Oxera

Agenda

Advancing economics in business

Valuing water in England and Wales in the medium and long term

How can the value of water as a resource be included in the Ofwat regulatory framework? Jon Stern and Jonathan Mirrlees-Black, Centre for Competition and Regulatory Policy, City University London, recommend that, for the medium term, companies be required to set a bulk supply tariff price—ie, a resource price for the forward price for new water—a 'price to beat'. They argue that, if possible, this price should include a water scarcity element, at least for investment appraisal purposes, and also discuss the implications for water network service price caps

Ofwat's formal Consultation Document on Future Price Limits (FPL) for 2015–20 and beyond is due to be published soon, as is the government's long-promised White Paper on the water industry. The combination of these two—and an expected new Water Bill—provides a rare opportunity for a possible re-charting of the water and sewerage industry and its regulation.

Much of the discussion about water reform in England and Wales in recent years has been on retail competition—ie, whether and how far industrial customers should be eligible to choose their water supplier, as all non-household customers can in Scotland. However, there is also the question of upstream (wholesale) competition, and trading in bulk water and abstraction licences. We argue, on the basis of experience of other infrastructure industries such as electricity, gas and telecoms, that for retail competition in water to have a sustained effect beyond the short run requires effective upstream competition. We also argue that current and potential regional water supply shortages greatly reinforce the need for explicit upstream water trade and competition.

The Cave Review and other contributions have discussed upstream and abstraction but, in general, less attention has been paid to these issues than to retail competition.[1] In this article, we focus on upstream issues, with specific reference to setting a value for upstream water, raw and treated. In particular, we focus on how Ofwat could regulate the Resources element of the England and Wales water supply industry and foster an active upstream water market, taking as our starting point the April 2011 Ofwat FPL preliminary model informal consultation document.[2]

The April 2011 FPL consultation document suggested an updated framework for water industry regulation with two main sets of developments. The first set was a more outcome- and customer-focused framework that makes better use of market mechanisms where appropriate. The second set referred to water sustainability and environmental benefits. The latter require more efficient and sustainable abstraction and use of water, particularly given the currently predicted impacts of climate change on water availability over the next 30 years.[3]

We address both of these sets of issues but we do so from the perspective of obtaining a reasonable and robust measure of the 'value of water', recognising, of course, that this value varies considerably around the country both within and between water companies.

We see obtaining a proper resource value of water as the key foundation for effective regulation of the water supply industry, including at the retail customer level.

Value of water in a market and trading framework

Our main objective is the design of a framework for valuing water in the next price control period (PR14) and beyond—ie, for the medium-term period 2015–2020/25. However, we address this in the context of what would be the most appropriate long-run

This article summarises Stern, J. and Mirrlees-Black, J. (2011), 'A Framework for Valuing Water in England and Wales from 2015 Onwards', CCRP Working Paper No. 19, October, available at: http://www.city.ac.uk/__data/assets/pdf_file/0004/106366/stern_mirrlees-black_Valuing-Water-FIN-Oct11_no19.pdf. The views expressed in the article are the responsibility solely of the authors.

market and trading framework for the efficient abstraction and use of water in the long run—ie, post-2025. Hence, the medium-term concerns are to provide not just a more effective regulatory framework in the medium term, but also a first step in the development of a longer-term framework as and when current constraints can be relaxed.

We write against a background of considerable policy uncertainty. In particular, it remains to be decided, first whether, how far and when retail competition for water supply in England and, possibly, in Wales might be expanded from its currently highly restricted amount; and, second, whether and (if so) when scarcity-based abstraction prices might be introduced. These will only be made clear in the forthcoming water White Paper and subsequent legislation, since both of these changes (and other market underpinning changes) require new primary legislation. In consequence, our goal is to provide a regulatory framework for setting the value of water that would work more effectively than the current one: (a) both with and without an expansion of retail competition; as well as (b) with and without 'real' paid scarcity-based abstraction prices.

Our proposed framework without either of these policy changes would, we suggest, provide a better regulatory basis than the current one, but it would have only weak incentives to evolve into a strong long-run market and trading framework. However, our main focus is on a medium-term model with a substantive expansion of retail competition to non-household customers but without explicit scarcity-based abstraction prices.

The April 2011 FPL informal consultation document briefly raises the use of 'shadow' abstraction prices and we discuss in the main paper at some length how these might be used in the medium-term water resource management plan (WRMP) investment appraisal purposes. This would be valuable in its own right for improving the quality of investments as well as for providing a better basis for the development of 'real' paid abstraction prices.

To develop an effective water resource valuation framework in the medium and long term, we need to set out the *key objectives and constraints*. The main objectives are to provide effective signals (a) for the right level and type of investment (in both new resources and network infrastructure); and (b) for efficient water resource use. Given the length of life of new water industry investment, we attach priority to the first of these. Providing strong incentives to current and future industry participants to build the right infrastructure at the right price is crucial.

As regards constraints, for the long term we assume that there are no major binding constraints. For the medium term (and for PR14), we first have to have a model that could attain at least some part of our objectives without 'real' scarcity-based abstraction prices. In addition, it needs to provide manageable change for the industry and to maintain the confidence of debt and equity investors. Ofwat has made clear that no mandatory unbundling will be required in PR14 beyond accounting separation, and that current protection of the water companies' regulatory capital value will be continued for new investments until at least 2015. We accept these constraints for the medium term. In consequence, our recommendations for a medium-term model incorporate those constraints, while also including in-built incentives for evolution towards a fully market-based water supply industry framework in the longer run.

For the long run, experience in regulated energy and other network industries suggests that the most relevant models for water in England and Wales are (a) vertically integrated area-based models; (b) pool models; and (c) bilateral contract models. The April 2011 Ofwat FPL document makes clear that it sees major disadvantages with vertical integration, given the development of the industry (and of regulation) over the past 10–20 years. It argues that it is now time, by the introduction of separate price caps, to start moving towards a water supply industry model that is more transparent and incorporates explicit upstream and retail markets with much more open entry. We agree.

There are still water companies and others who argue that vertical integration with enhanced regulation is a superior model for the water industry even in the long run, but that is not our view. There are fundamental difficulties with relying in the long term on enhanced regulation as a substitute for upstream and downstream competition. We also note that vertical integration, unlike the other two models, does not allow a clear and unambiguous valuation of water resources; in consequence, we do not discuss it further here.

Considering experience in other sectors, it is abundantly clear that the water supply industry does not need the complexities and rigidities of a pool model. Hence, we conclude that the most appropriate long-term model for water supply in England and Wales is the bilateral contract model. Under this, depending on the extent of retail competition, upstream water suppliers sell water directly to local supply companies and to final consumers (probably excluding households) across an unbundled network.

For the medium term and PR14, given the constraints set out above, we conclude that the main alternative to vertical integration is a bulk supply tariff (BST) model, and that is what we recommend. A bilateral trading model fails to meet most of the current constraints and

asks far too much of the current water companies. Under our proposed BST model, the incumbent water company is required to offer water at a 'default' regulated wholesale price, but wholesale and retail parties eligible to trade can do so bilaterally outside this mechanism. *The incumbent's regulated BST thereby provides a 'price to beat', both in the upstream wholesale water market and in the eligible retail market.*

The BST model

The first stages of introducing wholesale competition in energy and other regulated infrastructure industries throughout the world have used the BST approach—and the post-2008 Scottish Water structure is a BST variant. In consequence, it provides a good first step towards wider competition which can be essentially market-driven rather than regulator-driven.

BST models provide a useful way by which new players can enter wholesale markets, as well as a method for developing retail competition. This has been shown in electricity and gas. These models also provide a good way of valuing water as a resource. They can be expected to work well with 'real' scarcity-based abstraction prices and with shadow abstraction prices for investment appraisal. Finally, although far from ideal as a long-term model, they can definitely provide something that is far superior to vertical integration.

There are several BST model variants and, for England and Wales water, we discuss and appraise three of them. They differ as to whether and how far there are separate price caps for—and within—network services. Using the Ofwat April 2011 FPL framework:

- the first model that we consider has separate price caps for Resources and Network Plus *and* a separate price sub-cap for pipes within a Network Plus price cap, where Network Plus components include all pipes, treatment works, etc.;
- the second model has separate price caps for Resources and Network Plus but *no* separate price sub-cap for pipes within Network Plus;
- the third model has a single price cap for wholesale treated water that combines Resources and all Network Plus elements (like Scottish Water).

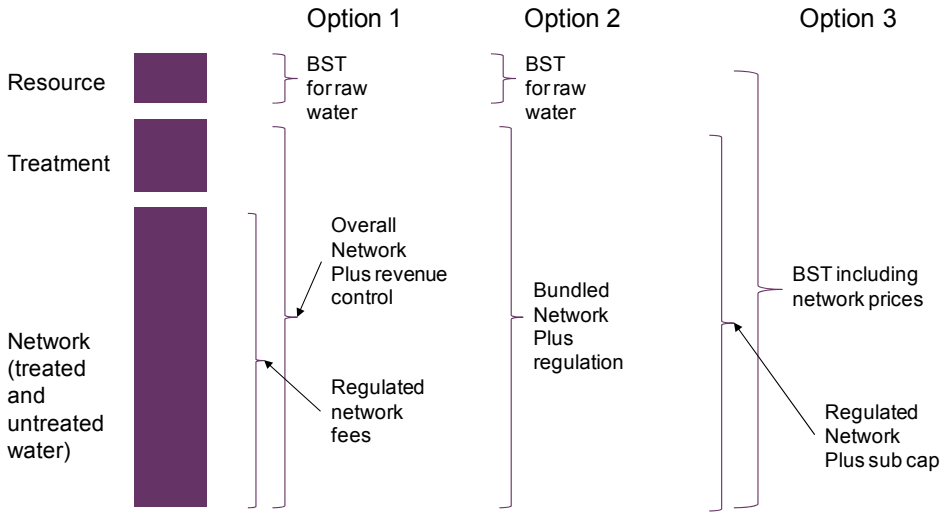
These three models are illustrated in Figure 1 below.

We recommend the first of these models for the medium term—ie, a separate company-level regulated BST for raw water (a Resources price cap) plus a binding sub-price cap for all within-company raw and treated water pipes to operate within an overall Network Plus price cap. This combination imposes a 'collar' implicit price cap on non-pipe Network Plus elements.

The main reason for our recommendation is that it provides a more transparent view of the value chain and is therefore much easier to regulate. In addition, it requires incumbents to provide a clearly specified set of network services with clear network access rules and (regulated) access prices for pipes and access rights for treatment works, system operation etc. This is a model that can and does support the development of wholesale competition—and interconnection between water zones and companies.

For use in PR14, our recommended model's viability depends on being able to develop network pricing rules for raw and treated water pipes at the company level. We argue that this can readily be done in the first instance by using simple 'postage stamp' tariffs.

Figure 1 Three alternative models for BST



Source: Stern and Mirrlees-Black (2011), op. cit.

The key point regarding the BST is how it would be set. We recommend that it be set to reflect the long-run marginal cost (LRMC) of new supplies of water. In particular, we recommend that the BST be calculated at company level by aggregating the LRMC for each water resource management zone (WRMZ) as reported in WRMPs. If 'real' scarcity-based abstraction charges were in place, these would be added to the LRMC-based prices for water-scarce areas, aggregating from catchment zones to WRMZs. If, as we expect, only shadow scarcity-based abstraction prices were available for PR14, the investment appraisals in the WRMPs and business plans should be carried out using those shadow prices.

The structure described in the above paragraph may appear complex. It is not. It follows well-established models in energy and other regulated infrastructure industries. The use of a forward-looking LRMC to value raw water has also recently been suggested by Severn Trent with Ernst & Young, although their recommendations are in other respects significantly different from ours and retain much more of a vertically integrated water company framework.

If our recommendations for England and Wales water supply were adopted for PR14 and accompanied by a significant expansion of retail competition, we believe that they could encourage retailers to exert greater pressure for lower costs and wholesale prices within incumbent companies—including the buying-in of wholesale water from other suppliers and the development of interconnection within and between companies. That may well require substantive changes to the culture and management methods in many water companies, but shareholder and other pressures could well promote such changes.

Even if the resulting degree of achieved competition were relatively small, we would still advocate our recommended company-regulated BST model with a separate network price cap and sub-cap as the best available for the medium term and, if necessary, beyond. In our opinion, this is the model that, within the FPL framework and constraints, most effectively sets a Resources value of water and gives the strongest likelihood both of achieving a market-based approach to water industry efficiency and of ensuring an environmentally sustainable water sector for England and Wales.

Concluding thoughts

The debate about introducing market mechanisms in the England and Wales water industry has been going on for several years. There is now relatively widespread acceptance that greater competition and trade are needed, but there is a lot more work to be done. We are confident that our proposals can be implemented in PR14. There will be some compromises between what is economically ideal and what can be implemented. But careful design means that the simpler choices necessary for early implementation should not distort investment and other long-term decisions. Moreover, provisions can be built in to ensure an interim Ofwat review can take place if issues arise that are of real concern.

Of course, there is a need to develop these ideas in much more detail. Key areas where more needs to be done are:

1. developing forward-looking LRMC prices that incorporate water resource concerns (ie, establishing 'shadow' or 'real' scarcity-based abstraction prices);

2. developing 'postage stamp' intra-company interconnection prices and an access and pricing framework for inter-company interconnection; and

3. deciding on how much retail competition will be implemented and when.

We have deliberately focused on trying to develop a framework that is evolutionary rather than revolutionary. To make the changes we are recommending in time for PR14 will require much hard and detailed work. However, we do not believe that this is inherently more difficult than comparable regulatory reform exercises such as the UK gas reforms in the 1990s or the creation of effective retail telecoms markets. With the existence of well-founded WRMPs and Ofwat data on accounting separation, we claim that such reform is readily achievable.

Jon Stern and Jonathan Mirrlees-Black

[1] Cave, M. (2009), 'Independent Review of Competition and Innovation in Water Markets: Final Report'.
[2] Ofwat (2011), 'Future Price Limits – A Preliminary Model: Informal Consultation', April.
[3] See, for example, Environment Agency (2008), 'Water Resources in England and Wales – Current State and Future Prospects'.

If you have any questions regarding the issues raised in this article, please contact the editor, Dr Gunnar Niels: tel +44 (0) 1865 253 000 or email g_niels@oxera.com

Other articles in the November issue of *Agenda* include:

- **thanks for sharing: can exchanging information be good for competition?**
- **unreasonable profit? A new framework for services of general economic interest**
- **yes, Minister? Incentivising value for money in publicly owned organisations**

For details of how to subscribe to *Agenda*, please email agenda@oxera.com, or visit our website

www.oxera.com