25 YEAR JOURNEY OF UK WATER INDUSTRY ECONOMIC REGULATION - LESSONS FOR THE NEW ZEALAND CONTEXT

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ABSTRACT

The water industry in England and Wales was first privatised in 1989. Scotland and Northern Ireland moved to their own regulatory frameworks in 2002 and 2010 respectively, taking on board the lessons learnt from the English and Welsh regulatory experience but addressing the specific needs of those countries.

This paper sets out some of the benefits and challenges of regulation, drawing on examples from the United Kingdom (UK). It discusses a range of issues relating to regulatory models, including possible economic models and frameworks for ensuring compliance and the protection of the environment and drinking water standards. The issue of privatisation versus regulation is also considered.

There has been an ongoing discussion about the possible regulation of the New Zealand water industry over recent years and learning lessons from other countries will be an important part of any future change. The aim of this paper is to provide some practical insights into regulatory options, to inform future discussion and debate.

KEYWORDS

Regulatory models, compliance, lessons learned, benefits and challenges of economic regulation

1 INTRODUCTION

The water industry in England and Wales was first privatised in 1989, largely in response to a need for a significant investment programme. The overall success of the model was such that Scotland in 2002 and Northern Ireland in 2010 established regulatory systems of their own, taking on board the lessons learnt from the English and Welsh regulatory experience but addressing the specific needs of those countries. There are similarities and differences between the models adopted by the four countries, which largely reflect their different social, environmental and economic drivers.

This paper draws together some themes and lessons learned on the UK regulatory journey, based on the authors' experiences. The paper does not focus on either a 'best for regulator' or 'best for utility' outcome, but aims to provide some selected practical insights into the process of water sector economic regulation, which may be useful for the New Zealand context. It touches on the importance of data, the challenges of setting expenditure limits, how regulation can operate without privatisation, possible methods of ensuring compliance, and outcomes of regulation that have been demonstrated in the UK – both positive and negative.

2 REGULATORY FRAMEWORKS

This section provides an overview of a range of financial regulatory models, discusses the merits and disadvantages of a model with separate regulation for the environment, drinking water quality and financial outcomes, and discusses frameworks for monitoring compliance. It also discusses whether privatisation is essential for the delivery of the stated benefits of regulation.

2.1 REGULATORY MODELS AND THE NEED FOR COMPARATIVE ECONOMICS

There are three key forms of approach to economic regulation. These models, along with their advantages and disadvantages are summarised in Table 1.

Model	Rate of return	Incentive regulation such as RPI-X	Regulation by contract
Description	The Regulator allows for a 'fair' return on the capital employed. Used predominantly in the United States	The Regulator accepts that there are existing inefficiencies and aims for relative improvements, predominantly used in privatised sectors	The bid price equals the cost (or the price charged) – used in concessions
Advantages	Controls companies' profits; predictability of revenues Protection of public interest Results in well run but inefficient companies	The incentive for efficiency occurs immediately after price reviews Operating costs and prices go down	Introduces competition *for* the market (although this is not as good as competition *in* the market because competitive forces only operate at the time of award, rather than continuously)
Disadvantages	Poor record for record for promoting efficiency Guaranteed cost recovery means little incentive to lower costs Gold plated asset base	Efficiency is not driven smoothly with distortion in the timing of improvements linked to the review timetable Limited incentive to improve capital spending efficiency	Requires significant post contract monitoring

Table 1: Advantages and disadvantages of models for economic regulation

The 'RPI-X' model has been employed by the regulator for England and Wales - Office of Water Service (Ofwat) – until recently and is currently employed by the Water Industry Commission for Scotland (WICS) the Utility Regulator – Water, for Northern Ireland (hereafter 'the NI Regulator').

Comparative economics has been the cornerstone of Ofwat's regulatory methodologies to date. Ofwat's generic approach has been to compare inputs (financial data) with outputs[1] (non-financial performance data) between companies and use this to:

- Set benchmarks for expectations for performance in terms of outputs for the coming price review period (in the case of England and Wales, five years); and
- Identify the most efficient company or companies and use this to define a 'frontier' company, which others are expected to 'catch-up' to over the coming price review period.

Historically, Ofwat collected detailed cost and performance data annually in the June Return, with a comprehensive cost base of comparative costs forming part of the quinquennial business planning process. However, Ofwat has reduced these requirements and companies now produce a limited set of Key Performance Indicators (KPIs) each year, whilst the cost base has not been used for the current (2014) Periodic Review (PR14). Instead, Ofwat has a series of comparative models which use data from companies' submissions in August 2013 to specifically develop a baseline of spend for each company. Whilst there is therefore some top level comparative data in the public domain, up to date detailed information is no longer available.

[1] Expressed as performance commitments against customer supported outcomes for the current price review

WICS and the NI Regulator rely upon the information published by Ofwat to carry out their regulation; so whilst a single water utility operates in each country, comparative economics are utilised for price setting. Indeed, the most recent Northern Ireland Water draft determination of prices (10th July 2014) refers back to the 2009 Cost Base from Ofwat (Utility Regulator for Water, 2014).

Where there are few companies, the need for comparative economic data can be avoided either by using rate of return regulation, or creating a set of comparators independent of companies. This latter approach was used by the Office of Gas and Electricity Markets (Ofgem) in England and Wales, where a single cost consultant priced all schemes to compare with the utility's estimate. Such an approach is a good way to encourage efficiency whilst allowing industries to develop their nascent data sets for more complex comparative econometrics.

This is an important point of note in the New Zealand context. The practical reality of regulating a single water supplier providing services to all of the country could be challenging. Whilst non-financial performance data could be reasonably benchmarked against New Zealand, Scottish and other international utilities, it would be more difficult to set efficient future prices for the provision of the expected level of service without financial data from a number of different organisations. The model suggested by WaterNZ (undated) of around two to four water supply organisations in the South Island and four to eight in the North Island would provide a good basis for comparative regulation between New Zealand water service providers.

There are wider benefits to the use of comparative approaches. They instigate a form of competitive behaviour which should drive ever better performance within the sector. Ofwat has positively incentivised performance against its customer service measure (the Service Incentive Mechanism, SIM) and companies are extending this with the move to 'Outcomes and Outcome Delivery Incentives' which include rewards for companies already operating at the upper quartile of industry performance to improve further. It is also important to recognise the importance of reputational incentives where staff take pride in their work and their utility's performance. Whilst Ofwat's SIM has a positive and negative financial incentive, companies are motivated to be higher up the industry performance list. All such incentives, be they reputational or financial, encourage innovation and identify leading techniques, ultimately leading to a better, lower cost service for customers.

2.2 A TRIUMVARATE OF REGULATORS

For each of the three UK regulatory regimes there are three regulators – one each for drinking water quality, the environment and economic matters. This model has been relatively static since the privatisation of the England and Wales water and sewerage companies and when operating effectively provides a healthy tension between investment needs and cost constraints.

Advantages	Disadvantages
Clarity of regulatory roles - Investment for drinking water and environmental quality schemes is often costly and can have competing drivers. A benefit of independent regulators is that they have a primary focus on their regulatory objectives. **Clarity of need** - Organisations and the economic regulator can be clear on the need case for drinking water quality and environmental schemes.	**Lack of flexibility** - In some cases conservative quality regulators, be they responsible for drinking water or the environment, can require 'gold plated' or 'old-fashioned' solutions to problems. This can reduce innovation and increase costs. This is particularly the case as these regulators have no duty of care to customers with relation to affordability. **Delay** - Introducing 'gate keepers' to a business planning process can result in delay, as they determine which schemes are required. This is particularly the case if they require a feedback loop of cost from the utility before finalising the scheme list.

Table 2: Advantages and disadvantages of separate economic, environmental and quality regulators

The model outlined above is lacking clear customer representation. Whilst the economic regulator often has a clear directive to ensure value for money for customers, without direct customer involvement or representation in the regulatory process there is a risk that customers' interests are not sufficiently accommodated. In Scotland the recently established Customer Forum has been tasked with '*bringing the customers voice to the table in determining future service levels, investment priorities, and how much* [Scottish Water customers] *should pay for water and waste water services*' (Customer Forum, undated). The resultant structure of water governance is Scotland is shown in Figure 1.

Figure 1: Governance of urban water supply in Scotland

In the New Zealand context this regulatory framework could comprise:

- The Ministry of Health regulating drinking water quality, as at present;
- A centralised economic regulator, similar to the Electricity Authority, or as an arm of this body, as is the case with the Northern Ireland economic regulator; and
- Either a centralised environmental regulator perhaps within the Environmental Protection Authority (EPA) or regional environmental regulators as is the current status quo.

2.3 ENSURING COMPLIANCE

The data asymmetry between the water supplier and the regulator, along with the cost implications of the data provided, have resulted in regulators using auditors to provide it with verification of the data provided. Financial auditors are engaged to audit and verify the historical financial data, which New Zealand Council organisations are already required to do with respect to their public annual accounts.

Technical auditors have also formed an important part of the regulatory process, until 2012 in England and Wales, and ongoing in Northern Ireland and Scotland. The technical auditors are engaged to provide the economic regulator with assurance that the technical data are verified, the methodologies employed to forecast performance and expenditure are appropriate and the capital programme proposed is required and reasonable. These technical auditors are called 'Reporters' in the UK context.

Is all of this audit required and is it a good thing?

Auditing of historical financial data is an accepted practice, with known benefits. Auditing of technical performance data also has benefits – the most significant of which is that it ensures that organisations are reporting in line with 'the rules', enabling meaningful comparisons, vital for any form of comparative regulation.

Providing an economic regulator with insights into the adequacy and reasonableness of future planned expenditure as well as quantifying the expected benefits of such interventions in terms of improvement to performance can also have merit. Whilst some requirements may be straight forward and well backed up in terms of costs and benefits, such as the upgrading of a water treatment works to meet new drinking water standards, using accepted and reliable technology supported by three contractor quotes, other expenditure proposals may not be so straightforward. A proposal to invest in new telemetry, or one to increase the rate of mains renewal, may be more difficult to assess. How extensive are the telemetry requirements and what is an appropriate specification? What is the required rate of mains renewal? What sort of replacement material should be used? These technical details have a significant impact on cost and are more difficult for non-technical assessors to determine. Experienced technical support can cut through these challenges and provide an independent view of the proposals for the regulator's consideration. Additionally, the regulator wants to know that the organisation is investing in the right things. It wants to see that the organisation understands the risks it faces and can identify appropriate mitigations. What are the benefits to customers? Is the company investing now to be more efficient in the longer term?

Whatever decision is made in relation to the scope and scale of audit, clear role definition is required. The regulator needs to outline what its requirements and expected outcomes are from the audit in order to fully benefit from the process. It may be considered desirable to review all information provided, a sample of information or to limit audit to specific schemes or areas of investment. These requirements may also change with time, as the regulatory process evolves, as has been the case in England and Wales where the role of the Reporter has recently been dis-established, and the mature sector deemed to be responsible for ensuring its submissions to the Regulator are appropriately assured..

Where an auditor's duty of care sits should be carefully considered. The Reporter in England and Wales had a dual duty of care to the company and to the regulator, but were selected and engaged by the company. The premise of this was that companies were encouraged to share data and Reporters were encouraged to help the company improve, whilst still meeting Ofwat's objectives. The Drinking Water Inspectorate (DWI) auditors are engaged directly by that organisation, and have a primary duty of care to that organisation. The DWI auditors operate across a range of companies, which provides good visibility into proposed challenges and solutions, and with a consistent understanding of the Regulator's expectations.

In the New Zealand context there are a range of feasible options. Financial audit practices are likely to remain unchanged. Technical audit responsibilities and capabilities could sit within the regulatory organisation, with the Office of the Auditor General (a less likely outcome) or with external consultants, engaged either by the regulator or by the water supply organisation and regulator in tandem.

2.4 REGULATION WITHOUT PRIVATISATION

For many people regulation is synonymous with privatisation. Most New Zealander's see water as a public good and resist a move to a model whereby private organisations are responsible for water supply. So, does ownership matter?

It is generally accepted that public ownership may result in lower levels of performance, typically as the public is less interested in checking utility and managerial performance than private shareholders would be (Boardman AE & Vining AR 1989). However, interest groups may still have the opportunity to influence the allocation of resources or prioritisation of investment (Bennedsen 2000) and research has shown that ownership is not as influential as the market in which the organisation operates (Vogeslang 1990). This conclusion is borne out by the performance of Scottish Water.

Scottish Water is the wholesale water provider in Scotland and is a government owned company (GoCo). This means it is owned 'for the people' by the Scottish Government, who are the single shareholder holding the

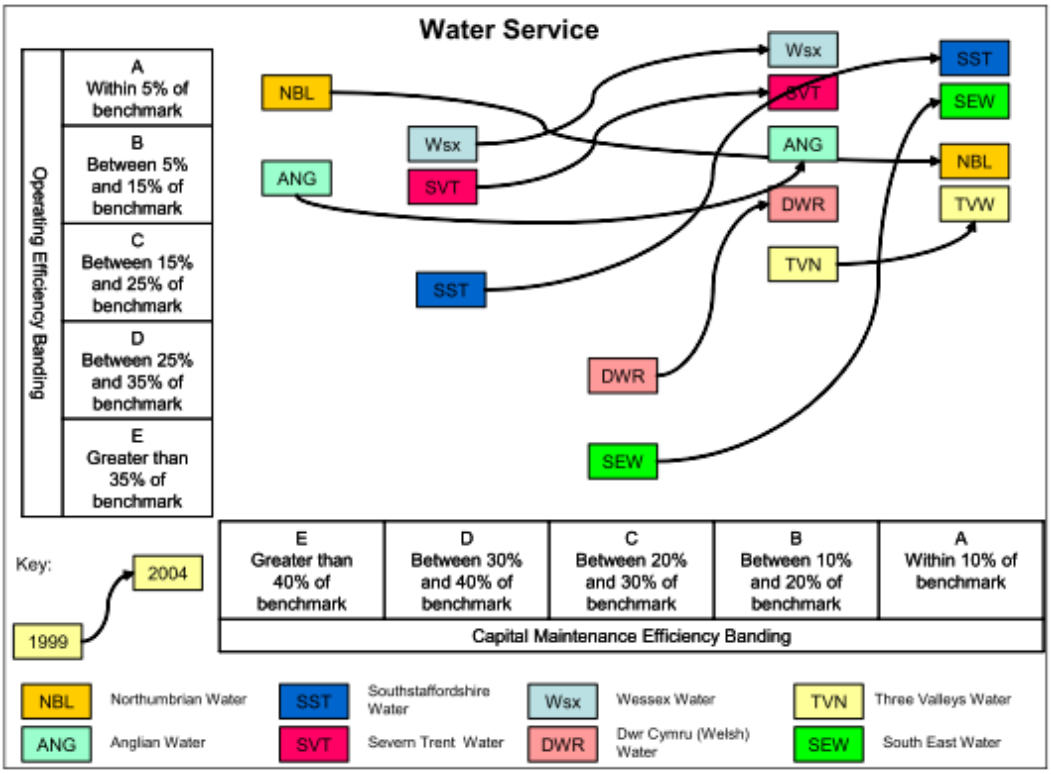
Board to account for the Company's performance. Its retail arm 'Business stream', is also a GoCo, and operates in a competitive market for business customers (Scottish Government undated). The achievements of Scottish Water since its conception in 2002 are discussed further in Section 3.12.

The whole of the England and Wales water sector is privately owned although Welsh Water is an unusual case. Welsh Water was privatised in 1989 along with the other water and sewerage companies of England and Wales (the so-called 'water only companies' have always been privately owned). In 2000 it was purchased by Glas Cymru which (DCC 2014):

- Is a private company with no shareholders;
- Is financed in the capital markets, with no government support;
- Is not allowed to diversify into other activities or geographies; and
- Uses all financial surpluses for the benefit of its customers.

Like the English water companies, Welsh Water has also delivered significant benefits to customers since privatisation. Figure 2 shows the migration towards the efficiency 'frontier' achieved by selected companies over the period 1999 to 2004, which includes the last year of Welsh water's 'private' status and the first four of its 'not for profit' status. Welsh Water (DWR in the Figure) demonstrated significant improvements in both operating and capital maintenance efficiencies over this period, moving closer to the frontier than the privatised company was in 1999.

Figure 2: Movement of English and Welsh companies towards the efficiency frontier, 1999 to 2004



Source: Atkins et al (2005)

These two examples show that successful regulation can exist without privatisation[2].

[2] It should be noted that for the 2014 Draft Determination of prices, Ofwat has concluded there is a performance shortfall for the recent five year asset management period (AMP5) in relation to water infrastructure serviceability.

3 DEMONSTRATED OUTCOMES OF REGULATION

3.1.1 THE IMPORTANCE OF DATA

Good data underpin good decision making. A paucity of data, or data which are unreliable, inaccurate, inconsistent or incomplete, make it difficult to make informed decisions about investment or other futures. The requirement to collect and make use of data is a significant benefit of effective regulation.

A regulatory framework established to motivate improved financial performance requires the collection of information about costs and outcomes. An effective regulator will clearly define the useful information that should be collected by a utility and require its use. This results in a framework to work within, with benefits including:

- The sharing of best practice;
- The ability to meaningfully compare and benchmark performance;
- A consistent and informed approach to decision making across the country; and
- A defensible and transparent methodology, providing customers with greater comfort that their water charges are being used effectively.

Incentivising the collection of data should be a key aim of the early years of regulation. The authors' experience of the development of the English and Welsh water utilities' data reporting over the regulatory period is that there has been a significant improvement in data completeness and reliability. This incentivisation can be achieved using a range of techniques, for example by explicitly rewarding high standards of reporting or best practice planning approaches, or by providing funding for data collection.

Improved data, enabling the adoption of improved planning approaches and hence more effective investment, will result in improved utility performance and better outcomes for customers. The regulator should consider an appropriate level of performance for utilities operating under a range of conditions. Once this level has been reached by a water supplier then the focus of regulation should switch, with the aim of incentivising the water supplier to achieve this level of performance in a more cost effective manner.

Data hold further significance in a regulated environment. There will always be an asymmetry of data between the water supplier – who hold all of the data – and the regulator – which holds the data it is provided by the water supplier. In England and Wales this has resulted in the regulator requesting increasing volumes of information with each price review and in some cases, specific investigations into the provenance of the data provided. In the New Zealand context there may be a point at which the cost of this increased data provision is likely to offset any marginal benefits the information accrues. Managing this will be a future challenge for any regulator.

3.1.2 BENEFITS

There has been improved performance in England, Wales and Scotland and it is still early days to be assessing trends in Northern Ireland (NI 2014)

Ofwat notes (Ofwat undated) that companies in England and Wales have made significant improvements since they were privatised:

- Leakage levels are 35% lower than they were at their peak in the mid-1990s;
- The number of properties at risk of sewer flooding has dropped by 75% over the past decade;
- The number of properties experiencing low pressure is down almost 99% since privatisation;
- There is higher environmental compliance, with 98.6% of bathing waters in England and Wales meeting the required EU standards; and

- Consumers have access to excellent drinking water, with 99.6% compliance with tough EU standards.

This has all been achieved whilst keeping bills lower than they would have been. The Regulator's effect on bills is demonstrated as price determinations have been consistently lower than companies' proposed price increases. It is not possible to ascertain whether Ofwat could have held prices to an even lower level, in the face of tougher drinking water and environmental water quality standards. However, the fact that companies' have chosen to challenge their determinations at the Competition Commission indicates that, for these companies, Ofwat's regulation has certainly reduced expenditure to levels the company considered unreasonable or unachievable.

This has happened because of the Regulators' focus on improving:

- Service to customers and the environment – at each review companies are challenged to perform better than before;

- Efficiency – companies are required to deliver at lower costs; and

- The use of incentives (both financial and reputation) to drive best behaviour.

Companies have responded to these challenges by:

- Getting better data to make sure they understand the links between investment, performance and risk so that they make the right decisions; and

- The development, identification and sharing of good practice leading to adoption of innovative approaches as industry standard.

WICS (2014) states:

"At the price reviews in 2001 and 2005 we challenged Scottish Water to provide value for money by requiring it to deliver its statutory objectives at £2.5 billion less than the company had proposed in its Business Plans. Scottish Water accepted this challenge. As a result of Scottish Water's response to the regulatory framework, average household bills are today around £110 a year lower than they would otherwise have been."

And

"The regulatory framework in Scotland is bringing clear benefits for customers. Average household bills in 2011-12 are around £30 lower than they are in England and Wales. Scottish Water is becoming more efficient - by reducing its running costs by almost 40% from their historic base, Scottish Water now operates as efficiently as the private water and sewerage companies in England and Wales. Customer service is improving too".

Specific stated benefits to customers include a reduction in leakage by 32% and a doubling of customer service levels since 2002.

An important driver for such change has been customers, whose views have moved closer to centre stage in each review process, most obviously with Scottish Water as discussed above. This growing involvement of customers has led to a focus on customer preferences, such as Ofwat's customer-supported-outcomes approach. This has been possible because of the improvements in data and increasing understanding of customers' willingness to pay for changes in performance through improved customer research methods, which has resulted in an economic approach to levels of service. This demonstrable link to customers' preferences and valuation of service is now a key aspect of service provision in the UK which will help drive continued customer legitimacy.

3.1.3 CHALLENGES

One of the biggest issues in any regulatory environment is the asymmetry of information available to the Regulator and the organisation. Such asymmetry can lead to gaming, whereby an organisation takes actions to

take advantage of the regulatory structure in a way that could not be justified if specifically identified and challenged.

In England and Wales, Ofwat has looked to manage this by adopting a 'truth telling' menu approach (CEPA, 2012) where (for PR14) after the Draft Determination of prices has been made 'fast tracked' companies are allowed to choose from the Totex (total expenditure) menu which will impact on their allowed revenues in their Final Determination (Ofwat 2014). Companies will then be rewarded for delivering the plan closest to the regulators baseline, with rewards for outperformance (and additional menu benefits for those that have been fast tracked). Given the relatively recent adoption of menus by regulators (OXERA, 2008), their impact on company behaviour is as yet unquantified[3] and this often complicated area of economic regulation remains unproven in terms of effectiveness.

Ofwat introduced other procedural controls to limit company gaming at PR14, such as not sharing its models until after companies had submitted their plans. Inevitably, this can only be done once, but it has the added challenge that unless data requirements are fully defined, without visibility of modelling approaches companies may submit data inconsistent with the regulators expectations, effectively skewing the Regulator's modelling. The result of this is that regulators may challenge companies based on inappropriate data or modelling, resulting in unachievable efficiency targets

4 CONCLUSIONS

If economic regulation of the urban water sector is pursued in New Zealand there is a wealth of information and knowledge available about what has gone well elsewhere to inform the design of a regulatory system. A clear statement about the purpose or purposes of regulation is required to ensure the overall regulatory framework is appropriate and likely to provide the best outcomes for New Zealanders. Once this is established, those responsible for preparing the regulatory system should ensure they tap into the available knowledge to design a system that is efficient and effective.

This paper has discussed some of the available regulatory models for economic regulation, assurance, and for drinking water and environmental quality. It has discussed benefits and challenges demonstrated by the regulatory regimes in the United Kingdom, and has sought to draw out relevant issues for the New Zealand environment where appropriate.

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