates an essential or monopoly activity – such as transportation or treatment services in water – it may be able to exploit its strong market position to discriminate between different users through the price that it offers new entrants to access these services. Alternatively, even if the incumbent firm offers a uniform price all users, it can potentially employ a range of non-price mechanisms to discriminate against potential rivals, such as: placing different restrictions on the terms of access, reducing the quality of access, or by giving preferential rights of access to particular firms.

4.2.2 Pros and cons of accounting and business separation

Given these rationales, an immediate question arises as to the relative merits of the differing unbundling options, which, as always, depend upon the relevant economic context. Consider accounting separation first. Such separation will be useful to a regulator insofar as it increases the information available concerning the appropriate attributions of costs to relevant activities. Where the concern is that costs attributed to regulated, monopoly activities might become inflated, leading to higher, allowed prices (i.e. the first rationale set out above), accounting separation developed around attribution issues is an obvious policy response.

However, whilst better cost attribution may help regulators in assessing issues of discrimination, such an accounting exercise, at least if used in isolation from other measures, may be inadequate to address the problems. The obvious point here is that accounting separation does not weaken the motives/incentives to engage in discriminatory practices. In this it is unlike full ownership separation, which does affect motives as well as capacities.

In practice, of course, accounting separation in circumstances in which there exist both monopolistic and competitive activities within the same vertical supply chain is typically accompanied/supported by other anti-discrimination measures, such as the enforcement of competition law and the development of rules governing access to networks. How well such combinations work in a particular factual context, relative say to options that require business separation or full ownership separation, is a matter for discovery.

More generally, it is as well to be aware of the possible limitations in the information likely to be produced as a result of accounting separation, particularly when assessing the proportionality of the specifics of reporting requirements: as indicated by an extensive research literature on the limited impact of 'accounting announcements' on capital market valuations (share prices), new accounting information does not necessarily contain substantive new, economic information. Whilst regulatory agencies have a much lower information processing capacity than capital markets, and hence may learn rather more than markets from accounting separation, that very same, limited, processing capacity also implies a potential for information overload. That is, greater complexity in reporting requirements may, past a certain point, start to impair regulatory effectiveness. In short, there is a proportionality issue to be addressed here.

Turning to the various organisational unbundling/separation options, the principal argument in favour of such approaches is that they weaken the incentives of incumbents to engage in discriminatory conduct. Full ownership separation is the option that has the most far reaching effects here, but lesser degrees of business separation can, via behavioural effects on decision making within organisations, also be partially effective.

The strength of this 'incentives' argument depends, of course, on the strength of incentives to discriminate under more integrated business arrangements. If the incentives are strong, their mitigation or elimination will tend to be an important issue

in assessing the alternative policy options; if the incentives are more limited, then the incremental effects of full ownership separation may likewise be relatively limited.

This point is important because it is not always the case that a regulated company will have strong incentives to discriminate against competitors in related markets. There may, for example, be little financially at stake because the related market is so competitive, or because the related market is very small. In such circumstances the balance between competition law penalties and the potential gains from anti-competitive conduct may be such as to deter infringements even in circumstances where the prosecution of cases is difficult.

The relevant trade-offs in this area are well illustrated by 'structural' policy decisions taken at the time of electricity privatization. There was mandated ownership separation between the high-voltage transmission system in England and Wales and electricity generation – activities that had previously been bundled, under the control of the Central Electricity Generation Board (CEGB). The underlying policy judgment was that vertical integration under private ownership would create very strong incentives for control of access to the national grid to be used to restrict competition in electricity generation, *an economic activity characterised by substantial value added and by potential problems of competition*. By and large, this policy of structural (ownership) separation has been judged to have been a major policy success, and today UK policy seeks to see similar measures adopted at an EU level.

In contrast, at privatization there was no mandated business or ownership separation of regional electricity distribution and electricity retailing, even though it could likewise be argued that control of (monopolistic) distribution networks could be used to restrict competition in retailing (to the large industrial users who were free to choose their supplier). At the time, only parts of the industrial and commercial retail markets were open to competition, and supply/retail margins were typically low in these segments. Even in the absence of the deterrence effects subsequently introduced by the Competition Act, the implicit policy judgment was that the strength of the incentives to discriminate was insufficient to justify the costs of mandated organisational separation. And this strand of policy also turned out to be successful. Regional Electricity Companies recognised that the network business (electricity distribution) was a good, high margin business to be in, and that the returns from competitive retailing to large end users were small in comparison. New entrants came into retailing, increased their market shares quite quickly, and market concentration fell.

Even within the same sector (electricity), therefore, we can observe a qualitatively similar structural issue involving monopoly and potentially competitive activities (transmission/generation; distribution/retailing) being addressed in different ways, reflecting proportionality assessments and leading to different, but largely successful, policy outcomes in both cases.

4.2.3 Voluntary and mandatory unbundling

Leaving aside the debates as to the broad pros and cons of alternative forms of vertical supply arrangements, proposals for organisational separation can raise very practical considerations of how a 'split' of a given organisation may be effected and

enforced. Here the electricity privatization decisions are a less helpful guide to possible options for the water sector, for reasons that include the following:

- The ownership separation of electricity transmission and generation was decided at a time when the industry was still nationalized. The government of the time could, therefore, dispose of the relevant assets in any way that it thought fit, without raising any significant issues concerning infringement of private property rights. For very good general reasons, such policy-led re-structuring of an industry tends to be a much more difficult thing to do when assets are privately owned.

- The boundaries between monopolistic and competitive activities in electricity (transmission/generation; distribution/retailing), whilst not always crystal clear, are nevertheless relatively easy to determine to a degree of approximation consistent with effective policy making.

One way of putting this last point is to say that, at privatization, there was little to discover about appropriate (for policy purposes) boundaries between monopolistic and potentially competitive activities in electricity. Where, however, there is more to discover about the boundaries – as has generally been assumed to be the case in telecoms, and is arguably the case in relation to water services – it should be obvious that one of the limitations of mandated, structural separation is that policy makers may get it wrong. Seeking to 'optimise' industrial and organisational structures is not, after all, the kind of activity in which there is good reason to expect that the public sector might excel. Further, since structural policy does not involve the kind of measures that can easily be adjusted to changing circumstances[19], premature decisions based on limited discovery could have enduring costs.

As already noted, however, such limitations on public policy micro-management of industrial structures do not imply that regulated sectors have typically exhibited 'fossilised' organisational arrangements; and a good illustration of non-mandated organisational unbundling is to be found in the gas industry. British Gas was privatized in 1986 as a vertically integrated company with interests in offshore gas fields, onshore transmission, regional/local distribution, and gas supply/retailing. Slightly more than a decade later, it split into three: British Gas (upstream gas production), Transco (transmission and distribution) and Centrica (supply/retailing).

Whilst this initial divestiture was heavily influenced by the regulatory activities of Ofgas – which was, by pursuing a strategy of regulatory unbundling, in the process of establishing arrangements that served to reduce both the capacity and the incentives to benefit inappropriately (either by cost shifting or discrimination) from vertical integration of monopolistic and competitive arrangements – a few years' later Transco, now part of the National Grid Group, decided, under no regulatory pressure

[19] We note, however, that Ofcom's 'negotiated separation' of BT's local wires business (Openreach) appears to contemplate some adjustments to what is and what is not included in the business in the light of changing circumstances. How that will work remains to be seen, but it is difficult to believe that there could be significant adjustments other than at significant cost.

whatsoever, to divest some of its regional gas distribution 'businesses'.[20] That is, there was a commercial decision to split the monopolistic activities themselves.

It is perhaps worth emphasising that voluntary ownership separation is not unique to gas. There have, for example, been divestments by electricity companies of their retail supply businesses, which have led to ownership separation between (monopolistic) distribution and (competitive) retailing. In these cases, the driving factors were commercial, associated with the discovery that these were different types of business, with differing financing requirements, skill sets and cultures.

In specific relation to the water services sector in England and Wales, it is apparent that there could be a very large number of ways in which businesses could be organised, based around differentiation among activities such as water abstraction, treatment, storage, carriage, retailing, wastewater collection, sewerage, sewage treatment, waste disposal, etc. Given the potential complexity, there is clear merit in avoiding excessively prescriptive restrictions on how businesses should organise themselves.

Market processes do not simply allocate resources; they are also mechanisms for discovering ways of *organising* production and supply that are more effective than their predecessors. Some restrictions – and possibly quite tough restrictions – on certain business arrangements may be warranted in order to facilitate more effective regulation, but, as always, it is a good principle to contain such restrictions to the minimum necessary for achieving the relevant public policy purpose (i.e. to those that satisfy the necessity/indispensability principle), leaving businesses free to innovate and to adapt their own organisational structures in response to changing economic and regulatory environments. Experience suggests that such a policy – which tends to involve some tough, but narrowly focused, regulatory requirements – is likely to be most effective when policy itself is based upon clear, regulatory unbundling.

[20] In fact, this particular ownership unbundling was a source of inconvenience to the regulator, since it required rather substantial changes to network governance arrangements to encompass the new interface, previously internalised, between the National Transmission System (the high pressure pipelines) and Local Distribution Zones.

PART II

THE SPECIFICS OF WATER SERVICES

5. DEVELOPMENT OF COMPETITION IN THE WATER SECTOR

As explained in section 2.2, a number of forms of competition were introduced at the time of privatization of the water sector in England and Wales. In the period since, a number of other measures have been taken to encourage competition in different dimensions. Although each has been relatively limited in scope, these exercises provide useful information for any general assessment of the prospects for the development of competition in the future.

5.1 Inset appointments

An inset appointment allows a specific customer or group of customers to replace the existing water or sewerage undertaker with another supplier of water and/or sewerage services for one or more customers within a specified geographical area. Inset appointments allow for part of an area (not the entire area) covered by an existing undertaker's licence to be serviced by another supplier.

Inset appointments are granted in three circumstances. First, for one or more customers premises, providing that the premises is supplied (or is likely to be supplied) with not less than 50,000 cubic metres of water (or the same amount in sewerage services) in England, and not less than 250,000 cubic metres in Wales, in any period of 12 months. Second, in areas not served by an existing undertakers (such as greenfield sites), including areas currently supplied by unregulated or 'private' suppliers. Finally, where, with an incumbent's consent, the boundary is changed to allow part of an area to be transferred to another undertaker or potential undertaker.

There are a number of steps involved in the process for obtaining an inset appointment, and according to recent Ofwat guidance the application process should in principle take up to 12 weeks. However, as discussed below, in practice this process has taken considerably longer. Applications for inset appointments are granted through a licence issued by Ofwat. The licence will relate to the specific area of appointment. With the granting of the licence, the appointee assumes the functions, obligations and duties of an undertaker, including complying with environmental and water quality obligations. However, in some cases Ofwat can suspend some conditions of the licence which are not immediately applicable, for example where the inset applies to a single user Ofwat can suspend the conditions relating to undue preference or discrimination in charging. Where an existing undertaker gains an inset appointment its licence will typically be varied to include the inset area.

There are currently seventeen inset appointments that are on the Ofwat register. Nine of these inset appointments are for the supply of water only, one is for sewerage only and the remaining seven are for combined water and sewerage services. All but three of the appointees are existing undertakers operating in other areas of England and Wales. In terms of inset appointment 'type', the majority (ten) relate to sites that

previously have been unserved by an existing undertaker. Four appointments are in respect of large users, while the remaining three inset appointments involve the incumbent undertaker consenting to the transfer a particular area to the inset appointee. Of the seventeen appointees, ten use their own resources to supply while the remaining seven are involved in bulk supply and discharge arrangements.

The process involved in obtaining an inset appointment has, in the past, been considered by many, including Ofwat, to be unduly slow and burdensome. Ofwat notes that, in part, this reflects the fact that an inset appointee is being appointed as a monopoly water undertaker, and that this requires a rigorous application process in order to protect customers where a new exclusive right is being granted (given that in the case of greenfield unserved sites, customers are typically not involved in that process in any appreciable way).

In response to an Ofwat consultation published in August 2006, respondents identified the following problems with the inset application process: the level of information requirements; the timescale; the lack of consideration of multi-utility projects; and on-going price regulation for small inset appointees.[21] In addition, it was argued by some stakeholders that the inset appointment process should be developed to allow for more innovation in the delivery of water and sewerage services.

5.2 Retail competition in Scotland

The Water Services etc. (Scotland) Act 2005 (WSSA) introduced a new statutory framework for the provision of retail water and sewerage services in Scotland. It allows for the companies to be licensed, by the Water Industry Commission for Scotland (WICS) established by the Act, to provide retail services to non-household customers on a competitive basis. The framework for such competition has now been established, and the new arrangements went 'live' on 1 April 2008.

It can not be said that the proposals to develop competition in the water services sector met with great enthusiasm in the Scottish Parliament. The Regulatory Impact Assessment (RIA) conducted in the course of developing the legislation noted that the prevailing arrangements, based upon monopolistic supply by a publicly owned utility, had, until recently, been sufficient. However, the Competition Act (1998) had opened up *"the possibility of other parties seeking various forms of access to the public networks"*, and the RIA went on to state that *"On balance, Ministers have concluded that the risk of competition developing unchecked by a legislative framework, and the impact that this would have on their policy objectives, requires legislation to be put in place to regulate the development of competition."* In order to prevent the *"unchecked"* development of competition, it was further stated that: *"These provisions will prohibit competition on the public water and sewerage networks through common carriage; prohibit retail competition to domestic customers; and provide a legal framework for competition to non-domestic consumers ..."*

[21] Ofwat 'Updating the Inset Appointment Guidance' RD 12/06, 4 August 2006, http://www.ofwat.gov.uk/aptrix/ofwat/publish.nsf/Content/rd1206.

In short, the WSSA opens retail water and wastewater services to competition for business customers, but maintains monopoly in all other activities, including the *wholesale* supply of water services (although, notwithstanding what was said in the RIA, the legislation does not rule out the possibility of common carriage arrangements being developed in the future, provided that a number of conditions are met). Retail activities include the following: retail pricing and tariffs, the billing process, collection of charges, provision of credit, debt follow up and debt management, meter reading and customer meter operations, call and correspondence handling, responses to customer enquiries, complaints or requests for information, key account management, liaison with the wholesaler to deal with customer issues, marketing.

A new competitor is therefore not able, under the legislation, to gain access to Scottish Water's networks in order to obtain wholesale supplies from sources other than Scottish Water. The entrant simply purchases wholesale water and wastewater services, 'delivered' to/from the relevant premises, from Scottish Water.

Viewed in static terms, the Scottish reforms appear to be highly limited, with competition being open in relation to economic value added of the order of £30 million per annum. On the same basis, the changes would also appear to introduce rather top-heavy market governance arrangements, encompassing a licensing regime, a market code, an operational code, an independent Central Market Agency (to register customer switches and calculate wholesale bills), and a template wholesale services agreement.

On the basis of past experience, however, it would be inappropriate to take a static perspective. Like all market opening initiatives, the reforms trigger the establishment of a new discovery process, for market participants and regulators alike. It will therefore be interesting and informative to see how things work out in Scotland over the next period, not least in relation to potential implications for future developments of competition in England and Wales. And, as always, it would be unwise to prejudge the possible outcomes of competitive processes.

What can be said about policy in Scotland is that it is very much in line with regulatory experience in sectors such as energy and telecoms insofar as it indicates, once again, the significance of pro-active regulation in the evolution of competitive markets and their institutional frameworks. The initial steps may be modest, but, as Sir Ian Byatt and Alan Sutherland have emphasised, they are part of a *"journey"* of discovery. Moreover, legislative frameworks are virtually always specified in relatively broad terms, so that a purposeful regulator has the discretion, over time, to develop policy in ways that reflect 'new learning'.

To illustrate, in the event that the evidence indicates that it is appropriate and bearing in mind the importance of stability and consistency in regulatory policy, the Water Industry Commission for Scotland (WICS) will have at least some opportunities for redefining the boundary between wholesale and retail activities in ways that could expand the size of the market open to competition. Examples identified by WICS to date include new connections and trade effluent management.

More important, although the WSSA does not currently provide for common carriage and wholesale competition, it is permissive of departures from Scottish Water's standard wholesale charges where a customer has either done or has consented to do something that reduces the costs incurred by Scottish Water in serving that customer. In effect, this provision opens up the possibility for water retailers to be rewarded for upstream (water resources, network activities) contributions. WICS has thus far identified a number of possible ways in which this could happen, including reducing peak-time usage, taking interruptible supplies (both normal features of energy markets), making water resources available to Scottish Water in resource-constrained areas/locations, and owning and operating a local network (rather than giving it up for adoption to Scottish Water).

It remains to be seen whether or not there are significant developments in the future in relation to the possible departures from standard wholesale tariffs which are permitted by the legislation. The point is, however, that there do exist opportunities for development, even within a regime that *prima facie* might be thought inhospitable to competition outside of a narrow area of economic activity.

5.3 Retail competition in England and Wales

A principal initiative of the Water Act 2003 was to introduce retail competition in water supply in England and Wales for a particular sub-set of non-household customers. Specifically, the Act allowed for retail competition to develop in respect of non-household customers who use a minimum of 50 thousand cubic metres of water per annum. At the time of its introduction it was estimated that there were approximately 2,200 eligible customers.

Companies entering the market are required to obtain a licence from Ofwat. The form of retail competition adopted is such that, as in Scotland, licensees buy water 'wholesale' from appointed water companies and then sell it on to end users. Licensees are therefore responsible for retail functions in respect of any customers they acquire. The pricing approach adopted is governed by what is called the 'costs principle' which is discussed elsewhere in this report. As (controversially) interpreted by Ofwat, the costs principle has been read to imply that that the prices charged to licensees by incumbent suppliers for wholesale water supplies delivered to the customer's premises should be set equal to the retail charges of the incumbent water undertaker for supplies to the relevant customer less any costs avoided by the incumbent in consequence of the entrant's taking over of retail activities.

There now appears to be a general consensus among Ofwat, water undertakers and potential entrants that the experience to date of retail competition in England and Wales has been unsatisfactory. Although seven licences have been issued, there has not yet (as of end March 2008) been any customer switching from an appointed supplier to a new entrant. As Ofwat noted, in its April 2007 assessment document:

> *"So far no customer has switched supplier under the WSL* [Water Supply Licensing] *regime. Seven licences have been granted, two to new entrants and five to companies associated with existing water companies. Also, to date negotiations have focussed on agreements for wholesale supplies."*

> *"So far the competitive regime under WSL has failed to deliver these benefits. Since 1 December 2005 there has been little progress in WSL competition. No customers have yet switched supplier, few WMAs* [Wholesale Master Agreements] *have been signed between licensees and appointed water companies, most WMA negotiations are taking too long to complete, and not even half of licensees appear to be actively engaging in WSL negotiations."*

Although these statements clearly indicate an absence of competition in the retail market for eligible customers, this does not necessarily reflect an absence of attempts to compete in this segment of the market. Our discussions with certain stakeholders indicated that although no customer has yet to switch supplier, this has not altogether been an area of inactivity. As discussed in the next section, however, there appear to be a number of significant factors that have impeded switching, and that will need attention in the future if the possibility of switching is to have greater leverage.

In its December 2007 review of the WSL regime, Ofwat noted that there is no reason why retail competition should not be a contestable market and it proposed various measures that it considered would foster the development of competition in the market. Ofwat recommended that, at a general level, the access pricing methodology be adapted to develop a set of wholesale prices which are based on the average costs (on a fully allocated basis) for different geographical areas and associated with serving different customers. Among the measures proposed are the abolition of the 'costs principle' and its replacement with a general set of access pricing criteria and principles, and the gradual reduction of the eligibility threshold to zero over two years. If introduced this would mean that the number of eligible non-domestic customers would increase to approximately 1.25 million. To facilitate switching among different suppliers, Ofwat suggested that a 'switching authority', or switching authorities, may need to be established.

Ofwat also raised the possibility of the extension of retail competition to household customers. It noted that a number of parties – including both existing water undertakers and licensees – were in favour of such an extension, and it proposes to examine the issue in more detail in its Spring 2008 document.

As of now, however, it should be apparent from the evidence that the scope of the retail market open to competition has not been the major constraint on the development of competition. In sectors such as energy, it has been the largest customers that have been the easiest for new entrants to win, and the relative lack of success of new entrants in winning the accounts of very large water consumers (who are currently eligible to choose their retailer) points to the existence of other, much more significant barriers to entry than the size of the eligible market.

5.4 Combined supply competition

The second major initiative of the Water Act 2003 was to introduce so-called 'combined' supply licence competition in England and Wales for non-household customers using in excess of 50 thousand cubic metres of water per year. In principle, a combined supply licence allows a licensee to compete by developing its own water sources, entering water into an appointed water company's system, and using the

supply systems of the latter to provide water to customers' premises. This means that combined licensees require physical access to an undertaker's network, so as to be able introduce water into the existing transportation and treatment system – an arrangement that is much closer to traditional access arrangements in other network industries.

Of the seven licences that have been issued under the WSL regime, six have allowed for combined supply. Again, however, the level of competition under these licences has been minimal, as reflected in the fact that no customer has yet switched supplier.

One of the principal barriers to competition developing in respect of combined supply appears to arise from difficulties in obtaining 'spare' or new water supplies. This point was made to us by a number of parties, and it is noted in the Ofwat December 2007 consultation document.

As discussed below in more detail, the trading of abstraction licences has been a fringe activity to date. On its website, the EA has cited examples of the types of water rights trading observed to date, including: trades between industrial abstractors and a water company; trades between a water bottling company and two nearby industrial abstractions; and the grouping of agricultural licences and trading to allow for the issue of temporary licences for agricultural purposes. However, these are examples from a very thin market indeed, and the maximum amount of water allowed to be abstracted under any of the licences following trading was 8,000 cubic metres per day.

The current situation reflects a number of features of the abstraction regime, including the administrative, rather than market-based, nature of the process in which trading can occur. In addition, there appear to be some barriers to the acquisition by potential, combined supply licensees of information about where potential 'spare' or additional water may be available. While the EA maintains a register of all abstraction licences and their allocation, we found a perception among stakeholders that obtaining this information can require a substantial investment in search and time costs.

There is something of a chicken-and-egg issue here. Poor information is characteristic of administered resource allocation processes/systems, and in this case may be one of the barriers to the development of competition and to consequent improvement in information flows. But this is precisely the type of circumstance where pro-active, pro-competitive regulation can be most effective, in that a few, targeted measures to improve initial information can help unlock a process that will subsequently increase information flows to levels way beyond anything that could be achieved by regulation alone.

It is also worth noting that the very notion of 'spare' water is a concept drawn from a central planner's *weltanschauung*, and not a term to be found in the economic lexicon. It implies a discriminatory pecking order in which B can only acquire a resource if it is surplus to A's requirement. In this world-view, A and B don't compete, the power lies with A, and B knows his/her place. In contrast, in the much more democratic

world of market processes, A and B compete for the resource on broadly equal terms, and the value of the resource gets discovered along the way.

Putting this another way, under market arrangements water abstractions will tend to end up in the hands of those who value them most – although this will, of course, be achieved by paying/compensating their previous holders. In contrast, the notion of 'spare' water tends to be interpreted as meaning that existing holders of abstraction rights should only make water available to others if they (the holders) attach little or no economic value to it, irrespective of how valuable it is in alternative uses.

5.5 Secondary supply

Secondary supply refers to a situation where one licensee requests a water undertaker in a neighbouring area to provide a wholesale supply of water to enable it to supply its customers. A secondary supply arrangement represents one way in which a combined supply licensee can introduce water into the supply system to supply its own retail customers. The water undertaker who provides the supply of water is said to be a secondary water undertaker, and the water undertaker into whose system the water is introduced is known as the primary water undertaker. The conditions under which a 'duty' on a secondary water undertaker to provide a wholesale supply of water, if asked to do so by a licensee, are set out in the legislation.

The stated purpose of such secondary supply arrangements is to promote the use of 'spare' water by requiring water undertakers to make that water available in specific situations. However, an immediate issue that arises concerns the definition of 'spare' water and how this relates to existing or probable future obligations. For example, 'spare' water is defined as water not being used for supply, contracted for supply or used as backup or headroom or other form of security. In addition, it must also be compatible with the water in the primary water undertaker's system (i.e. non-potable water cannot be introduced into a potable system).

As with other aspects of the WSL regime, secondary supply arrangements can only be entered into for eligible customers where the total quantity of water estimated to be supplied is not less than 50 million litres per year. However, a licensee is able to supply such the premises either entirely by secondary supply, or through a combination of secondary supply and retail supply (in which case a proportion of the supply requirements are met through the purchase of wholesale water from the primary water undertaker).

The experience of secondary supply as a means of introducing competition in water supply has mirrored that of combined supply competition discussed above. Although discussions with some of the parties we have talked to in connection with this study have indicated that, in the past, water exchanges had occurred between neighbouring undertakers, these exchanges were apparently made in order to meet certain supply and security obligations, and were not facilitated under a secondary supply type arrangement.

In response to identified deficiencies in the process of negotiating and approving secondary supply arrangements, Ofwat issued a consultation document in April 2007 on the framework for entering into secondary supply arrangements under the water

supply licensing regime. Responses to this consultation identified two general problems with the secondary supply arrangements: the method by which 'spare' water is assessed, and the process for assessing the costs and pricing of secondary supplies. These go to the heart of the general problem: there is currently no very satisfactory process for discovering the value of raw water and for allocating it efficiently. These entangled, dual tasks – discovering values, allocating resources – are precisely what competitive market processes are potentially able to accomplish.

6. RE-FRAMING THE ISSUES

6.1 Introduction

It is evident from the material in Chapter 5 above that, in England and Wales, attempts to promote forms of competition other than those most directly associated with privatization – capital market competition, franchising/contracting out, yardstick competition – have not met with success. In Scotland, a rather more energetic attempt to promote retail-only competition to non-household water consumers has just been launched, and we wait to see how that new development turns out.

This gives rise to a potential problem. Is the appropriate response simply to roll up sleeves and try harder next time? Or should policy makers take heed of Healey's Law: when in a hole, stop digging? Each of these voices can be heard in current debates about the prospects for competition in water services.

Our own view is that there is some truth in each of the views just (crudely) summarised. In water services, there has not been the same amount of regulatory effort put in to the start-up development of competitive market processes as there has been in sectors such as communications and energy. There are, of course, reasons why that has been so. If the prospects are perceived to be limited, it would arguably be disproportionate to put in great effort; and it is undeniably true that, over the years since privatization, there have been schools of political and environmental thinking at work which regard competition as inappropriate for most supply activities in the water sector.

On the other hand, as we argued in Part I of this study, regulation (and public policy more generally) is itself a discovery process. If, therefore, little effort is put into the attempt, it is likely that the *actual* prospects for competition will remain undiscovered. Given the superiority (over alternatives) of competition as a discovery process, even if there are reasons why its role might be more limited in water than in many other sectors, we think that it is worth devoting more effort than hitherto to finding out. And that we think has been the most significant difference in regulatory approaches between Scotland and England and Wales in the recent past: the commitment to discovery appears to have been positively correlated with latitude.

In relation to Healey's Law, the relevant take-home lesson might be to stop digging in these particular places, rather than to stop digging at all. As emphasised from the outset, competition (rivalry) can take many, many different forms. What can be concluded from experience to date is that the forms of competition tried so far have not worked very well. What can not be concluded is that other, feasible forms of competition would also not work very well. To the contrary, long experience would suggest that it is highly likely that there are, at least in a number of water sector contexts, forms of competition that would work very well indeed. Unfortunately, it is also unlikely that blueprints for the relevant processes and institutions are to be found, ready made, on the metaphorical shelves of public policy retailers. Rather, these are

things to be developed and discovered, in line with the normal, institutional evolution that takes place in market economies.

Our general view, therefore, is that this is a good moment to stand back from some of the detail of regulatory policy in the water services sector, consider the 'view from thirty thousand feet', and seek to determine where, in the myriad of possibilities, the prospects for the exploration, discovery and development of more effective competitive processes look most promising. What follows is an exploratory attempt to provide such a re-framed perspective.

6.2 Water resource issues

In the final sentence of his introduction to the recent Defra publication *Future Water: the Government's water strategy for England* (February 2008) the Secretary of State writes:

> *"We are all increasingly understanding that we need to value water more, use it more wisely and play our part in taking responsibility for protecting this essential and unique resource. This strategy aims to help all of us to do so."*

There is clear recognition here of failures to value water and to use it 'wisely'.

In the main text of *Future Water*, there is an apparent discomfort about greater reliance on desalination plants, such as that being built on the Thames estuary, to increase water supplies:

> *"Sea water and brackish water can be made drinkable through desalination processes, although this is likely to come at a high financial and environmental cost, particularly in terms of greenhouse gas emissions. This option should therefore be carefully assessed before being taken forward as part of a WRMP* [Water Resource Management Plan]. *Any decisions in relation to the various permissions necessary for the development of desalination plants will continue to be made on a case by case basis."*

Yet, notwithstanding the high value that must be attributed to incremental water supplies (in order to justify the high costs involved in desalination), charges for water abstraction in South East England are only a fraction of some of the charges made for abstractions of water in the Northumbria region. Existing arrangements tell us simultaneously that water in the South East is cheap (relatively abundant) and expensive (scarce), which necessarily sends confused signals that are of no value in helping to assess which investment projects are and are not efficient.

Today, the management of water resources lies chiefly in the hands of the Environment Agency (EA) and, in its conduct of public policy and consistent with the Defra view in *Future Water*, the EA increasingly operates as if water is, or is in the process of becoming, a scarce resource. However, as just indicated, if it is true that there are significant scarcities, then the current resource management arrangements appear to be poorly suited to the public policy tasks at hand.

For example, two immediate questions are:

- What is the degree of scarcity or, alternatively, what is the value of the resource? (A question to which the answer may well vary with the location of the water source.)

- How is the resource best allocated? (Here the answer will depend in part upon the public policy objectives.)

The establishment of markets and of competition within those markets is a proven method of addressing these 'discovery and allocation' issues. The relevant institutional arrangements are, however, lacking for water resource management, and the current approach to discovery and allocation issues is much closer to central planning than to a market-based system.

There are some developments that presage a more economic approach, such as EA charges for water abstractions and the existence of limited trading in abstraction rights. However, the charging system is based on administrative costs rather than economic costs/values, and these administrative costs become accounting costs for water companies, implying that the resulting accounting costs transmit poor signals for resource allocation. In addition, there are no effective mechanisms in place for discovering economic costs/values, and the trading possibilities in relation to abstraction rights remain highly constrained.

The effectiveness of competition *at any stage in the vertical supply chain* will necessarily be limited for so long as central planning and administrative arrangements dominate the upstream arrangements. For example, the establishment of market competition downstream might simply serve more effectively to translate upstream distortions in price signals, created by inappropriate water abstraction charges, into major downstream pricing distortions, with consequential implications for water demand and for the costs of meeting that demand.

Absence of economic valuations for water abstractions could also provide incentives for major inefficiencies in investment. If, for example, there is a question of whether it is better to provide incremental water supplies in the South East by the construction of new desalination plant or by 'interconnection' projects to transfer water from other regions, the nature of the upstream valuation and allocation arrangements becomes critical to the economics of the latter option ('interconnection'). If charges for water abstraction by region do not reflect economic values, water transfers cannot be properly costed, and the investment choice will be made on the basis of 'false information'.

Given these points, further development of more market-based approaches to water resource management seems to us to be the very first place to look for an area of economic activity where competition can play a significantly greater role in improving value discovery and resource allocation.

6.3 Network issues

Discovering boundaries

In confronting questions concerning the potential role of competition in a sector such as water services, a standard line of thinking is to distinguish between activities that are naturally monopolistic and activities that lie outside the 'core' natural monopoly, with the former being assumed to reside in 'network activities'. As explained earlier in this Report, whilst this is a sensible way of thinking about things in abstract, it leaves open the question of where the relevant boundaries lie, which, of course, is a highly relevant question for the development of practical and effective public policy.

To illustrate, consider the question of whether a particular treatment works is or is not part of a natural monopoly. There can be no abstract, general answer to that question. Rather, the answer will depend, *inter alia*, on the precise location of the works, local network topography, local demands for water services, planning issues (e.g. constraints on constructing new connections between local networks), etc. However, the information available to assess the underlying trade-offs is likely initially to be poor, for want of competitive processes in the past, suggesting that care should be applied not to prejudge the relevant issues.

The outer boundary of any core natural monopoly can itself be expected to be a function of changing economic conditions. For example, in the energy sector much of the recent development of competition in retail markets has been conditioned on rapid progress in information technology, and would have been infeasible a generation earlier. More generally, as market opening has proceeded there has been a tendency in other sectors to find that the scope of the natural monopoly is rather narrower, and sometimes much narrower, than initially thought.

Information from related markets

The last point again illustrates the centrality of discovery for policy evaluation. Relevant boundaries must themselves be discovered, and whilst 'network competition' may be infeasible, the gradual development of competition in what are sometimes called *related activities* can be helpful in this process of 'finding out' about network possibilities. Competition in related markets leads to situations in which a number of parties make use of common network facilities, and each party can be expected to bring its own information, knowledge, skills and perspectives, based on its own experiences and market positions, to bear on matters to do with how network facilities are operated and development. Put simply, the information set pertaining to network operations and development tends to be enriched; and one of the lessons from experience in sectors such as energy is that there can be very considerable scope for discovering enhancements to the effectiveness of network usage and development, with consequential benefits for costs and, ultimately, end consumer prices, for example by avoiding inefficient capital expenditure projects and programmes.

The significance of interconnection and linkages with the abstractions regime

These arguments are reinforced in the case of the water services sector by the physical characteristics of the relevant networks themselves. Unlike in sectors such as energy, communications and transport, there is no national network (no national water grid). Although there is some interconnection, including via use of natural features such as rivers and canals, the networks are more localised. *Interconnection issues can therefore be expected to feature very prominently in policy assessments*, since interconnection to a neighbouring network may, in some circumstances, substitute for very costly investment in infrastructure and in the development of new sources of water which might otherwise be required.

Quite clearly, interconnection issues are closely linked to water valuation issues, since the value of interconnection will depend upon locational differences in water values. Better discovery of locational differences in water valuations, such as might be obtained from more competitive, market-based abstraction arrangements should therefore provide signals that will guide more efficient infrastructure/network investments.

"Systems operation"

Interconnection also raises issues concerning co-ordination of certain types of economic activities across the network, an economic function that is referred to as 'systems operation' in the energy sector. Partly in consequence of the re-organisation of the water sector prior to privatization, the significance of this function appears to have got somewhat lost, and the relative lack of investment in interconnection arrangements over the past twenty years may be one consequence of that neglect.

Systems operation involves bilateral contracting between an overall network operator/manager and parties that can provide services that improve overall network efficiency. As explained in previous RPI work for Defra[22], systems operation involves delegation of the task of most effectively resolving a set of related external effects, particularly where locational issues are involved. While the function is monopolistic in nature, it is possible to develop competition in the provision of services to the network operator, as happens in the energy sector.

If water resources are viewed as a system, then the EA is already behaving as a system operator. However, the function is not clearly identified as such, and therefore remains embedded/entangled/bundled with other EA functions. The opportunity to separate out/unbundle the relevant activities, the relevant objectives, and the potential instruments available to meet those objectives, and to establish a much more commercial approach to the management of water resources, is an area of policy development that we believe is particularly open to innovation.

---

[22] T. Keyworth and G. Yarrow, *Economics of Regulation, Service Charging and Other Policy Instruments with particular reference to Farming, Food and the Agri-environment*, Report for Defra, RPI 2005; George Yarrow, *The Regulatory Picture: Current and Future*, Defra/Agricultural Economics Society, Conference on *The role of Government in landscape management and nature conservation from an agricultural perspective*, January 2006.

Charges for use of network (access)

Finally, in relation to the operation of the network, there is the highly important set of issues associated with third-party access to network facilities and services, including access charges. Public policy in the water sector has become snagged on a 'retail minus' approach to access charging, and in particular on an implementation of retail minus known as the efficient component pricing rule (ECPR). Unfortunately, this has an international track record of implementation failures, and it has led, in water services, to a dead end.

As was made plain by the Competition Appeals Tribunal in the recent *Albion Water* case, appropriate access pricing is crucial to the development of competition in both upstream activities (e.g. water abstraction) and downstream activities (e.g. retailing). Although current arrangements place constraints on the potential scope of competition in water abstraction and in retail, it is nevertheless possible for new entrants to obtain sources of water and to address a subset of (very large) water users, and those constraints do not appear to explain the very limited nature of entry into water supply thus far. This suggests that current access pricing is itself a major barrier to entry; and hence that addressing access charging issues should be a high priority in policy developments going forward.

6.4 Retailing

The WSL regime provides for third parties to purchase wholesale water supplies from water companies, delivered to the premises of the relevant end consumer. In effect, this means that the third party purchases a bundled service of commodity and network services from the incumbent undertaking, and adds value only at the retailing stage of the supply chain.

It has often been pointed out that the value added that is 'open to competition' is small in relation to the final price of water, and it is argued on the basis of this observation that there is little scope for retail competition to produce significant benefits. However, although only a modest fraction of value is added at retail, particularly for large end consumers for whom the costs of servicing of the account can be spread over large volumes of water consumed, that does not imply that the total retail value added is small (for example, when judged against the size of other markets). The total value added in the water sector is very large, and hence even a modest fraction of that total can amount to a significant level of economic activity.

The more substantive issues concern what it is that competition at the retail level might be expected to achieve. One answer is better service and lower retailing costs, although the latter cannot be taken for granted. Retail competition introduces new categories of costs relating to marketing and customer acquisition, which can be quite significant – as is evident from retail energy markets. Conflicting pressures are therefore at work in relation to costs.

As tends to be the case more generally, the major potential benefits of competition at the retail level are likely to be associated with prospects for discovery and for the

realisation of dynamic efficiencies. Since the scope for resource savings appears to be greater at other stages of the value chain – for example in abstractions and in the use and development of networks – realisation of substantial benefits of retail competition are likely to depend upon how effectively the upstream abstractions and network access regimes function. In the absence of reforms to these latter, aimed at facilitating the better determination of economic values (for water and for network assets/facilities), the contribution of retail competition might well be relatively limited.

On the other hand, once upstream and network reforms have been implemented, retail competition can be expected to play a much larger role, since it brings end consumers directly into the wider discovery processes. That is, it ensures an active demand side for upstream markets. In the absence of retail competition, a monopoly buyer would necessarily be substituted for the influence of many, independent consumers, with all the inevitable informational losses that monopoly implies.

6.5 Competition in other activities and domains

There are a range of other activities/domains in the water services sector for/in which competition could potentially develop over time. For example, discussions with interested parties conducted as part of this study, as well as experience drawn from outside the sector, suggests that some form of competition could potentially emerge in respect of activities such as water storage, the treatment of water and sewage, and the disposal of sludge. Indeed, in a number of these activities there appears to be significant potential for innovation to occur under the appropriate conditions.

For the purposes of this report we have not considered the issues relating to the potential for competition in these activities in any detail, largely based on an assessment of priorities which has been informed by discussions and interviews with stakeholders during the course of the study. A number of points can be made in relation to this judgment however:

- There is already a competitive element in sewage in the form of on-site waste treatment, and there is scope for further development of, and innovation, in this type of arrangement which does not depend upon regulatory action.

- Wastewater and sewage treatment plants are increasingly including tertiary treatment in their processes, allowing for discharge of better quality water back into the environment, and the trend clearly reflects the implicit increase in the 'value' attached to clean, raw water in environmental policy decisions. However, just as the absence of effective valuation processes for raw water can serve to distort investment decisions in water supply networks, so the very same deficiency can potentially distort investment and innovation in waste water treatment investments. Again, therefore, the priority in the policy development sequence seems to us to lie in remedying the fundamental weaknesses in water valuation processes.

- The general arguments concerning competition as a discovery process apply just as much in relation to activities associated with the wastewater services as they do to activities associated with the supply of water. The Council for

Science and Technology is currently engaged in an exercise to try to assess where in the sector the greatest benefits from innovation might be achieved and, whilst for reasons (to do with discovery processes) given in Part I of this report it would be unrealistic to expect any great precision from such an exercise, it would not be entirely surprising if a number of the identified areas turn out to lie in the wastewater section of the industry's value chain.

7. AREAS FOR POLICY DEVELOPMENT

7.1 The abstractions regime: discovering the value of water

The importance of the abstractions regime is fully recognised in *Future Water*:

> 6. *The principal mechanism for achieving sustainable management and development of water resources is the Environment Agency's system of abstraction licensing. The system was introduced in the 1960s and has recently been updated through the phased implementation of the Water Act 2003. An abstraction licence is generally needed for taking water from rivers and aquifers where the quantity taken exceeds the threshold of 20 cubic metres per day. Abstraction rights can be transferred or apportioned within the current licensing regime; the review of competition for water (discussed in Chapter 9) will examine whether the system can be modified to facilitate this further. For historical reasons, many licences were issued to remain in force until revoked and cannot be readily modified. All licences issued since October 2001 have been issued with a time limit. There is a presumption of renewal such that a new licence would be granted, on the expiry of a time-limited licence, subject to a continuing need for, and efficient use of, the abstracted water and so long as the environmental impacts of the abstraction are acceptable.*
>
> 7. *We need to ensure that water resources are allocated efficiently in order to cope with the anticipated impacts of climate change and to achieve water quality objectives.* ***We intend to consult on further changes to the licensing regime. …***

As indicated by this passage, there have been recent reforms to the regime, and further change is in contemplation. What we would add by way of commentary on the statements is that the scope for improvement is very large indeed: current arrangements are nowhere close to establishing effective valuation and allocation processes.

7.1.1 Recent developments

In general terms, there are two principal ways in which a combined supply licensee could potentially gain access to water resources. The first is by identifying, or developing, 'new' sources of water in particular catchment areas and applying to the EA for an abstraction licence. The second method is by acquiring rights through the 'trade' of an existing abstraction licence. Since 2001 full licenses have been issued on a time limited basis (before that they were issued on an indefinite basis), usually up to 12 years, and there are also temporary licences that permit abstractions for up to 28 consecutive days.

The introduction of the Water Act 2003 made a number of significant changes to the way in which the abstractions system operates in England and Wales. Among the changes introduced were:

- an exemption for small abstractions under 20 cubic metres from obtaining a licence;

- a requirement to have a licence for the dewatering of mines, quarries and engineering works, water transfers into canals and internal drainage districts, use of use of water for trickle irrigation;

- the introduction of an ability for the EA to amend or take away someone's permanent licence without compensation if abstraction is causing causing serious damage to the environment after 2012;

- new duties on water companies to conserve water; and

- a requirement on water companies to develop and publish water resources management and drought plans.

In addition, the Water Act 2003 was intended to simplify the water rights trading process by removing requirements such as that the licence is linked to a specific area of land. In principle, the various provisions in the Water Act 2003 should have made it easier for the holder of a combined supply licence to be able to obtain rights to abstract water.

7.1.2 Unnecessary restrictions on trading

There are, however, a number of practical difficulties associated with the process of trading water rights which appear to act as barriers to a robust and efficient trading system, these include:

- The 'trading' regime for water rights is not, in fact, a conventional trade mechanism whereby rights are defined and parties can then exchange rights bilaterally, without third-party involvement. Rather, trading proposals are dealt with by the EA in a similar manner to new applications. This means that parties wanting to trade abstraction rights require prior approval from the EA. The holder of the rights (seller) is required to make an application to reduce the amount of water he/she will abstract, and, at the same time, the acquirer of the rights (buyer) is required to make a separate application for a new licence (or a variation of an existing licence) to acquire those rights. In these circumstances there is no guarantee that the EA will accept such an application.

- A critical element in this process – and one which distinguishes it from the trading of rights in other markets – is that the EA has discretion to vary the character and nature of the rights from those surrendered when it re-issues an abstraction licence. Put simply, even if the rights surrendered allow for the abstraction of 1000 cubic metres per day, for example, the acquirer of the rights may, under the terms of the new licence, only be able to abstract 800 cubic metres per day. This approach of varying abstraction licences that are the subject of trades appears to be actively pursued by the EA. In each of the case studies of trading in abstraction rights listed on the EA website the

amount of abstraction rights was reduced as a result of the trade, and the tone of those case studies indicates that the EA believed that such reductions in rights were Good Things.

- The EA's stated policy is to administer the trading mechanism in such a way so as to ensure that no environmental damage results, and that it is consistent with the local Catchment Abstractions Management Strategy (CAMS). In general terms, the position appears to be that in many catchments there is an imbalance between environmental requirements and the amount of water licensed for abstraction, such that areas are deemed to be 'over-licensed' and 'over-abstracted' and, that the totality of water abstractions is judged unsustainable.[23] As such, any new or varied licences issued by the Agency in these areas are likely to be either 'restricted' or reduced in volume in order to rebalance the environmental considerations.

- An additional problem relates to timing and potential costs associated with trading abstraction rights under the current arrangements. The period over which the EA will consider an application will vary from region to region. According to the EA the application can take up to three to four months to be considered, and longer for more complex applications. In addition, those making the application may be required to submit supporting information – in the form of environmental impact reports or studies – which, as acknowledged by the Agency, can be substantial in some cases. The costs associated with the preparation of the supporting materials are borne entirely by the applicant.

Assessment

It is abundantly clear from this short description that current arrangements for trading abstraction rights serve to restrict market development, and hence impair the process of valuing and allocating water resources. A major source of the problems also seems clear: the EA takes the opportunities offered by 'trades' in abstraction rights to achieve reductions in total abstractions in an area. This represents very poor policy targeting (and hence stands in violation of better regulation principles), since it is equivalent in its economic effects to a substantial 'tax' on trading. Not only does this act as a severe disincentive to trading and to seeking out/discovering water trading opportunities, by substantially reducing the tax base (trades) it achieves little for the 'reduction in abstractions' objective.

Worse than that, the discretion available to the EA creates uncertainty. The 'tax' on the trading of abstraction rights necessarily appears uncertain and arbitrary to those involved, and the deeply adverse consequences of such a regime were set out clearly by Adam Smith more than two and a quarter centuries ago (see footnote 18 above). A visiting Martian might conclude that there are parts of Whitehall that the Scottish Enlightenment has not yet reached.

[23] This view is confirmed in Defra's recent *Future Water* strategy document where it is noted that "in many areas there are excess claims on available water, and in nearly all areas there are environmental costs associated with abstraction and treatment" (page 19 and 20).

The difficulties involved in trading abstraction licences have been recognised by Ofwat. In its response to a 2003 EA consultation on water trading rights Ofwat emphasised that for trading to be effective attention should be given to:[24]

- the minimisation of the administrative burden on traders;
- the importance of brokers in the development of water trading activity;
- the importance of maximising the visibility of the abstraction licensing policy, including through the publication of the abstraction register on the web and by ensuring that CAMS provide as much guidance as possible to potential traders as to how their applications are likely to be treated;
- the need for a predictable and transparent mechanism for trading water rights.

Significantly, Ofwat went on to note that the EA:

> *"... should not treat trading rights as a means of recovering licences in over licensed catchments. There are legal arrangements for resolving over-licensing through licence revocation and compensation. We think these routes should be used to resolve these problems, leaving trading to work on a market basis as far as possible."*

In other words, Ofwat recommended what we have called regulatory unbundling (and which might also be called better policy targeting) to the EA. All that need be added is that this is a specific example of the importance of a principle with much wider applicability. It can be noted also that the same (important) general theme recurs in Ofwat's December 2007 document, which draws attention to the significance of abstractions rights trading as a means to deliver the EA's objective of managing water resources, and to assist in the performance of Ofwat's duty to protect consumers.

Looking ahead, the experience of other countries where some form of water trading has been introduced, and where the process for the negotiation and acquisition of rights incorporates more market based features, may provide helpful pointers for policy development in the UK. For example, in rural Australia – where there is typically a severe shortage of water – a range of waterbrokers and centralised trading platforms or exchanges have been established to assist parties to identify in which regions licences are available and to facilitate and streamline trading.[25] These developments are assisted by various grants and support from the Australian Government.

In general terms, the experience from water trading in overseas markets suggests that where such trading occurs it has typically developed thus far only at the margin of supplies. It should not be assumed therefore that a more effective abstractions regime would necessarily lead to large traded volumes (although neither should it be assumed

[24] Ofwat ' A response by the Office of Water Services to the Environment Agency's consultation document *Trading water Rights* (issued June 2003), www.ofwat.gov.uk/.../$FILE/ofwat_response_ea_cons_trading_221003.doc.

[25] Examples of such platforms include: www.waterfind.com.au; www.waterexchange.com.au; www.watermove.com.au;

that this will not happen – it being a matter for discovery). Classically, however, economic values are determined at the margins of activity, and trading at the margin is all that may be required for radical improvements in the value discovery and allocation processes.

7.1.3 Availability of water

A second and related issue concerns the availability of excess or 'spare' water in the supply systems of water companies. Following the introduction of the Water Act 2003 it is now a statutory duty for water companies to prepare and submit Water Resource Management Plans (WRMPs) to the EA. These WRMPs require water companies to show how, over a 25 year horizon, they intend to provide sufficient water for their customers whilst simultaneously protecting the environment.

In the most recent WRMPs submitted in 2004 the position presented was one in which the relative baseline supply-demand balance was in deficit for the majority of the water companies, with 13 companies expecting a deficit to occur in their region over the period of the forecasts. Another 7 companies reported that they expected to be partly in deficit in some resource zones over the same period, while only 4 companies indicated that they expected to have sufficient supply resources to meet demand over the horizon examined.

If any credibility were attached to the WRMPs, a situation of expected full or partial deficit over 25 years for all but four companies suggests that one possible response would be to invest in measures to increase the supply of water, through resource developments such as the construction of reservoirs. However, the EA appears to be averse to further resource development, exhibiting apparent disapproval of the fact that those companies that had identified a significant, anticipated impact on their operations from climate change were intending to deal with this through developing new water resources. The EA urged companies in these circumstances to consider the full range of possibilities and not just the engineering options.

Against this backdrop of a 'predicted' tightening of the demand-supply balance over the 25 year period, the EA also suggested that the 'target headroom' reported by some water companies in the WRMP may be overstating the expected relative scarcity of water so as to score 'high' on Ofwat's security of supply index, given the way in which that particular index is constructed.[26]

The suggestion that the picture of relative scarcity of water painted by the WRMPs may be in some way overstated also arose in some of our discussions with water sector stakeholders. In particular, it was suggested to us that, in some cases, public water companies had significant additional water resources which could potentially be released, or traded, in the event that the abstractions regime became more conducive to such trading. Others expressed the view that the water companies simply did not have an accurate enough register of the available resources, and that under the current

[26] The security of supply index measures the difference between the actual and target headroom. Achieving target headroom shows that a company is able to deliver its planned level of service. Ofwat 'Security of supply, leakage and the efficient use of water 2002-2003 report' http://www.ofwat.gov.uk/aptrix/ofwat/publish.nsf/AttachmentsByTitle/leakage_02-03.pdf/$FILE/leakage_02-03.pdf.

arrangements, they had little incentive to discover whether their resources were finely matched to expected demand conditions in different possible sets of future circumstances.

We do not take these views to mean that, in absence of further investments and/or better management of resources, the proposition that water is likely to be characterised by conditions of excess demand in particular locations and at particular times (e.g. of peak demand, following a period of low rainfall) is necessarily wrong. Rather, the point to be made here is just that under the current arrangements for trading, and given the requirements of Ofwat in respect of security of supply, the incentives for the revelation of accurate information about water availability may be somewhat deficient.

Assessment

One of the techniques taught to student of mathematics is to ask, when faced with a new problem, "have I seen something like this problem before?" In relation to water availability, it may be more helpful to ask: "have we seen something like this solution before?" And the answer, of course, is yes: current arrangements are a form of central planning.

That characterisation is useful, because it facilitates quick identification of the weaknesses of the *status quo*. From experience, central planning has extremely poor performance in relation to anything to do with information (whether relating to discovery, interpretation, use, or transmission). In relation to the Secretary of State's desire to see better value discovery, wiser use of water, and wide participation in the relevant processes, central planning is a good way of guaranteeing low scores on each and all of the three counts.

Illustrations from economic history abound, but it suffices to give one example from the (UK) water services sector, and reference a second example from (UK) electricity. In 1973 the Water Resources Board forecast that by 2006 the total demand for public water supply in England and Wales would reach between 26,000 and 28,000 Ml/d, and accordingly developed plans to achieve large scale increases in supply. As the EA said, in its 2006 assessment of the case for establishing a national water grid:

> *"Much of the WRB's plan has been proved to be unnecessary, principally because the forecast doubling of demand for water supply did not occur. Total demand for public water supply has remained broadly constant for the last decade at about 15.000 Ml/d."*

In electricity, it was once predicted that electricity generated at nuclear power stations would be so cheap that there would be no need to meter supplies to end users, which is not quite how things have turned out.

The general point is that, particularly in circumstances where the supply of information is impoverished for want of effective discovery processes, these kinds of long-run forecasts are simply stories, based on extremely limited information sets. How things will turn out, however, will depend upon all sorts of factors, and upon

interactions among those factors, in ways yet to be discovered. There is no basis for expecting any close relationship between the two (the story and the unfolding reality).

Stories, narratives and fairy tales have their uses – for example, in providing comfort in an uncertain world, sticks to beat with, and covering for backs – but in circumstances where information is so limited, we suggest that a focus on developing processes that will start help rectify the 'general ignorance', and that will provide greater flexibility and adaptability in the face of evolving challenges, is likely to be more productive than the pretence of knowledge that typically underpins long-run planning.

7.1.4 Abstraction licence fees

As discussed earlier, the current approach to the setting of abstraction licence fees is administrative in nature, reflecting the statutory requirement that the EA's expenditure on the management of water resources be recovered through licence fees. In 2005, it was estimated that the total costs associated with managing water resources were about £114 million per annum, and that these costs were recovered through licence fees paid by around 32,000 licence holders.

The EA sets licence charges annually for nine charging regions in England and Wales. The standard abstraction charges for each of these regions from the period 1 April 2007 are shown in Table 3 below. The table indicates that the standard rates for the current year range from £10.71 per 1000m^3 to £24.86 per 1000m^3. These charges are set in such a way so as to recover the costs associated with managing water resources in each region, and this is why the charges so differ across the regions. For example, the high charges for the Northumbria region reflect EA legacy costs associated with Kielder reservoir.

Table 3. Abstraction charges for year commencing 1 April 2007

Region	2007/08 Standard Unit Charge (£/1000m^3)
Anglian	24.37
Midlands	13.74
Northumbria	24.86
NorthWest	12.71
Southern	17.88
South West (incl. Wessex)	19.44
Thames	13.05
Yorkshire	10.71
Environment Agency Wales	12.85

An immediate observation about this approach is that abstraction licence fees do not in any way reflect the perceived relative scarcity of water at different points in the country – the standard unit charge in the Northumbria region, where the level of 'water stress' is assessed as low by the EA, is 90% higher than in the Thames region,

where the level of water stress is assessed to be "serious" (the highest level in the rating system).

The standard abstraction charges shown in Table 3 are adjusted by various 'charge factors' to reflect certain differences in the characteristics of abstractions, such as seasonal and geographic variations or differences in intended water usage (see Tables 4 – 6). Within the scope of the current study, we have not had time to investigate the rationales (if they exist) for the differences in these charge factors. The seasonal differentials – which imply summer rates that are ten times higher than winter rates – suggest that they may reflect some assessment of the relative *economic* values of water in the two time periods; but whether that is so and, if it is, how the relativities are intended to work within an overall framework that is administrative, rather than economic, in nature, we don't know.

All that can be said is that the EA's charges for water abstractions reflect an administrative valuation process, and that it appears obvious that the resulting values bear no relationship to the values implied by statements in documents such as *Future Water*.

Table 4. Source factors for year commencing 1 April 2007

Source	Factor applied to standard rate
Unsupported: all sources not included in other categories (incl. groundwater)	1.0
Supported: abstraction from sources or parts of sources within specific co-ordinates (for example, part of a river such as the Tyne or the Tees)	3.0
Tidal (inland waters downstream of normal tidal limit)	0.2

Table 5. Seasonal factors for year commencing 1 April 2007

Source	Factor applied to standard rate
Summer: abstraction only between 1 April and 31 October	1.6
Winter: abstraction only between 1 November and 31 March)	0.16
All year (abstraction which takes place all year)	1.0

Table 6. Loss factors for year commencing 1 April 2007

Source	Factor applied to standard rate
High loss: spray and trickle irrigation, and other purposes where water is not returned to any source of supply	1.0
Medium: such as public and private water supply, commercial purposes not specified elsewhere	0.6
Low loss: mineral washing, vegetable washing and non-evaporative cooling	0.03
Very low loss: such as power generation, water transfers from one source of supply to another source of supply	0.003

Assessment

In order to get a feel for the size of the discrepancies between the actual charges for water abstractions and the implicit valuations that appear in other policy documents (which are themselves also necessarily subjective – because they are made on the basis of highly limited information), we have examined what the National Audit Office said about the incremental costs of water supply in its 2005 Report *Environment Agency: Efficiency in water resource management*. At para 1.2 it is stated that *"To replace a supply of 1 million litres of water a day would typically cost about £2 million."*

The cost figure here is presumably a capitalised sum, but at, say, a 5% discount rate it translates into £100,000 per year (for a total demand of 365 million litres). In comparison, at the highest of the standard unit rates (Northumbria), the annual charge (for 365 million litres) is slightly less than £9,000, less than a tenth of the implied, incremental-cost based, estimate of the NAO.

Although at first sight this might suggest that attempting to move toward economic valuation of water abstractions by, for example, promoting the development of competitive market trading, is a utopian exercise – because if end consumers were charged the economic value, water bills would rise by politically unacceptable amounts – more careful reflection suggests otherwise. A shift to economic valuation could lead to a large increase in economic rents to holders of water abstraction rights. Under the current arrangements, given the indefinite nature of pre-2001 abstraction licences, and specifically in relation to abstractions for public supply systems, that is the water companies. Water companies are regulated, however, and it is therefore possible to protect final customers by appropriate adjustments of the regulatory arrangements.

Underlying such adjustments is a decoupling of average and incremental values, and the detailed regulatory mechanisms for so doing are not entirely straightforward. There are, however, three broad points that are worth stressing:

- Such decoupling is feasible: there are precedents in the form of similar exercises being undertaken in other regulated sectors.

- Reform in this area could potentially provide the EA with more effective, more flexible, and more targeted instruments for reducing abstractions in circumstances where over-abstraction is causing serious environmental damage.

- Any 'rent distribution settlement' will, for consumers reliant on the public supply system, probably need to be effected in large part via the price-control process. An immediate corollary is that there is a very close policy complementarity between the promotion and facilitation of competition on the one hand and Ofwat's approach to charge control determinations on the other hand. *These are not two, disjoint regulatory activities and, if there is to be a serious effort to improve water valuation and allocation processes, competitive issues will need to figure prominently in Ofwat's price control thinking.*

7.2 The access regime in water services

Notwithstanding the limitations of the abstractions arrangements, it is a fact that potential entrants in water services are able to obtain supplies of raw water by working within the existing EA system to obtain abstraction licences. Similarly, although the number of potential end customers is limited by the existing volume threshold, entrants are able to find potential customers. Thus, as argued earlier, the fact that there has been so little entry activity under the provisions of the Water Act 2003 is at least suggestive that the most constraining of existing barriers to entry may arise from the access regime.

7.2.1 Terms of access agreements

Significant difficulties in getting access to water networks appear to arise from both process issues and from the terms on which wholesale access is provided to licensees. The terms of access here include both the price and non price terms and conditions. Discussions with interested parties have indicated that the negotiations involved are typically viewed by potential entrants as complex and likely to be protracted, and that there can be substantial difficulties for newly appointed water suppliers in reaching agreement on terms of access.

The problems associated with the negotiations of access agreements have been recognised by Ofwat, which has drawn attention to the difficulties in the process on a number of occasions. For example:

> *"Few WMAs have been signed, owing to disagreements between licensees and appointed water companies during negotiations. We consider that licensees should be able to understand how different appointed water*

companies approach issues so that they can enter into negotiations for access on a more informed basis."[27]

It is possible that one of the underlying difficulties here is the absence of sufficient standardisation of the process. Water networks are relatively fragmented geographically, and the underlying structure of the various economic/business activities is arguably more complex (for access issues) than, say, in energy networks. However, policy does seem to have been relatively relaxed on this issue when, precisely because the matter is so central to the regulation of monopoly, targeted simplification and standardisation might reasonably have been pursued with more vigour.

7.2.2 Access pricing

The problems associated with the access pricing approach adopted under the Water Act 2003 are now widely recognised. In its December 2007 document Ofwat proposed that the 'costs principle' be replaced with a more general set of criteria to govern the determination of access pricing, and there are few now who would doubt that the sentiments underlying that proposal are sound.

The proposition that the charge for monopolistic network services should be determined by reference first to a price in a potentially competitive market (the retail market) is a notion that has probably arisen from failure to understand the motivations and circumstances that first led to the development of 'retail-minus' pricing rules (at least in the relevant type of context – there can be other arguments for the approach in some rather different contexts, which include cases in telecoms).

These originating circumstances involved expectations of enduring retail price regulation or, alternatively, of perfect contestability (in which case end-price regulation is redundant). Neither of these conditions is satisfied in a typical liberalisation process, whether in water, energy, telecoms, or transport. The usual expectation is that the relevant retail market will become sufficiently competitive as to merit deregulation (and that expectation should certainly hold in relation to the supply of large end-users of water), but that the activities of the incumbent monopolist, taken as a whole, will not.

The linking of a price of one service (wholesale water or network access) to another, in a different and distinct, relevant market and in conditions of monopoly/dominance in one of the markets, was bound to cause problems with competition law, and it has – as witnessed in the *Albion Water* case. In our view the obvious way forward now is via regulatory unbundling. Networks confer monopoly power – that is the reason use-of-network services are regulated – and there is a standard approach (globally) to the regulation of networks. It is to set prices based on economic conditions in the markets to be regulated, the most important of which are network costs, but which may also include other factors such as demand conditions. None of this exercise involves any sort of direct linkage to retail prices, which, given at least some competition, will be influenced by retail market factors that have no relevance whatsoever for use-of-network charge determination. For example, if retail marketing overheads were to

[27] Ofwat "Water Supply Licensing (WSL) – Best Practice" 2 May 2007 http://www.ofwat.gov.uk/aptrix/ofwat/publish.nsf/Content/wsl0307.

increase by, say, 10%, that would be no reason to adjust use-of-system (access) charges.

Regulatory unbundling also implies maintaining a clear distinction between the supply of wholesale water by an incumbent and the supply of network services. To the extent that reform of the abstractions regime leads to higher prices for raw water, that increase should be appropriately reflected in a higher price for wholesale water, and this pricing mechanism should not be confused with the charge determination process for use-of-system/network.

We do not suggest that developing a new access regime for use-of-system will be a simple and straightforward exercise. Price control is almost never that, and networks can give rise to some complex price structures. It is, however, the core activity of sectoral regulators, their principal *raison d'etre*. Further, the degree of complexity is at least partly controllable: there is abundant experience of approximations and simplifications, which can help determine what approaches will most likely work well and which will most likely not.

Among the issues that tend to occur in determining access prices are:

- Where access prices are combined with requirements to cross-subside particular types of customers – such as geographically uniform retail pricing – the set-up of the arrangements will tend to be influenced by the risk of selective, inefficient entry (or 'cherry picking') targeted on the most profitable customers, leaving the appointed water companies to service the unprofitable customers.

  There is a trade-off here that is often glossed over in overly-theoretical discussion. Excessive aversion to cherry picking may stifle virtually all competition, since any entrant will tend to target its strategy in some way or other. In most circumstances, the tendency of competition to drive prices toward costs is regarded as a Good Thing, since it tends to improve allocative efficiency. However, the more important point is that many arguments about cherry picking rest on the implicit assumption that *the relevant costs are known*. In practice, in monopoly conditions, it is remarkable how little companies tend to know about variations in their own costs-to-serve different customers, for the simple reason that monopolists lack incentives to discover such information: it is generally of little or no value for the conduct of their businesses.

  Cherry picking competition tends to lead to better discovery of costs, and this is a (dynamic) factor to be weighed in the balance when assessing it as a form of competition.

- If nevertheless it is decided on policy grounds that there should be strong, geographic 'levelisation' of use-of-network charges, then the implications for the structure of access charges are relatively straightforward. One option is simply to implement a levelised charging structure. This is what is now being proposed by Ofwat and it has been done by, for example, electricity distribution companies, which, like water companies, have regional network monopolies. Levelisation is also implemented to some extent in the national

transmission systems for electricity and gas, in that offtake/exit charges are uniform within defined zones or regions (although there are significant inter-zonal differences, set broadly to reflect transportation costs).

- The 'costs principle' that has become so problematic in the sector states that the charges payable by a licensed water supplier to a water undertaker shall, among other things, enable the undertaker to recover from the supplier an amount which the undertaker (a) reasonably expected to recover from relevant customers; but (b) is unable to recover from those customers as a result of their premises being supplied by the licensed water supplier. Since the policy aim behind this condition can be achieved by alternative methods of determining access charges – for example, via levelisation of those charges without reference to retail prices – we do not share Ofwat's view that changes in primary legislation are required to make progress on a reformed access charging regime. However, given the confusion and uncertainties that have arisen, if and when changes in primary legislation are implemented, we think it would certainly be sensible for the Government to follow Ofwat's recommendations on this matter.

- One of the most important distinctions in price-setting for network utilities is between the overall regulatory settlement, which determines the average *level* of charges, and the determination of the *structure* of charges. For example, one approach is to base the structure of charges on the structure of estimated, long-run incremental costs (LRICs). Since LRIC-based charges are frequently insufficient to recover total costs, including a reasonable return on capital, a common approach is to apply a proportionate mark-up, which provides for greater revenue whilst maintaining the cost structure.

- In water services, it is possible to imagine circumstances where LRIC based access charges, coupled with a reformed abstractions regime, would lead to over-recovery of costs, as those costs are measured for the purposes of the overall price settlement at an Ofwat periodic review. In that case, there will be issues of how to 'recycle' the excess flow of funds back to network users and, for those parts of the retail market not open to competition, consumers. However, in moving forward, regulators can be reasonably confident that there ways of resolving the issues in practical and workable ways, for two reasons. First, in technical terms, this 'reverse-Ramsey' problem is not fundamentally different from the more familiar Ramsey problem. Second, there are regulatory precedents, including over-recovery of revenues from gas transmission entry capacity auctions and examples in airport regulation where, because of planning constraints, LRIC prices lead to over-recovery of allowed costs (there can be substantial economic rents involved). The detail is beyond the scope of this study, but, because of the importance of the issue, we have added a short extension to the discussion at Appendix1.

Assessment

Use-of-network charge determination is the traditional 'core' activity of sectoral regulators working in an economic context in which there are monopolistic network activities and competitive or potentially competitive activities dependent upon access

to network services. It is critical both for ensuring that end customers are well-served and that related markets function effectively, and it therefore brings together both the price control and promotion of competition aspects of the sectoral regulatory task. Given this, it is unfortunate that the interpretation of the legislation has led to the development of access arrangements that are now almost universally acknowledged to be a dead end, and that this is a case where Healey's Law applies fully.

Going forward, Ofwat has recognised the case for reform, and has made proposals for legislative changes. However, whilst some legislative changes certainly appear to be desirable, we are concerned that there still seems to be a belief that such changes are *necessary* for, and therefore a precondition of, significant developments in competition in the sector. That is worrying since it suggests that there may be some continuing confusion surrounding the conduct and effects of access pricing policies, and if that is the case there will likely be some risk that what will come next will be another dead end.

Our concern in this regard is not mitigated by the view expressed in Ofwat's December 2007 document to the effect that *different types of competition are likely to require different methods of pricing*, for example retail competition and combined supply competition. Specifically, it is suggested that a different approach to access pricing methodology for combined supply should be developed from the approach used for retail-only competition. *That would, in our view, be both an idiosyncratic and risky approach.*

Suppose that, for a hypothetical supply, we write the price (P) for wholesale water (to retail-only competitors) as the sum of the per-unit access charge (A) and the resource price (W):

$P = A + W.$

It is entirely unclear why the access charge, A, should be determined differently for combined licence network users than it is for retail-only customers (i.e. determined differently depending upon whether access is purchased alone or in combination with a supply of wholesale water). Access services and wholesale water are two different things, supplied in two different markets, and making the access charge dependent upon whether or not it is purchased bundled with wholesale water seems to us to run the risk of heading straight back into the competition law entanglements that Ofwat surely wants to escape.

The experience of the introduction of competition in other sectors – and consistent with what has been said about the significance of regulatory unbundling – suggests that there is a strong argument for identifying and keeping separate the various activities in the supply chain. This includes seeking to separate cost estimates for the different activities, and also keeping the pricing of the different elements separate.

What this implies is a determination of an access charge that is the same irrespective of the type of licence, and a separate determination of the wholesale price of water, which is relevant to retail licensees only.

We conjecture that the reluctance to unbundle access price determination and resource price determination stems from the concern that, if resource markets are developed to replace the current administrative pricing arrangements, there is a risk of the resource price jumping up and being passed through to consumers. Precisely how resource markets will develop, how property rights (over water) will be allocated, what incentive arrangements will be established around market trading, etc, are, however, matters for the future, and it would be unwise to deviate from clear, well established charge determination methodologies in speculative anticipation of future price movements that may not even eventuate across significant regions of England and Wales.

The better way to proceed is along the lines of the suggestion in the final bullet point above, which implies dealing with any problems of 'excess' water company revenues via *ex post* balancing adjustments, not via idiosyncratic *ex ante* tinkering with pricing methodologies. For example, if there are excess revenues, rebates can be applied to the access charges and, whilst it is true that an implication of this is that access charges might, *ex post*, turn out to be influenced by the wholesale value of water, the rebate would be applied *uniformly*, across all licence holders, with no differentiation/ discrimination between different types of competitor.

It is also possible that policymakers' reluctance to act more decisively on unbundled access pricing arises from a concern about over-regulation. That in itself is not a bad sentiment, but it is a sentiment that can be misplaced when dealing with a core regulatory competence. We are strong supporters of the necessity/indispensability principle, but regulation that is *less* than necessary to achieve the relevant policy objectives is also deficient. The best rule-books are not always the thinnest rule books.

In saying these things we do not mean to add to the generalised demand for Ofwat simply do 'do something', and to do it quickly. Like much else, the development of access pricing arrangements in water services will be a discovery process, involving participation by a range of interests. The policy process will start with networks as they are, and will seek to contribute to the development of related markets; but as those related markets develop, they can be expected to contribute new information as to how networks might be better utilised and developed, and as to how access arrangements might change and adapt in response. If experience in other sectors is any guide, one of the chief benefits of the development of competition in related markets will be more efficient use and development of the monopolistic parts of networks, resulting from the general improvement in information conditions that competition can be expected to bring.

Speaking broadly, what we suggest is not that Ofwat should come up with blueprints, but rather that it should seek to 'kick start' the discovery processes – something that can be done now, and does not require primary legislation.

7.3 Retail competition in water supply

In principle the retail market is already open to competition for non-household end users with demands in excess of 50 thousand cubic metres per year, and Ofwat has proposed that this threshold be further reduced in stages to zero. In Scotland, that has

already happened, although the Scottish arrangements allow explicitly for retail-only competition.

As discussed above, there has, however, been little response to the market opening measures taken in England and Wales and, in this respect, the situation bears some resemblance to what happened in the energy sector in the 1980s. In that case, market opening legislation was introduced in both electricity and gas in the early 1980s, allowing entrants to use incumbents' networks to supply large, industrial end users – and nothing very much happened.

The lesson learned from the energy experience is that the development of markets in network industries requires rather more effort than the simple removal or loosening of statutory restrictions: removal of statutory entry barriers alone does not necessarily lead to liberalised markets. The following, written twenty years ago, may have a familiar ring:[28]

> *"Thus, in theory, since 1982 UKCS producers have been free to negotiate direct sales of gas to larger consumers. In the event, however, no use has been made of the provisions of the Act to date, and the legislation has had no discernible effect on the degree of competition in the UK gas industry. The reasons for this apparent failure in policy are several and, taken together, they underline the point that, given the structure of the gas supply industry, much stronger liberalizing measures are required if significant competition is to be introduced into the market."*

On that basis, an undue focus on measures that would simply increase the number of eligible consumers, without addressing the more fundamental (and inter-related) problems associated first with the abstractions regime and second with access arrangements, would create a high risk of going down another blind alley in nominal pursuit of the development of competition. That might be a welcome development for those opposed to the actual development of competitive markets, but it could also be an expensive blind alley for consumers in that establishment of arrangements for large-numbers participation in retail markets can, depending upon how it is done, be a relatively costly exercise.

In this context, it can be noted that Ofwat's recommendations to the Secretary of State concerning measures to further promote competition in the sector have not been focused exclusively on retailing issues, and have encompassed views on the abstractions regime and access arrangements. The implied approach – based on recognition that a number of pieces of a jigsaw have to come together if policy is to be effective – is, in our view, the right approach. In the absence of that recognition, competition policy in water services risks becoming a costly pretence, perhaps acting as sheep's clothing to conceal the central planning wolf beneath.

Materiality issues

If retail competition for non-domestic customers were to be promoted in isolation from other initiatives in other parts of the value chain then this would raise obvious questions about the materiality of the benefits that might accrue. This is especially

[28] J. Vickers and G. Yarrow, *Privatization: An Economic Analysis*, MIT Press 1988.

the case given that there are likely to be potentially large transaction costs associated with the introduction of retail competition to all non-household customers. For example, the proposal by Ofwat to establish a central switching authority (similar to the Central Market Authority in Scotland) is likely to involve significant cost.

There are various estimates of the potential gains from retail competition in the non-domestic sector. In its December 2007 document, OFWAT estimates of average retail margin under the current eligibility thresholds to be in the vicinity 0%-2%, with a maximum retail margin of 3.74% in 2007. However, it must be remembered that these are 'static' estimates in the sense that they are derived from settings where there has been an absence of competitive pressure to date.

Although the size of the potential gain from introducing retail competition is a relevant consideration, undue attention on the size of the retail margin as an indicator of potential gains for non-domestic customers can under-estimate the broader gains from introducing retail competition. Retail competition may also introduce informational benefits, such as an increased focus of the industry on identifying the costs and benefits associated with different business activities. More generally, in other sectors it has been claimed that the gradual or staged introduction of competition into some areas of activity has led to a change in the mindset of the industry in relation to consumers. In the absence of retail competition, it is clearly much more difficult for information about what it is that customers want and are willing to pay for to be revealed and transmitted back to those who are in a position to respond to wants and to willingness to pay.

On the other hand, in the absence of changes to the abstractions regime and to access arrangements, the potential supply-side responses to demand side discovery will be highly restricted: the only significant adaptations might be in that limited set of activities labelled 'retailing'. This is the jigsaw point again.

Duty to supply

A separate retail-competition issue relates to so-called 'duty to supply' obligations on appointed water companies, and, in particular, whether these companies have an obligation to supply customers that have switched to a new entrant who has subsequently been unable to trade. According to Ofwat, such a requirement exists in respect of retail supplies, and where the physical availability of resources is not an issue customers should be taken back by the incumbent. Ofwat proposes that a special default tariff be introduced for returning customers, and that appointed water companies make it clear that they will take customers back in such circumstances.

Obligations such as these exist in other sectors. In electricity and gas, for example, supplier of last resort obligations allow Ofgem to direct any gas or electricity supply licensee to assume responsibility for a failed supplier's customers provided certain pre-conditions are met. In such cases, the tariffs paid by customers do not vary from that previously paid, and claims for unrecoverable costs incurred by electricity and gas suppliers' can be recouped through a 'levy' on gas transporters' and electricity distributors' use of system charges.

In our view, given the workability of such arrangements in other sectors it would appear that similar types of obligations, and similar types of methods for the recoupment of costs, should raise no major obstacles to progress with market development in water services.

The issue of the 'duty to supply' also arises in respect of combined supplies. In its December 2007 document Ofwat noted that the current arrangements under the strategic supply regime did not provide adequate protection for combined licensees and their customers. To remedy this concern Ofwat proposed that water undertakers be required to develop a special set of tariffs for returning combined supply customers, which in some cases may be higher than standard retail tariffs. These tariffs would be higher if it can be shown that investment by the undertaker was deferred as a result of the customer switching.

As discussed above, there does not appear to be any strong argument for discriminating on an *ex ante* basis between those customers who switch suppliers and later must return to the incumbent. In fact, this would appear to act as a strong disincentive for customers switching suppliers in the first instance; a point confirmed by a recent survey conducted by Ofwat of the reasons why business customers are yet to switch suppliers. In our view, there are other approaches which can potentially allow for customers to return in such circumstances without the need to anticipate such events occurring. For example, if a customer returns to an incumbent supplier from a licensee and this requires substantial investment or enhancement of the network then these costs can be reflected in the connection charges levied for re-connecting. Alternatively, in the event that undertakers are required to supply a substantial number of new connections because a licensee could no longer supply them, then the costs associated with these connections could be recovered through an agreement with the regulator.

A separate issue which should not be confused with the duty to supply concerns how the infrastructure of the treatment and transportation network should be developed over the long-term if combined supply licensees serve a significant proportion of non-domestic customers. This issue is one of co-ordination and planning, and not necessarily related to duty to supply obligations. Once again, there are a number of examples from other industries and from the water sector in other countries where the introduction of competition in upstream services – and even in transportation and other core services – has been accompanied by mechanisms to ensure that underlying infrastructure is developed in the most efficient manner.[29]

7.4 Retail competition in sewerage services

In Ofwat's December 2007 document the regulator stated that retail competition in providing sewerage services would be a welcome addition to the WSL regime – a view shared by the majority of the respondents to the consultation – and requested

[29] A notable example is the establishment of the independent system operator in electricity networks. In North America, for example, a number of jurisdictions have entrusted the responsibility for system development to not-for-profit Independent System Operators (ISOs) who are typically required to be proactive in their approach to system planning and development. The investments in the infrastructure is however undertaken by transmission owners or third parties.

that the Government amend primary legislation to allow for competition in sewerage services as part of the WSL regime. Ofwat's position is based on the perceived benefits in allowing entrants to be able to operate in both the retail water and retail sewerage markets, allowing for single bills to be issued for these services. Put another way, it is expected that there will be economies of scope in retailing the distinct, but related retailing services.

Economic evidence for economies of scope between water supply and sewerage services is thin on the ground and, both currently and historically, the water sector has exhibited some degree of vertical separation between the two (suggesting that the cost advantages are not so strong as to preclude water-only companies). Ironically, the introduction of retailing competition might actually increase economies of scope *by increasing retailing marketing costs*, since marketing is an activity where scope economies tend to be available. This is what happened in liberalised retail energy markets, where increases in marketing costs, particularly for household segment of the market where such costs tend to higher relative to energy prices, quickly led to the emergence of dual-fuel supply on a major scale.

As indicated earlier, the static, cost arguments in relation to retail competition are two-edged. Competing for small accounts can be expected to increase marketing costs; competition itself may help keep costs down to efficient levels generally. The more substantive pluses and minuses of retail competition in sewerage services will therefore probably be associated with other effects, particularly effects on market dynamics.

We have argued that the greater the accumulation of areas in which competitive pressures are at work, the greater is likely to be the discovery of information that is economically relevant to the operation and development of the remaining, monopolistic activities. Put more technically, information discovery has external benefits across activities. Further, the same points that we made in relation to retail competition in water supply are valid again here, in the sewerage context. The benefits of competition are dependent on reforms in other parts of the value chain, which will strongly influence the ability of suppliers to respond to the information generated by retail competition.

An additional issue that arises in respect of retail competition in sewerage services – which does not arise in relation to water services – is the allocation of responsibility between the wholesaler and the retail entity for the nature, quality and volume of the sewage that enters the system. Put simply, given the dispersed and heterogeneous nature of the way in which non-domestic sewage is 'produced' and enters the network, it is generally necessary for one party to assume responsibility for ensuring that what enters the sewerage network is consistent with the volume and type expected for treatment.

Two broad approaches to allocating the responsibility, and the associated costs, for ensuring that sewage production conforms to particular standards have been suggested to us. One approach is for the wholesaler – who operates the transmission, treatment and disposal facilities – to continue to have a relationship with the end user customer and, therefore, to consent to the sewage that will be released into the network.

An alternative approach is based on the delegation of responsibility for consenting to the production of sewage from the wholesale company to retail licensees. In this case, the end user will contract with the retail customer to supply a certain type and amount of sewage, and the retail entrant will then make contract with the wholesaler responsible for activities relating to the transport, treatment and disposal of the sewage. Under this approach the end user and the wholesale entity do not have a direct relationship, and the retail entity bears the responsibility and the associated costs for ensuring that the sewage that enters the wholesale system is as anticipated.

The detailed assessment of such alternatives is beyond the scope of this study, but they provide an illustration of the types of choices that are available when developing the detail of the 'rules of competition', and therefore when trying to assess/discover what will work best in a given context for the purposes at hand.

7.5 Insets

As was highlighted earlier, in practice there are a range of different types of entry which can be potentially provided for under the inset appointment arrangements. However, with the introduction of the WSL arrangements a number of these potential means of entry would no longer, in practice, require an inset appointment, and future developments to the retail and combined supply arrangements of the WSL regime could expand the level of overlap that exists in terms of entry options. For example, the supply of water to a "large user" could be provided for either under the inset appointment arrangements, or under the WSL regime (through the use of a retail or a combined supply licence depending on whether the entrant made use of its own water resources or sought to purchase water from the incumbent supplier).

The situation with respect to sewerage services differs a little from this, since the WSL regime does not currently provide for an entrant to provide retail services associated with wastewater. Thus, the inset provisions provide a broader basis for entry in this respect. However, if the WSL regime were to be modified so as to allow for the provision of retail services associated with wastewater, then this would be another area of overlap between the inset and the WSL arrangements.

The above comments focus on the 'large user' criterion for inset appointments. However, inset appointments can also be made where a site is currently un-served, including greenfield sites. The principal recent interest in the use of inset appointments has been in relation to this area of activity, and in particular, in relation to new housing developments. Indeed, a number of the parties that we have talked to have indicated that the use of insets for the provision of water and sewerage services to new housing developments could be a highly significant area of entry going forward.

The activities involved in the connection of a new housing development can, in simplified terms, be divided up as follows:

i) Network provision associated with water supply for the new development;

ii) Network provision associated with wastewater from the new development;

iii) The ongoing management/maintenance of the new water and wastewater networks serving the new development;

iv) The provision of retail services to customers that occupy sites on the new development.

One notable feature of inset appointments in the context of new housing developments then is that they can result in a party other than the incumbent providing retail services to household customers. Whilst this can allow for customers to face a different supplier than they would have done in the absence of the inset appointment, household customers would have no ongoing choice with respect to their supplier. Thus – in the absence of other developments that provided for competition in retail supply – the familiar monopoly regulation issues apply, although on a relatively small scale.

With respect to (i) and (ii) above, it is important to note that a developer can, in the absence of any inset appointment arrangements, contract with a party other than the incumbent to provide the local water and sewerage networks. With respect to water supply, there are explicit legal provisions associated with what is referred to as "self-lay", such that – provided that relevant technical requirements are met – the incumbent is required to "adopt" the newly laid network and make a payment to the developer in relation to the relevant costs. Thus, the self-lay provisions allow for contracting for the laying of new water network to be undertaken by a party other than the incumbent, but then provide for the transfer of the assets to the incumbent. In doing so, they allow for the introduction of some additional competition in the contracting process, but do not give rise to a new party that has to be regulated going forward (as an inset appointee would).

The arrangements for sewerage differ from this. We understand that developers do sometimes arrange for a third party to lay the sewerage network as this is a key early part of the construction process, and thus close control of this function is important for the progress of other foundation work. The incumbent may adopt the new network (subject to relevant technical standards being met), but unlike in the self lay case, we understand that there may be no payment involved

The importance of the above comments is that they imply that there are alternative means (to insets) by which some competitive pressures can be put on new network provision activities, and these alternative means should be taken into account when assessing the contribution of insets. Nevertheless, insets do appear to be a significant area of interest for at least some entrants, and interviews with stakeholders indicate that the threat of losing new network development work does appear to have spurred at least some incumbents to rethink, and devote more attention to, their commercial approach to such developments.

One issue that has been highlighted by a number of stakeholders concerns the extent to which the current interest in insets is spurred by the potential for a form of 'regulatory arbitrage'. That is, the extent to which the existing regulatory treatment of new network developments exhibit features that artificially favour the entrant – for example, through the methodology by which bulk water supply to the new development is charged. We have not examined these issues in detail, and simply

note the importance of clearly assessing the potential for such distortions to arise, and developing the arrangements to address any identified, material failings.

Innovation in local network design

The above comments implicitly consider a situation in which laying of new networks is treated as largely generic activity – that is, it was implicitly assumed that the network to be laid was a given, and that competition (whether through self-lay or insets) concerned who was to undertake this given activity, and how efficiently they might be able to do it. However, in principle, the design and operation of the local network could also be highly relevant areas for competitive processes, and the existence of at least some small scale developments that have sought to incorporate elements of water recycling, some forms of localised water treatment with re-use for non-drinking purposes (e.g. toilet flushing), suggests that this may indeed be an area where there is considerable potential for innovation and discovery.

To the extent that this is the case – and in line with earlier comments – it suggests that there may be a highly important role that competition could play. Moreover, the inset provisions would appear to be relatively well suited to such developments given that they allow for local network build and operation. When discussing the potential for innovations in this respect with stakeholders, many have indicated that the planning consent process will be the key influencing factor. That is, such developments are unlikely to be spurred on other than through planning requirements. However, since the use of localised recycling arrangements and partial treatment could potential have material consequences on the costs of providing water and sewerage services, the role for economic incentives appears to merit further attention. For example, if a new development has significantly lower requirements for water from the incumbent supplier than would an equivalent alternative development, then that could potentially give rise to material savings, with costly new resource developments deferred.

8. SUMMARY AND CONCLUSIONS

Assessment of the prospects for the further development of competition in water services leads to something of a paradox.

In the Ministerial Foreword to Defra's recently published *Future Water: the Government's water strategy for England*, the Secretary of State ends by saying that:

> *"We are all increasingly understanding that we need to value water more, use it more wisely and play our part in taking responsibility for protecting this essential and unique resource. This strategy aims to help all of us to do so."*

Yet, in the document that follows, discussion of competition does not appear until the final substantive chapter, where it appears almost as an afterthought, as if, having produced a text on planning, someone has reminded the authors that this is a policy statement from a UK government nominally committed to liberalisation and the Lisbon Agenda.

The oddity is this. The Secretary of State appears to be seeking policies that will (a) lead to better, more realistic valuations of the commodity water, (b) encourage efficiency in the ways water is allocated and used, and (c) involve large numbers of people in these processes. If the question is then asked: do we know of processes capable of achieving these objectives? there is a quick and straightforward response: competitive markets, which tend to encompass large numbers of participants, are, by some margin, the structures that tend to be most effective in discovering values and allocating resources efficiently, particularly in conditions of uncertainty and change. In contrast, as the history books tell, central planning is hopeless at discovering the value of scarce resources, tends to massive inefficiency in resource allocation, and involves the few, not the many, in the determination of values and allocations. If the Secretary of State's views are taken seriously, the development of competitive processes should be the first 'policy strategy' that comes to mind, not the last.

It follows that the prospects for the development of competition in the water industry should be good, but the reality is that they are quite possibly not very good. There have been a number of false starts in this policy area in the years since privatization of water services in England and Wales nearly twenty years ago now, and the latest attempt to move forward, in the form of those provisions of the 2003 Water Act dealing with market opening and with access to water networks, is widely regarded as having resulted in failure. Scotland, which has just launched its own market-opening initiative (on 1 April, which it is to be hoped is not portentous), may do better, but on that we will have to wait and see. Those who are sceptical about the potential contributions of competitive markets can certainly point to the fact that there is only limited evidence of success.

Given all this, and given that the Government has launched its own review of the role of competition in the sector, we suggest in this study that now is probably a sensible time to look at the policy issues in a wide perspective, to try to understand how competition might help achieve public policy objectives, where the priorities should

lie, and how public policy might be shifted away from its current, central planning tendencies, which cannot be expected to lead to anything other that the systematic failures that such tendencies have always produced when seeking to value and allocate scarce resources.

We have sought to make some initial progress in these tasks, by first of all considering what competition is (answer: rivalry), what forms it can take, and how it is affected by what we have called the 'rules of competition' (RoC), by which we mean to refer to a wide range of influences on market conduct, from general law to shared understandings of market participants. Since it is almost self evident that rivalry is not an end in itself, competition stands to be assessed as a means for achieving some other purpose. The emphasis is on competition as a 'discovery process', in which new information is constantly discovered, interpreted and utilised on a scale and with an effectiveness that is typically well beyond the capacities of monopolistic entities.

We also emphasise the relationship between competition and the specific context – physical, social and economic – in which it operates. Good rules of competition are rules that cause competition to work well in the relevant context, and one of the principal tasks of regulatory policy is to help in the discovery, development and enforcement of such rules in a given, specific set of circumstances (in this case the supply of water services). In contrast to the individualistic nature of the myriad particular decisions in competitive markets, such 'discovery of rules that work well' is a collective/social activity.

Given these various points, in assessing the prospects for competition it is natural to ask: where might the discovery capacities of competition be most valuable? Our conclusion is that the answer is likely to lie at the water resource management and water abstraction stage of the value chain. As *Future Water* indicates, there is much to be learned about the economic value of water and about how best it might be used in the face of uncertainties surrounding climate change. Current charges for water abstractions are poor indicators of value, as is evident from the fact that it costs substantially more to abstract water in Northumbria than in the Thames region, where a desalination plant is currently being built to meet demand for incremental water. That geographic pattern of water values makes no economic sense.

It is also manifestly clear that although there have been some moves to allow trading of abstraction rights – the first step in developing more effective valuation and allocation arrangements – the current arrangements are a long way from satisfactory. In effect, the Environment Agency subjects abstraction rights trading to a substantial tax (in the form of a reduction in the rights), which discourages trading. Not only does this restrict the development of competition, but also it has the effect, by restricting trades, of accomplishing very little in terms of reduction of abstractions. As Ofwat has argued, this is poor policy targeting.

Given the scope of the study, while it seems clear that there are a number of steps that could be taken to improve the abstractions trading regime, we have not sought to develop any proposals in detail. We are, however, of the view that there is potentially great merit in the Environment Agency being given a more explicitly specified, but simultaneously more commercial, role in the buying and selling of abstractions rights

in pursuit of its water resource management responsibilities. In effect, the Agency is responsible for the management of natural 'systems', which tend to give rise to economic externalities that are not easily fully marketized because of the locational specificity of the relationships between causes (e.g. excessive abstraction at a particular location) and effects (consequential environmental damage, possibly across a wider area). The economic structure of the Agency's task is therefore not entirely dissimilar to that of 'system operators' or 'network managers' in other network sectors. The organisational architecture and conduct of these institutions might therefore offer some guidance as to the possibilities for the future although, as always, institutional development will need to respond the specifics of the water resource context.

Making progress in developing markets that are more effective in discovering the value of raw water, including variations in value according to location, season and time of day, is important for network development. The rationale for bulk transfers of water from location A, say, to location B is that the water is more valuable at B than A. In terms of the broad direction of investment in major projects, therefore, network investment efficiency will continue to be impaired for so long as the value of abstracted water is not determined in appropriate ways. And here is another major potential benefit of markets in raw water: the information discovered from competition at that point in the supply chain is also of value in making decisions about water services infrastructure, even though the latter may remain monopolistic. Further, given that major infrastructure projects are very costly – the replacement value of water company assets in England and Wales is of the order of £230 billion – even relatively modest improvements in the discovery of information relevant to investment decisions can have substantial benefits.

It can also be noted that, looking forward, better valuation processes for raw water may also have positive effects on investment decisions in relation to sewerage and sewage treatment. Environmental constraints are pushing for enhanced treatments that return higher quality water back to the environment, which, in effect, means that that the environmental constraints are implicitly placing higher value differentials on water of different qualities. Improved, more transparent, market valuation processes could also help in eliminating inefficiencies that might arise as a result of the generally poor value information that tends to exist when markets are absent (i.e. when decision systems suffer from the informational poverty characteristic of central planning).

In order to be able to develop water trading, it is important that new entrants into water services be able to obtain non discriminatory access to the networks of incumbent water companies. Policy in this area has, unfortunately, got itself snagged on a particular approach to access pricing called the Efficient Component Pricing Rule (ECPR) which, oddly, takes potentially competitive retail prices as the starting point for setting charges for access to monopolistic networks, and which has a global track record of failure in implementation. Ofwat is now calling for changes in the legislation so that access charges can be set on a more 'standard' basis, to reflect the costs of the network services that are being provided, albeit on a geographically averaged basis. We are of the view that Ofwat could change its approach without any requirement for primary legislation, and should do so without waiting for Government to act – a view we believe is fairly widely shared – but it would also seem sensible for

the Government to accept and act on Ofwat's proposals, if only to clear up any ambiguities and bring to an end a debate that is closer to economic theology than to substantive policy discourse.

Expanding the scope for competition at the retail level by reducing the threshold volume at which an end user is entitled to choose a water supplier is also a development that, over time, can be expected to bring benefits, both directly to consumers as a result of retail competition for their custom and indirectly, by improving discovery in the market for wholesale water. There is a caveat here, however. Experience in the energy sector indicates that, when industrial and commercial markets were first opened up to competition in 1982 and 1983, nothing very much happened; there was no significant entry. The lessons from that experience – which has been repeated in the water sector in that there has been no significant entry in the period since the introduction of the Water Act 2003 – is that it is not to be expected that competition will necessarily develop automatically once statutory restrictions are withdrawn. Rather more development work on the rules of competition than that typically needs to be done if market liberalisation is to work well.

We suspect there is a danger that those who are inclined more to central planning than to competitive discovery processes, but who recognise that some 'compromises with competition' might have to be made, will tend to favour a focus on retail competition, which might serve to keep competitive pressures 'in their box', and well away from resource management. The Scottish Parliament took such a view in restricting competition in Scotland to a retail-only form, although the Water Industry Commission for Scotland is taking a very pro-active approach in seeking to maximise the scope of its remit under the legislation and, as the discovery process proceeds, it might easily generate new information that will cause the Parliament to think again.

The risk to consumers in an excessively heavy focus on retail competition is that there are non-trivial costs in establishing the systems and arrangements that could sustain such competition. In the absence of the development of wholesale water markets and of reformed access arrangements, the benefits of retail market opening could be quite limited, and the costs incurred could be disproportionately high in relation to those benefits. In contrast, if the abstractions regime were improved and access arrangements reformed, suppliers would have greater scope to respond to consumer wants and the effects of retail competition would likely be leveraged into network decisions and into wholesale market decisions. In this context, it is perhaps worth remembering that there were established wholesale markets in both electricity and gas (albeit not particularly deep in the latter) before monopoly franchises at the retail level were fully withdrawn.

Our main conclusion then is that competitive discovery processes have potentially very important roles to play in the water sector, particularly at the wholesale level where we know that we know relatively little about the economic value of water, including its spatial and temporal variations, and how to use it most wisely. The Secretary of State has posed a straightforward challenge, based around the notions of the value of water, its allocation, and wide participation in the valuation/allocation processes, and we are of the view that competitive processes could be developed which are not only capable of meeting that challenge, but that could be expected, on

the basis of experience, to be rather more effective in meeting it than any alternative approach. This would require the collaborative participation of a range of organisations, and we suggest that it requires a kick start from one or more of Defra, the Environment Agency, and Ofwat; and preferably from all three.

Appendix 1. Managing the transition to unbundled access and resource pricing

The study has emphasised the importance of having separate prices for the different activities in the value chain, including separate prices for water resources and for using the treatment and transportation services supplied by incumbents. This immediately raises questions as to how the transition from the current aggregated approach to access and resource pricing to a disaggregated approach is best achieved.

At the core of this issue is how best to introduce separate prices for the various activities associated with the production, treatment, transportation and retail supply of water, while, at the same time, remaining within the broad constraints set under the current pricing regime. Put another way, the challenge in the short-term is to allow prices to reflect the economic costs and values associated with the distinct activities – for example, the value of water at different points on the network and at different periods (peak/off-peak) – while at the same enabling end consumers, particularly household customers, to avoid substantial volatility in end-user prices, including possible possibly sharp hikes in prices over short periods.

This is a significant issue in water since there are good reasons for believing that the current 'value' of water resources – which reflect the Environment Agency's administrative approach to water pricing across England and Wales – will not ultimately reflect the economic value of water resources as determined through more market based valuation processes. Although there is considerable uncertainty as to the scope and pattern of the likely divergences – since economic values have yet to be discovered – and although there can be arguments that any anticipated scarcity of water is much more a function of poor public policy than of environmental changes (one of the classic defects of central planning is that it tends to have highly restrictive effects on the supply-side of markets), we think it reasonable to believe that the introduction of market mechanisms would create a realistic possibility that there would be significant increases in the value of water in at least some regions. That is, any policy concerns about 'pass-through' of higher water prices are not entirely unfounded.

The transition from bundled prices reflecting a set of activities to disaggregated pricing is not unique to water, and it is one that has been encountered by regulators in other sectors and in other countries, as parts of the relevant industry value chains have been opened to competition. Various approaches have been adopted in seeking to unbundle the relevant prices associated with different activities in the production, transport and distribution of water, while at the same time ensuring that this transition operates within the constraints set by existing price control arrangements.

One method adopted, which may serve as a useful example for water, is where a specific activity (say production) is opened to competition to a limited degree, and where those involved in that activity have the opportunity to gain (or lose) from trading in production *within specified constraints* within the first period that competition is introduced.

Conceptually, applying this approach in water involves the disaggregation of prices for resources, treatment/transport and retail in the first period. In that period, water

undertakers would be able to trade water abstraction rights in the market, therefore allowing for the revelation of the 'value' of those rights. However, the total amount that the undertaker would be able to keep from such trades would be limited *ex ante*, for example under a 'sharing factors, caps and collars' type of arrangement. So, for example, a water undertaker may be limited to, say, a X% 'cap' on any revenue it can make, over and above the amounts agreed in the price control, from trading in resource rights. Should the revenue of the water undertaker from trading in abstraction be greater than the pre-specified limit (X% in this case) then any excess revenue will be returned to network users and customers in the form of rebates. As more information is discovered and revealed, the sharing factors and caps/collars can be periodically re-set.

While the specific details of such an approach would need to be developed further, at least at the conceptual level this type of way forward has the advantage of simultaneously opening the abstraction of water to competitive trading – thereby discovery of the economic value of water – while at the same time limiting the potential increases that can potentially flow through to end-user prices.