



# The impact of cost of capital reductions on regulated water utilities in England and Wales: an analysis of isomorphism and stakeholder outcomes

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## Abstract

This paper investigates the impacts of price cap regulation—weighted average cost of capital reductions determined by The Water Services Regulation Authority (Ofwat)—on the internal actions of regulated water companies in England and Wales through an application of the theory of institutional isomorphism. More specifically, the paper examines the potential impacts of the most recent 2014 PR14 reduction on (1) potential homogeneity of regulated firm behavior and (2) the likely impact on stakeholders, including shareholders, consumers, and employees of regulated water companies. We hypothesize that firms face isomorphic pressures in the wake of WAAC reductions that influence firm behavior regarding financing, investment decisions, profitability and returns to shareholders, service quality and consumer price, and impact on employees and employment levels. The methods utilized include a targeted analysis of available reported water industry annual reports and financial statements and semi-structured interviews with industry professionals. Interview results reveal that companies will utilize debt to fund investment in the future, with a smaller proportion of retained earnings, and that the PR14 reduction would result in downward pressure regarding water companies' credit ratings. Interviewees stated that the WACC had minimal impact on investment decision-making, but may reduce profitability and returns to shareholders. Regarding service levels and quality, interviewees predict that service levels will remain the same, while consumer prices will decrease or remain the same. Trends towards potential employee reductions were evident through redundancies or the merging of departments.

**Keywords** Cost of capital reductions · Incentive regulation · Institutional isomorphism · Stakeholder analysis · United Kingdom · Water utilities

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## 1 Introduction

This paper investigates the potential impacts of price cap regulation on the actions of regulated water companies in England and Wales through an application of the theory of institutional isomorphism. More specifically, the paper examines the potential impact of the most recent 2014 weighted average cost of capital (WACC) reduction determined by The Water Services Regulation Authority (Ofwat) on (1) potential homogeneity of regulated firm behaviour and (2) the likely impact on stakeholders, including shareholders, consumers, and employees of regulated water companies. We hypothesize that firms face isomorphic pressures in the wake of WAAC reductions that influence firm behaviour regarding financing, investment decisions, profitability and returns to shareholders, service quality and consumer price, and impact on employees and employment levels. We assume that firms have some flexibility to prioritize and make trade-offs between stakeholders, and that they seek to maximise their profitability within the regulatory framework. The methods utilized include a targeted analysis of available water industry annual reports and financial statements and semi-structured interviews with eleven industry professionals.

The governance of public utilities owned by for-profit companies and overseen by government regulators represents an area of ongoing concern (Hall 2001; Lobina and Hall 2007; Araral 2008; Furlong and Bakker 2010; Martinez et al. 2013). Private sector participation is seen by some as a possible remedy to the potential problems of state-operated infrastructure management, namely lack of investment, and poor service coverage, quality, and efficiency (Lobina and Hall 2000; Hall et al. 2005); however, regulation of private involvement in public assets is a complex concept with many contentious elements (Verma et al. 1999; Jamison 2007). Critical to the task of managing utility firms is to balance and incentivize considerations of financial viability, efficiency, affordability, and environmental sustainability (Romano et al. 2017). Price cap regulation is a common method used to regulate industries where a natural monopoly is present, and essentially involves constraining the pricing behaviour of associated firms. Many infrastructure services are managed under such price regulations due to the lack of competition that often prevails in markets supplying public goods, including water utilities (Oum et al. 2004).

While prior research has considered the impact of privatisation more broadly [see Byatt (2013) and Cowan (1993)], the real-world implementation of privatization in utility markets presents new opportunities for research (Vogelsang 2002). Emerging scholarship has attempted to relate different types of ownership structures with economic performance (Monteduro 2014; Peda et al. 2013). Although there are some papers that have investigated both theoretically the effects of price regulation on the cost of capital and capital structure (e.g. Camacho and Menezes (2013)), there is scant literature investigating the relationship between cost of capital reductions and the decisions of regulated firms. Incentive regulation in the United Kingdom has been examined in other sectors, for example the experience of the UK electricity distribution sector under incentive regulation (Jamash and Pollitt 2007) and Heine (2013) examines the impact of external incentive regulation of the electricity and gas markets in the European Union on the internal workings of firms.

Addressing the case of water utilities in England and Wales, this paper provides new insight into the understudied area of how external incentive regulation may shape internal management decisions. Given the lack of previous analysis on the impact of WACC reductions in the UK water industry, empirical analysis in isolation could be problematic. Therefore, this research applies the theoretical framework of institutional isomorphism to explain the behaviour of organizations trending towards homogeneous behaviour (DiMaggio and Powell 1983). This research begins with a targeted analysis of available reported water industry annual reports and financial statements in order to understand behavioural trends relating to how companies react to WACC reductions in terms of debt to capital ratios, capital expenditure, dividend yield, and numbers of employees. Eleven semi-structured interviews with water industry professionals were then conducted.

The results reveal considerable homogenous behaviour exhibited by firms, serving as evidence of isometric pressure within the regulated water industry. Interviewees stated that companies will utilise debt to fund investment in the future, with a smaller proportion of retained earnings, and that the most recent PR 14 WACC reduction (referred to hereafter as “PR14” or “the Reduction”) will result in downward pressure regarding water companies’ credit ratings. Interviewees stated that PR14 had minimal impact on investment decision-making, but that it will reduce profitability and returns to shareholders. Regarding service levels and quality, interviewees predict that service levels will remain the same, while consumer prices will decrease or remain the same. Trends towards potential employee reductions are evident through redundancies or the merging of departments.

## 2 Literature review

Regulation of public utilities varies in form depending on the context. Incentive regulation aims to mimic market incentives and stimulate the managers of public utility firms to utilise their industry knowledge to improve efficiency and reduce costs (Laffont 1994; Vogelsang 2002). The two most common types of price regulation are those based on price, mainly price cap, and those based on cost or returns (rate of return) (Reynaud and Thomas 2013). Price-cap regulation was developed in the 1980s, and was applied to the UK water industry in 1989 (Cowan 2002). In the case of the UK water industry, the regulator, Ofwat, sets the price, investment, and service package that customers receive (Ofwat 2014), with the price reviewed every 5 years. By fixing the price, a water company bears the risk of input prices and shifting demand, and also has the incentive to reduce costs, as the price is not adjusted in response to efficiency on costs (Cowan 2002). Price cap regulation is designed to allow a privately-owned asset to benefit from cost reduction by retaining an incentive for the asset to improve efficiency (Bakker 2005), and it has been adopted by a number of countries including the United Kingdom, Australia, and Denmark (Oum et al. 2004). Lowering the cost of capital is seen as a way of stimulating investment in infrastructure and reducing excessive profits for regulated companies.

The other common type of price regulation is the rate of return approach—as has been applied in Canada, Japan, and the United States—whereby regulatory agencies

fix the rate of return that a utility can achieve on its assets (Alexander and Irwin 1996). The debate surrounding the cost of capital is independent of the regulatory approach and has been contested strongly in both the United States and the United Kingdom (Jenkinson 2006). However, this study concentrates on the application of the cost of capital in England and Wales, and more specifically to the water utilities industry.

The cost of capital is usually calculated as the “average rate of return demanded by investors in the company’s debt and equity” (Brealey 2014, p. 155), accounting for gearing. Because it has material impacts on the success of the regulatory regime (Helm 2009), the cost of capital is claimed as one of the most important factors that regulators and companies are required to estimate (Smithers & Co 2003; Genzoglani 2004; Jenkinson 2006). Cowan (2006) argues that the dominant regulatory problem for the UK water industry is how to determine, recover, and reward investment, with cost of capital being integral to this investment decision-making process. Helm (2008) suggests that the proportionate impact of only a 1% change in cost of capital can overshadow any efficiency gains made in relation to capital or operating expenditure.

## 2.1 Institutional theory and institutional isomorphism

Making decisions under conditions of uncertainty forms a core part of organisational literature. Since the work of Simon (1965), theories have been developed that, notwithstanding organisational members’ attempt to make fully informed (and therefore rational) decisions, suggest decision-making is often undertaken with less than complete information (Galaskiewicz and Wasserman 1989). Furthermore, decision makers often do not have the data necessary to understand how changes will affect their organisation, or if their response to these changes will have the proposed effect (Milliken 1987).

DiMaggio and Powell (1983) first related institutional theory to the question of why organizations have become more homogenous despite heterogeneity in the early stages of an organization’s life cycle (Miles 2012). Institutional theory itself was founded on the proposition that peripheral elements influence firms, which lead to processes that may include compliance and mimicry (DiMaggio and Powell 1983). Many approaches contend that state influence actually generates such forces (Zucker 1987). DiMaggio and Powell (1983) also state that this tendency to homogeneity is not related to seeking efficiency, but rather that “bureaucratization and other forms of organizational change occur as the result of processes that make organizations more similar without necessarily making them more efficient” (p. 147). Furthermore, parties within an organisational field come to resemble each other due to institutional isomorphism (DiMaggio and Powell 1983). This is relevant, as Willman et al. (2003) refer to the UK water companies as an institutional field, where firms may be swayed in their approach to regulation by external forces.

DiMaggio and Powell (1983) use the term institutional isomorphism to explain the behaviour of organisational members in such an environment, describing it as a trend towards homogeneity. Three distinct, although potentially interacting, forms of

isomorphism are identified as follows. It is worth noting the contention by DiMaggio and Powell (1983) that the three types of isomorphism are not mutually exclusive. While they can operate independently, they can also interact.

1. Coercive isomorphism occurs where there is an imbalance of power (Farquharson 2013) resulting from formal and informal pressures; for example, a government mandate (DiMaggio and Powell 1983).
2. Mimetic isomorphism is considered in the context of uncertainty (DiMaggio and Powell 1983), where organisations look to each other to determine how best to act (Farquharson 2013), with imitation of those organisations viewed as having been successful (Milliken 1987). This imitation may be more related to the pursuit of legitimacy via external agencies than striving for efficiency (Donaldson 1995).
3. Normative isomorphism occurs when organisations try to establish legitimacy for a particular profession within their field (DiMaggio and Powell 1983). Managers may rely on norms and standards within the industry, often communicated to decision makers through graduate schools, workshops, training sessions and so on (Milliken 1987). These factors can be codified in law, which leads to coercive and normative isomorphism reinforcing each other (Willman et al. 2003).

## 2.2 Isomorphic pressures in the UK water industry

The isomorphic institutional analysis framework has previously been used in analysing regulated industries in the United Kingdom more generally, in order to understand institutional change in the context of homogeneity (Willman et al. 2003). In this case the authors observe several forms of isometric pressure leading to a trend towards homogeneity within the UK regulated industries, particularly the water and electricity industries (which are both regulated through a price cap). In this research, a “bandwagon effect” was noted in that companies try to play the “regulatory game better than competitors by being the most efficient company” (Willman et al. 2003, p. 77). This results in a situation whereby, as soon as one company develops a relationship with the regulator, other companies feel forced to follow, which is a clear example of mimicry.

Building on this literature, this research investigates how the price review can potentially serve as a coercive pressure towards isomorphism in that it represents a statutory process to which all firms must conform every 5 years. Furthermore, considerations are expanded to different types of pressure that companies may face, and the way that three key groups of stakeholders are impacted, namely shareholders, employees, and consumers. Additionally, the relevant methods that firms use to meet the requirements set forth by the UK authorities are considered. We contend that the technical demands of this process can also lead to normative pressures.

## 2.3 Regulation and the cost of capital: the UK water industry

### 2.3.1 Water utility investments under private ownership

In 1989 the United Kingdom sold ten publicly owned water authorities on the grounds that private management would improve efficiency and fund investments to meet water quality standards. At the same time, the regulatory agency Ofwat was established to oversee ongoing regulation of private water authorities. A central question around the privatisation of the UK water industry is whether it has resulted in significant investments in infrastructure, as it was designed to do. Flotation was carried out at favorable terms to shareholders and most of the debt of the public companies was written off at the time of privatization, which resulted in the government's initial costs exceeding revenues from the sales (a deficit of about £1.3 billion). The new private water companies invested some £17 billion in the 6 years after privatization (meeting government investment targets) compared with the £9.3 billion in investments in the 6 years prior to privatization. However, concerns that investment costs were inflated by the water authorities were raised at the time (van den Berg 1997). According to Ofwat (2013a, b, c), as of 2011 privatisation has resulted in considerable investments, with over £90 billion of capital investment made under private sector management and Ofwat's guidance. Furthermore, leakage is 35% lower than at its peak mid-1990 levels, the risk of houses to sewer flooding has dropped by 75% over the past decade, households experiencing low pressure has been reduced by 99%, and 99.6% of consumers have access to high quality drinking water (Ofwat 2013a). Figure 1 is a map of UK water service providers.

### 2.3.2 General criticisms of water utility regulators

A number of concerns have been raised about the current regulatory regime and Ofwat's effectiveness (van den Berg 1997). At the inception of the regulatory body, a number of checks and balances were established in order to disallow political interference. Ofwat was provided with financial autonomy and independent government agency status, as well as broad discretion in interpreting and implementing rules. However, concerns have been raised about excessive control of water companies potentially eroding the autonomy of management, and about how Ofwat utilizes information to shape policy (van den Berg 1997a). One key concern is that the "yardstick" method of setting price caps—whereby caps are set based on comparative data from similar utilities in the United Kingdom and abroad—is deemed inadequate because each individual water company faces differing conditions and challenges. Information asymmetry is another potential problem; with the regulator requiring access to information over which water companies have control and may manipulate or provide only selectively. To mitigate these challenges, Ofwat has implemented a number of policies including capital expenditure certification, expert engineering appraisals, ongoing considerations for methods of asset valuation and econometric modeling, and consideration for how the price cap interacts with the tariff regime.

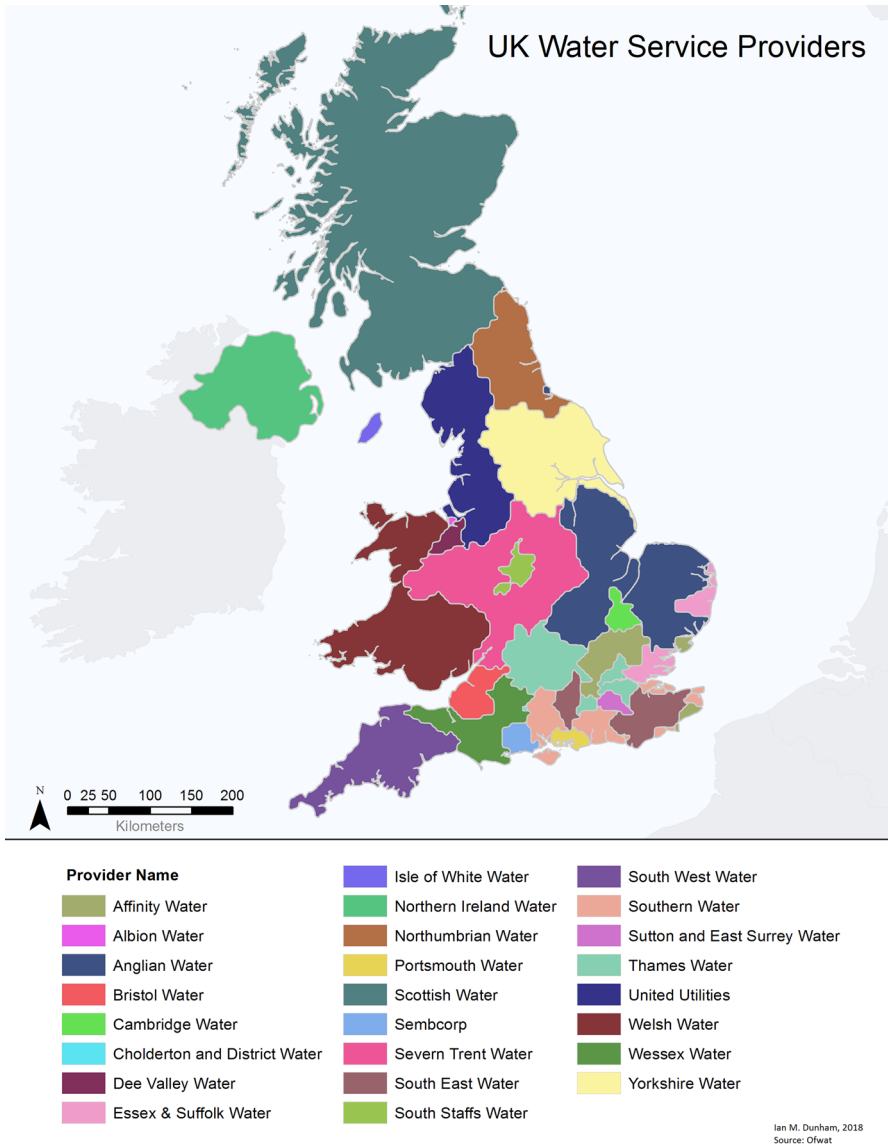


Fig. 1 Map of UK water service providers

Additional questions have emerged about the quality of water resources management under Ofwat’s guidance. The separation of economic and environmental regulatory responsibilities between Ofwat and the National Rivers Authority, respectively, is a noted concern (van den Berg 1997). Incentives to invest in environmental improvements may not be aligned with financial goals, and customers have low willingness to pay for water quality improvements. Another concern is that public costs and benefits are not sufficiently considered by Ofwat because ensuring the financial

viability of the utilities is Ofwat's primary objective (van den Berg 1997). Finally, given the economic and political uncertainty surrounding Brexit, all aspects of UK governance are coming into question, and as Engel and Heine (2017) point out, a potential downside of price cap regulation is that regulators may fail to predict how regulated firms will react during such times of economic volatility.

Problems with benchmark regulation and the complexity of administration aside, an overarching concern has been how to assess how private-sector ownership impacts infrastructure investments, since different ownership structures (i.e. publicly traded companies, private ownership, and parastatals) present different governance structures, and therefore use potentially divergent strategies to meet requirements (Bauer et al. 2008). To be clear, this analysis is not assessing the impacts of privatisation per se, but rather the specific impacts of reductions in WACC associated with PR14, and therefore, our discussion regarding historic investment will only be analysed in regards to the empirical evidence surrounding the reductions.

Moreover, regarding existing methodological approaches applied to addressing the contentious issue of regulatory policy, a number of papers apply agency theory to examine the relationship between regulators and regulated firms' decisions, for example incentives to invest (Martimort 2006) and for financing decisions (Bortolotti et al. 2008). Romano et al. (2017) apply agency theory as a theoretical lens to examine the relationship between corporate governance and efficiency amongst Italian water utilities.

### 2.3.3 Price cap regulation: the role of cost of capital

Price cap regulation—a form of incentive regulation whereby price increase is restricted by a price index—was designed by economist Stephen Littlechild in the 1980s (Littlechild 1986). A study of relevant WACC literature suggests that the price review process is a complex landscape. Within this framework, there are a number of variables that are contentious in their own right, with the WACC arguably the most controversial of all. As Helm (2008) argues, determining the appropriate WACC is a decision of considerable magnitude and it should be one based on thorough applied research. The price cap itself is based on prices in the last year of the previous period and includes: The Retail Price Index (“RPI”) to account for inflation; X, which concerns efficiencies that companies are expected to achieve over the next 5 years; and Q, which reflects the changes in outcomes expected of the companies over the next 5 years (together referred to as RPI-K). Immediately after privatisation, due to prior inadequate investment under state ownership, the Q factor more than offset X, and prices steadily increased (Saal and Parker 2001).

The basic idea behind price cap regulation is that regulators will eventually be in a position to set regulated prices that reflect regulated utility companies' true abilities. However, one issue hampering the ability of regulators has been how to accurately calculate the WACC. For example, accounting for the effects of inflation and the way in which a company's tax liability is remunerated are two pressing concerns. Asset beta and gearing assumptions may also be problematic (Perrin 2017). Regarding the association between incentive regulation and investment, Cambini and Rondi



(2010) show a high sensitivity of a sample of European energy utilities to the levels and changes in WACC.

In the UK water industry, Ofwat is responsible for setting the price, investment, and service package that customers receive as one means for fulfilling its mandate (Ofwat 2014), with price reviews occurring every 5 years. A number of cost of capital reductions in price cap have been implemented, with the most recent being a reduction in the 2014 price review. When setting price controls under the Water Industry Act 1991 (HMSO 1991), Ofwat must set prices that lead to the best chance of the agency achieving its primary duties (Ofwat 2011b). This includes furthering the consumer objective and ensuring that companies can finance their functions, whilst taking inflation into account (i.e. securing reasonable return on their capital). As part of each review, water companies must submit business plans for the upcoming price review period. The challenge of the price cap is that, if the price is set too low, underinvestment and other negative outcomes may occur. If the price cap is set too high, the concern is that companies may earn excess profits at the expense of consumers, while failing to make significant investments in infrastructure.

In the context of cost of capital for PR14, Ofwat reduced the WACC to no higher than 3.85%, which is significantly lower than the 4.3% industry average, as per the business plans submitted by the regulated companies (Ofwat 2013c). Companies were advised to submit edited business plans reflecting this guidance, with final determinations made by Ofwat on 29 September 2014. This determination was made in the shadow of some claiming that the United Kingdom was struggling to meet new demands associated with the European Directive, including the Water Framework Directive and flood-related expenditure (Helm 2009). Such political instruments demand high levels of investment; in fact, it was conservatively estimated that £37 billion of investment was necessary in the water industry between 2010 and 2020 (Helm 2009).

In practical terms, Ofwat determines the revenue required to deliver each company's business plan, followed by adjustments for performance-related rewards or penalties being applied (cumulatively referred to as the revenue requirement) (Ofwat 2009). As part of this process, Ofwat considers the revenue required by each company to (1) finance its day-to-day operating costs; (2) finance its capital investment programme; (3) finance past capital investment through capital charges and the returns the company earns on its capital base; and (4) meet tax liabilities (Ofwat 2011a).

The cost of capital determined at each price review is applied to the regulatory capital value ("RCV"), the sum of which is added to the revenue component required by companies. The RCV represents the capital value of each company for regulatory purposes, incorporating what is deemed necessary for companies to cover average costs of operations and to maintain the fiscal credibility in the market required to attract private investment (Helm 2010). An RCV value was placed upon each company at privatisation and Ofwat adds investment to the RCV at each price review, which is then depreciated. The companies can then recover this return from customers by applying the cost of capital to the RCV (Ofwat 2011b). In 2009, the RCV was £54 billion, with the proportion of customer bills determined by the return on RCV being 26.8%, a considerable factor

in customer bills (Ofwat 2011a). This figure reiterates how imperative it is that the determined cost of capital is fair and illustrates why it is so contentious, given the potential impact it can have on bills (Ofwat 2011a).

It is important to note here that historically, operational expenditure and the Infrastructure Renewals Charge (both referred to as “Opex”) have been funded through company revenue (“fast money”), whilst capital expenditure (“Capex”) has been funded through slow money, being the RCV mechanism described above (Marshall 2013). This is particularly relevant to the issue of Capex bias discussed later in this manuscript.

An analysis by the National Audit Office has suggested that financial engineering by the water companies may have led to negative price consequences for consumers in the past (NAO 2015). First, in order for the companies to maintain investment-grade credit ratings with exhausted balance sheets, customers have had to pay a premium to the WACC, or companies have increased the fast money element of expenditure to maintain credit ratings, effectively making consumers pay for future customer use of infrastructure services, which is an issue the RCV was designed to mitigate (Helm 2008). Second, customers have had to fund the difference between the marginal cost of debt and the WACC, which may have led to excess consumer costs of at least £1 billion per annum (Helm 2008).

There is little in the way of literature concerning the specific impact of WACC reductions on employees within water companies. Research is available concerning the impact of privatisation on employment, but this refers to immediate impacts, not those that arise over the periods long after privatisation. In terms of historic figures, the early post-privatisation period saw employment increase in the water industry; in 1990 employee numbers were 45,863, and by 1993, these numbers had grown to 58,270 (Parker 2003). Since then, employment numbers have fallen significantly, with some claiming that this initial growth was caused by lax regulation around efficiency combined with a lack of competition keeping incentives for efficiency improvements weak (Parker 2003).

The UK water industry price cap has been discussed in detail in the literature, including a detailed analysis of the relevance of WACC to this process and issues specifically associated with the WACC calculation (Alexander and Irwin 1996; Cooper and Currie 1999; Ogden and Watson 1999; Crowther et al. 2001; Saal and Parker 2001; Day 2003; Kessides 2005; Cowan 2006; Riley and Tyson 2006; Erbetta and Cave 2007; Zahariadis 2007; Portela et al. 2011; Armitage 2012; Tapia 2012; Byatt 2013; Reynaud and Thomas 2013; Watch 2013; Decker 2014). However, there is minimal literature that specifically considers the impact of WACC reductions in the context of an analysis of institutional isomorphism and stakeholder outcomes. We assess the possible isomorphic impacts on the water industry of such cost of capital requirements. In particular, we investigate what potentially perverse incentives might arise for corporations trying to maximize profitability following pressures due to cost of capital reductions.

### 3 Methods

The aim of this research is to advance an understanding of the impacts of price cap regulation implemented by Ofwat's PR14 WACC reductions on the internal actions of regulated water companies through an application of the theory of institutional isomorphism.

The methods utilized include a targeted analysis of available water industry annual reports and financial statements, and eleven semi-structured interviews with industry professionals.

This research begins with a targeted document analysis of available reported water industry information, including annual reports and financial statements from four publicly traded water companies in England and Wales: Severn Trent, United Utilities, Pennon Group (South West Water Limited and Bournemouth Water Limited), and Dee Valley Group (Dee Valley Group PLC 2015; Pennon Group 2015; Severn Trent 2015; United Utilities 2015).<sup>1</sup> The reason for examining these four firms is that they are the only UK publicly traded companies with their primary activity being water. Other companies are not comparable either because they are private (meaning not publicly-traded), engage in multiple revenue generating activities beyond drinking water, or have operations in other geographic locations, and therefore were omitted from the analysis. In order to provide an assessment and comparison of firm behaviour before and after PR14, and test the degree that isomorphism is present, a number of variables were gathered, including debt to capital ratios, capital expenditure, dividend yield, and number of employees. The annual reports and financial statements were read in order to understand behavioural trends relating to how water companies have reacted to the past three WACC reductions, such as adjustments made to minimise the impact of the reductions on their shareholder's rate of returns. Evidence of similarities in behaviour may be viewed as evidence of isometric pressure leading to a possible trend towards homogeneity within the UK water industry.<sup>2</sup>

Water utilities in the United Kingdom operate in a complex regulatory environment with a high degree of scrutiny from public officials and the public at large. One effect may be that, with potentially overloaded regulatory requirements, companies may require the assistance of external regulatory consultants who, by taking on multiple clients, may steer individual firms towards standardised industry responses to regulation. Such a demand for regulatory experts has been further reinforced through the creation of norms and best practices in dealing with the regulator, which is an example of normative forces at play. A review of information in the public documents reveals that the regulated companies display a high degree of transparency, with reports that clearly address issues of importance to shareholders (corporate governance and responsibility), employees (workplace environment,

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<sup>1</sup> As of February 15, 2017, Dee Valley Group plc operates as a subsidiary of Severn Trent Water Ltd.

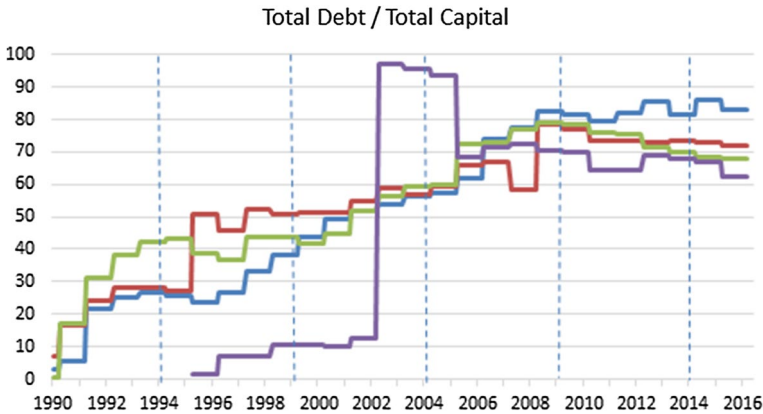
<sup>2</sup> To be clear, this investigation is in no way a condemnation of the operations of UK water utilities, but rather serves to inform the research methodology, and moreover, provide a timely and unique analysis of this under-examined but vital public policy conundrum.

safety, union relations), and consumers (customer service, satisfaction, etc.). Moreover, infrastructure investments, sustainability and environmental performance, and working relationships with regulators are addressed.

The aforementioned considerations in policy efficacy were subsequently used to inform the formulation of our semi-structured interviews and augment the interview results. Semi-structured interviews were conducted in which a set of topics and broad questions were covered, giving the interviewee flexibility in their response (Bryman 2012). Semi structured interviews were chosen because, given the limited literature on the impacts of WACC reductions, it was important for the participants not to feel confined by a rigid question framework. In terms of selecting participants, purposive sampling was employed, which involves the deliberate selection of people based on the information they can provide (Maxwell 2008). The interviewees were not limited to the four publicly-traded companies that are the source of the quantitative data, but rather include employees from the full list of UK water companies. It was particularly useful in this instance to capture the heterogeneity of the stakeholders selected, so that the study conclusions could best represent the full variation of opinions (Maxwell 2008). Groups were categorised within the industry (that for confidentiality reasons cannot be named), with websites and company documentation then searched to identify the potential interviewees with the appropriate level of knowledge required. Eleven interviews were conducted in total between 17 July and 5 August 2014. Where possible, the interviews were conducted in person, and telephone interviews were also used as required. Although not ideal, such an interview alternative is referred to by Bryman (2012) as highly efficient. Anonymity was important for the participants, and all responses in this paper are therefore unattributed.

Once these members were selected and contacted, a participant information sheet was sent to the interviewees for their perusal prior to the interview, as per the guidance from Bryman (2012). Topics covered within the interviews include financing, investment decisions, profitability and returns to shareholders, service quality and consumer price, and impact on employees. The Participant Information Questionnaire is attached as “Appendix”. Interviewees were asked to provide opinions on important financing matters, for example the impact on credit ratings of the Reduction, which is relevant given the impact that a change in rating can incur on profitability. Regarding investment decisions, the concept of the Capex bias is an area addressed, as there has been much conjecture, since privatisation, that water companies have a bias towards capital expenditure as opposed to operating expenditure, resulting in higher prices for consumers (Ofwat 2011a). Returns to shareholders, particularly dividend yield, was also an important area of discussion. Finally, impact on service quality and consumer price, and employment levels and potential changes in skill requirements are of particular interest, as consumers and employees are identified as stakeholder groups in this analysis.

The information sheet also contained information on the topic of this project, the subject areas of the interview, the anticipated duration of the interview, why the participant had been selected, the right of the participant to terminate participation at any time, data storage policies, a complaints procedure, and confirmation of ethics clearance. By and large all questions were asked to all interviewees, and similar



**Fig. 2** Total debt to capital ratios for four listed water companies. Dotted vertical lines represent years of Ofwat price reviews. *Source:* Thomson Reuters Datastream

wording used as appropriate to the interviewees' particular circumstances. Ample freedom was provided for the respondents to answer the question as they saw fit. Given the limited formal research on this topic, it was imperative that respondents felt that they can freely discuss the impacts of the Reduction. All interviews were recorded and transcribed under themes that presented themselves.

## 4 Results

### 4.1 Debt financing

Discussions with the interviewees from private water companies regulated by Ofwat initially centred on sources of financing for water companies, with the majority of companies stating they will be utilising debt to fund investment in the future (with a smaller proportion of retained earnings). This appears to be consistent with the rising trend in total debt to capital ratios for the four listed water companies (see Fig. 2), the so-called 'flight to equity'. These data appear to support the notion that water companies are being incentivised to 'gear up' above the notional gearing ratio assumed by regulators when they set the WACC (Decker 2014), although the trend does show a levelling in recent years.

Credit ratings are also relevant as they affect a company's cost of debt, its financing structure, and even its ability to continue trading (Gray et al. 2006). With this in mind, the participants were asked what the impact of the PR14 reduction might be on credit ratings. All participants stated that the Reduction would result in downward pressure regarding water companies' credit ratings; however, four participants stated it would not actually change the credit rating due to financial "headroom" within their respective capital structures. All participants from the water companies stated that maintaining their respective credit rating was expected to get "tighter". These responses support the prediction made by Moody's credit rating agency that

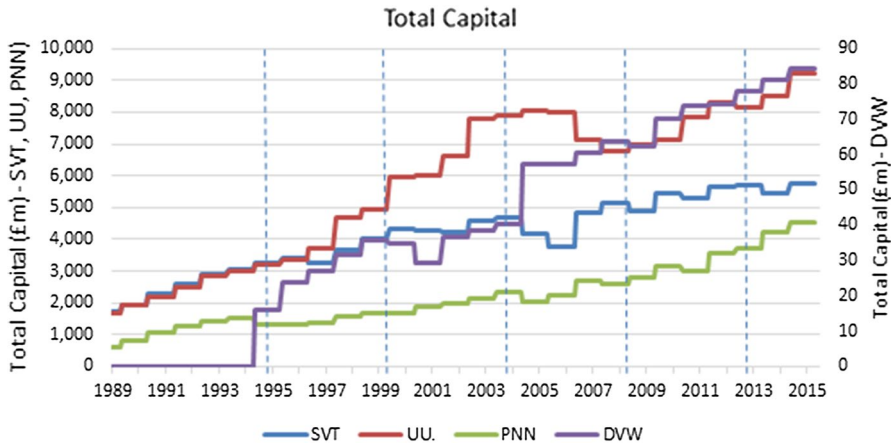
PR14 will lead to lower returns, particularly for highly-g geared companies, which will lead to “negative credit pressure for these companies, unless management and shareholders are able to implement balance-sheet strengthening measures” (Water-briefing 2014).

With this consensus on the downward pressure on credit ratings, participants were then asked whether the PR14 reduction would lead to changes in access to finance. The results were varied. Four of the participants stated clearly that they did not believe PR14 would affect the ability of companies to raise finance, with one specifically stating that the credit agencies did not appear to be “unduly alarmed”. However, one participant emphasised that their company would not be financeable if the Reduction was implemented without a small company premium to the assumed WACC. This could be due to the fact that financing costs (or access to credit) are unlikely to change if the actual credit rating does not change. In regards to the downward pressure on credit ratings discussed above, some participants had more headroom than others, leading to a varying degree of impact materiality.

Regardless, one participant noted that Ofwat had been in regular contact with the credit rating agencies to ensure the impact of PR14 on credit ratings was not in conflict with this duty, which therefore makes it unlikely that Ofwat would ever impose a reduction on water companies leading to a credit downgrade (unless those companies downgraded were viewed as “inefficient”). Despite some conjecture, the underlying theme throughout the interviews was that the effect of the Reduction on raising finance would be minimal. This conclusion is relevant in the context of investment decisions, as the cost of and access to finance has a considerable impact on this process. The cumulative interviewee responses suggest that isomorphism and adherence to industry norms and trends is present.

## 4.2 Investment decision-making

Where a water company can obtain finance at a lower cost than its regulated cost of capital there is an incentive for the company to increase the capital expenditure in its business plan submitted to Ofwat (Cave 2009), a phenomenon referred to as the capital expenditure (Capex) bias. The existence of Capex bias within the industry has been suggested as a mechanism that could lead to inefficient outcomes for consumers. Participants were asked whether PR14 would lead to a change in investment decisions. Two participants made it very clear that the Capex bias was never part of the decision-making process for the companies they represented. Further, that the decision-making within that company “is not based solely on financial outcomes and...that they try to do the right thing”. Two other participants stated that the cost of capital was not a major driver in its Capex decision-making. Rather, their lack of control of incentive project outcomes was the determining factor in the Capex bias. One participant even referred to incentive instruments as “speculative investments” due to the lack of guarantee for their success, and the delay in their occurrence. The example of an agricultural pollution event was provided, where the participant claimed there was no guarantee that the farmer will behave as contractually agreed, or that the aquifer will behave as modelled for pollutant transportation. In



**Fig. 3** Total capital expenditure of four listed water companies over 25-year period of privatisation (1989–2016). Dotted vertical lines represent years of Ofwat price reviews. *Source:* Thomson Reuters Datastream

this pollution example, it was argued that a filter can be installed and the result will be “99.99% guaranteed”. The nature of the water supply service requirements necessitates this level of certainty.

The underlying theme throughout the interviews appeared to be that the WACC had minimal impact on investment decision-making. In addition, most participants mentioned the impact of the newly introduced total expenditure basis (Totex) basis for costs assessment as being more relevant to investment decisions. Ofwat recently made changes to their cost assessment procedures to Totex, with the aim of removing incentives to seek capital-intensive solutions where there may be better alternatives that don’t require large capital investment (such as leakage reduction and demand management) (Hall and Lobina 2004; Ofwat 2013b). Moreover, historically, Opex has been funded through revenue (fast money), and Capex through the RCV (slow money).

An examination of the capital expenditure (CapEx) for each of the four sample companies, as seen in Fig. 3, shows gradual increases in investment throughout the period of privatisation. For the most recent price review we see three companies showed higher levels of investment in 2015 while only one company reported lower levels of investment.

### 4.3 Profitability and returns to shareholders

The most common theme throughout the interviews was the view of participants that the PR14 reduction on private water companies will reduce profitability, with one participant referring to the issue as the most significant impact “without a shadow of a doubt”. In fact, nine of the participants stated that the PR14 reduction would make things “tougher” for companies in terms of profitability. This was explained in a number of ways. One participant claimed the notional capital structure used

by Ofwat to calculate the WACC did not reflect their circumstances, leading to a higher actual WACC<sup>3</sup> and therefore decreased revenue. This issue can be viewed from another perspective where the notional capital structure has led to engineered returns on the WACC. Consequently, it is possible that the losses suffered here by some companies could be outweighed by those who have higher debt levels, and therefore experience lower actual costs of debt than the WACC presumes.

Two participants stated that, as their companies were relatively small and had long-term embedded debt with limited flexibility to refinance, that the cost of debt assumed in PR14 was not a true reflection of their circumstances. In fact, one of the participants said the “cost of refinancing the long-term debt is in excess of the value of the debt itself”. Ultimately, all participants said that the Reduction would, *ceteris paribus*, result in lower profitability regardless of whether the cost of debt was adjusted to market conditions, due to the decreased assumed cost of equity. As such, this lower expected profitability led to nine of the eleven participants concluding that returns to shareholders will be reduced over the coming asset management period (“AMP6”). One participant stated that the projected dividends for AMP6 are “half those that were received in the previous asset management period”.

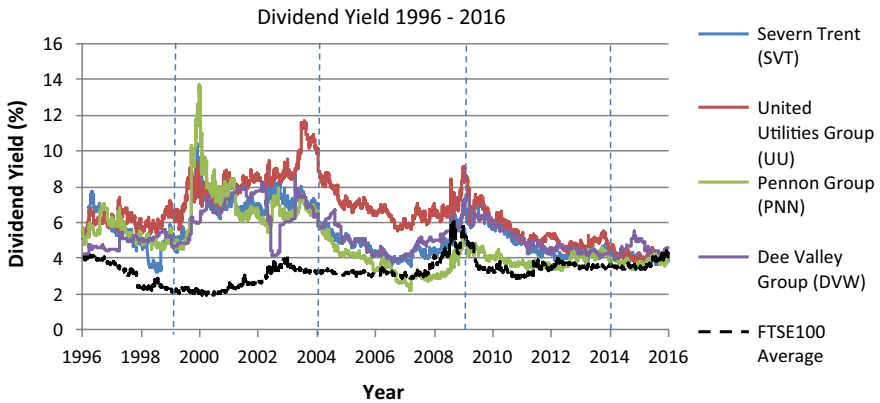
One interviewee stated that this trend is understandable as it “just reflects market conditions”. However, others stated that the reduced cost of equity did not reflect market conditions and shareholders will still demand the maintenance of returns. It is likely that this is technically not the case, as a fall in share prices of listed water company stocks would have been expected. In contrast, share prices have stayed relatively constant since the announcement of PR14, which indicates that the market has accepted the assumed lower cost of equity. However, three participants argued that this reflects the fact that shareholders are expecting higher returns than the assumed cost of equity through efficiencies in the business, such as the Service Incentive Mechanism.<sup>4</sup> The “dividend demand” will likely continue post-reduction, but it will likely be tempered through dividend mimicry in the form of returns to investors being lower than pre-reduction levels.

To assess the evidence for a trend in shareholder returns, the dividend yields for each of the four sample water companies was compared to the FTSE100 over a 20-year period from March 1996 to March 2016 (see Fig. 4). Dividend yields are the dividends paid relative to share price, which account for changes in share offerings that may affect dividends. This measure was chosen based on previous research that suggests that mimetic isomorphic pressures can apply to the payment of dividends by water companies in the industry. For example, Van Caneghem and Aerts (2011) considered intra-industry dividend policies and asserted that in keeping with isomorphic neo-institutional theory, companies may “...look at the dividend policy of other firms for clues as to what constitutes appropriate behaviour” (p. 493). Even when controlling for other dividend theories, they stated that “institutional conformity plays a significant role in firms’

<sup>3</sup> For explanation see PriceWaterhouseCoopers. (2013). “Cost of capital for PR14: Methodological considerations”, accessed from [http://www.ofwat.gov.uk/pricereview/pr14/rpt\\_com201307pwccofc.pdf](http://www.ofwat.gov.uk/pricereview/pr14/rpt_com201307pwccofc.pdf).

<sup>4</sup> See Ofwat (2013b) for more information on the Service Incentive Mechanism.



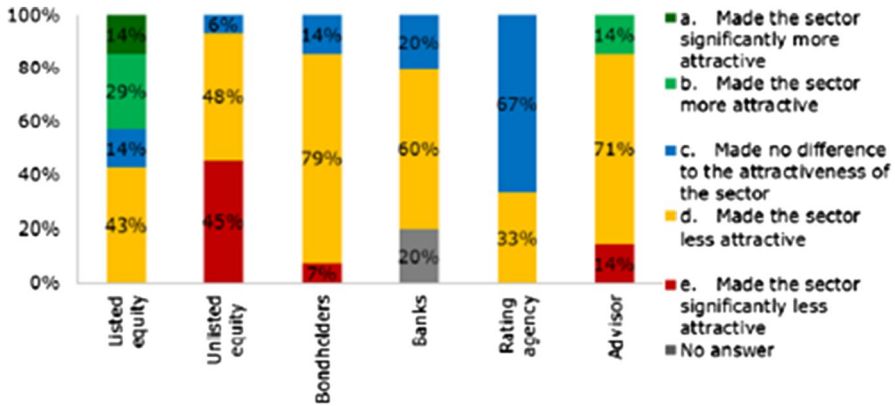


**Fig. 4** Dividend yield of four listed water companies compared with the FTSE100 average dividend yield over 20-year period (1996–2016). Dotted vertical lines represent years of Ofwat price reviews (note that Dee Valley is now owned by Severn Trent—as of February 15, 2017, Dee Valley Group plc operates as a subsidiary of Severn Trent Water Ltd.) *Source:* Thomson Reuters

dividend policy decisions” (p. 509). This appears particularly relevant as other theories, including tax, agency, signalling, pecking-order, or life-cycle theories, have been considered unconvincing in their explanation of the fact that water companies have paid out dividends in excess of cash flows for over 20 years (Armitage 2012). The clear trend towards conformity, as shown in Fig. 4, leads to the conclusion that “institutional conformity” may play a considerable role in shareholder returns, supporting the findings from Van Caneghem and Aerts (2011). The larger volatility in yields prior to PR09 perhaps also serves to validate the contention by Miles (2012) that organisations can exhibit heterogeneous behaviour early in their life cycles.

These results can also be analysed within the findings of the report produced by Indepen (Indepen 2014) which endeavoured to delineate the opinions of investors of the impact of PR14 on investment decisions, with holders of equity in listed and unlisted companies, bond holders, providers of bank debt, rating agencies, and professional advisors. As is evidenced below in Fig. 5, the majority of participants said that the risk and reward guidance (including the PR14 reduction) “had made the sector less attractive or significantly less attractive”.

It could be concluded that the share price stability and the decreased attractiveness of the sector demonstrates an adjustment within the market to the expected cost of equity. Therefore, it is likely that a core impact of the PR14 reduction could be reduced levels of profitability, with this likely being passed on to shareholders in the form of lower returns. The isomorphic pressures are expected to drive a demand for dividends within the industry, but the above analysis indicates that dividend mimicry in this context will take place at lower levels than those prior to PR14.



**Fig. 5** Effect of Ofwat’s “risk and reward guidance” on the attractiveness of investing in the sector. *Source:* Indepen (2014)

#### 4.4 Customers: service and price

In an operating environment with low levels of regulation, one might expect lower levels of profitability to have an impact on the price charged and the service provided to consumers. This could be inferred from the historic theory of shareholder primacy, which contends that a corporation has the core responsibility to maximise profits for its shareholders (Berle 1931), leading to changes in service level or the price charged to consumers. This fiduciary duty could be considered as a form of coercive pressure. Regarding the impact of WACC reduction on the quality of services, a primary concern is that service quality will potentially suffer under price cap regulation (Jamison 2007). However, it is also likely that the coercive pressure imposed by regulation in the areas of price and service quality may be sufficient, particularly given the level of transparency required from companies. This theory is reinforced by the findings below.

##### 4.4.1 Price charged to customers

The relevance of PR14 to the price charged to consumers was demonstrated by a participant who stated the “biggest impact on customer bills is the cost of capital”. The two issues are closely connected and arguments for and against the WACC commonly address prices. All but one of the participants expected prices to stay the same or decrease, with only one proposing a real price increase. There was some contention though about the material impact of the Reduction on prices. Essentially there was a general consensus that customer bills should decrease as a result of the PR14. However, a number of participants noted the complex nature of bills and how WACC changes can be mitigated through other means.

In terms of an explanation, three participants claimed that media focus linking the decrease in the WACC to lower customer bills was erroneous, as changes to the

PAYG ratio (fast money) mitigated downward pressure of PR14 on prices. Moreover, to alleviate lower cash flow due to the Reduction, these participants stated they would increase their PAYG ratios as necessary to maintain credit ratings and would expect others to do the same. Further, another company stated that although bills may decrease in the short term, due to the delayed refurbishment of mains renewals from lower profitability, they envisaged price increases in the future. This result is in direct conflict with the findings above, where various companies claimed they do “the right thing”.

Regardless of the reasons, PR14 is not expected to increase prices charged to consumers. Whether any changes to prices are negative or neutral, it is likely the coercive forces of regulation will lead to a homogenous response by water companies in determining prices. Due to the lack of price equalisation in the industry, this response should be interpreted in the context of calculation of water prices and does not refer to the trend towards homogenous prices.

#### 4.4.2 Service provided to customers

The results of the interviews reveal that all but one participant stated that there would be little or no change in service levels, with answers provided such as “the service will stay as is”, “there are too many consumer protections for a change in service”, “I don’t think customers should see a reduction in service levels”, and “the incentives ensure service levels will be maintained”; with two participants claiming service levels will actually increase during the next asset management period despite the expected price decreases. One participant did mention that, in order to avoid downward pressure on credit ratings if “cost shocks” present themselves, companies could “lower expenditure” and therefore “risk lower service levels” to customers (with the associated penalties). However, this was clarified by the participant stating that “companies don’t want to go there”, as the “water industry has a long-term focus, and damage of this nature would involve a long recovery”. Specifically, decreased service levels would “lead to increased costs due to greater contact with customers and an increased number of complaints”. This correlates with the theme throughout the interviews, expressed earlier, that companies “endeavour to do the right thing”. Of course, given the principal-agent relationship between the Ofwat and the company executives, and the primary goal of maintaining and improving service quality, interviewees may be hesitant to state any negative impacts to service quality.

#### 4.5 Employees

It was noted previously that residual pressure from shareholders to maintain levels of profitability could impact PAYG ratios resulting in decreases in prices less than would be expected. This theme was evident in discussing with participants the impact of the reductions on employee numbers. However, unlike the price and service to be provided to consumers, employment is not regulated under a price cap system (aside from generic employment law), and companies are free to implement

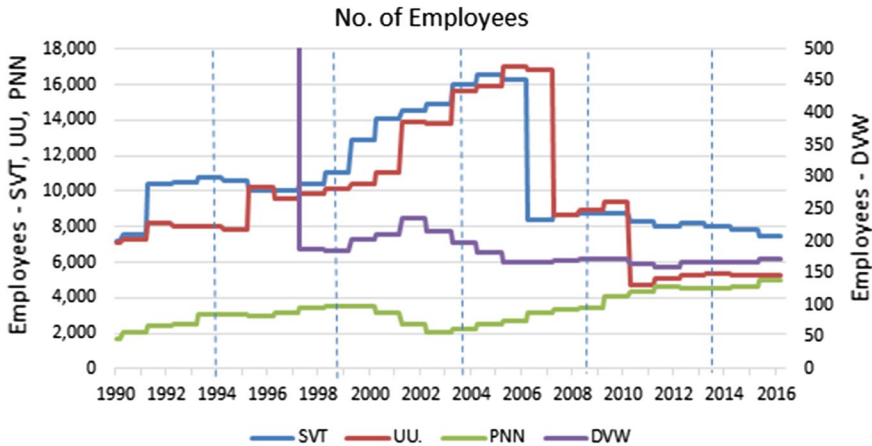
the most appropriate employment framework as they see fit. Nevertheless, four participants were adamant that PR14 would “have no immediate impact on employees”, with the focus being on “output efficiencies”, such as “energy” expenditure.<sup>5</sup> In fact, another participant stated that due to increased proposed investment, employee numbers were predicted to increase. One participant stated that they “stopped doing redundancies as part of the price review process about ten years ago”. Methods through which efficiencies were to be gained that would have neutral to positive impacts on employees includes, *inter alia*, “the improving of scheduling to avoid wasted travel”; “doing things right the first time”; increased insourcing leading to a “more engaged and skilled staff”; working closely with contractors (who were referred to as “partners” within the business and were incentivised for performance); and improved procurement approaches.

Still, other participants held a more negative outlook in regards to the impact of PR14 on employees, due to the focus on efficiencies to enhance profitability. Three of the participants stated that the Reduction could lead to reorganisation within the business, resulting in “redundancies, or the merging of departments”, with one stating that there will be a discussion at board level as to “head count within the company”. Further responses included the replacement of “staff with I.T. in terms of billing”, “decreasing pay levels” (with managers in the company not receiving pay increases in the previous year). One participant, who had previously said that there would be no effect on employees, proceeded to mention that the company had an “ageing workforce, and retirements were expected in the near future”; one could perhaps infer a reduction in this workforce might have resulted had a reduction through ageing not been on the horizon. It is noted that corporate executives may be hesitant to answer candidly when asked about the sensitive issue of potential workforce reductions. Therefore, the supplementary comparative assessment of information from annual reports that follows is intended to augment the analysis.

The number of employees reported for each of our four sample water companies is presented in Fig. 6. After increases in employment following privatisation, three companies recorded significant layoffs over the second half of the period, generally during the mid-term of a price review. Of particular interest is the timing of the changes which appear to be triggered around 2–3 years after each review. Now, employee numbers may vary significantly due to circumstances other than price cap regulation, including mergers and acquisitions, business cycles, automation, and the changing needs of companies. Notwithstanding this fact, the coercive pressure imposed through profit maximisation appears to be a force for change if we take into account the lagged reaction to regulation. If service and price are difficult to materially alter, employees could be asked to bear a considerable portion of the burden of maintaining investor returns. This is further emphasised by the comment made by two participants that generally every 5 years at the conclusion of the price review, there are redundancies, with one participant admitting the significant cuts its

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<sup>5</sup> For example, United Utilities entering into contracts with Open Energi to reduce energy demands during peak periods to reduce costs. <http://uk.reuters.com/article/uk-britain-electricity-aggregators-idUKKCN0YE0GU>.



**Fig. 6** Number of employees in four listed water companies over 25-year period of privatisation (1989–2016). Dotted vertical lines represent years of Ofwat price reviews. *Source:* Thomson Reuters Datastream

workforce after the 1999 price review were due to shareholders demanding returns from management.

Such dramatic changes in employee numbers have raised concerns within HM Treasury regarding the cyclicity in the water sector that they have associated with such impacts of the price regulation. That the productivity of employees are being reduced by the environment of uncertainty associated with the 5 year cycle and with the job losses that are inevitably followed by training of new staff (HM Treasury 2012). This effect appears in evidence in different forms for the companies shown in Fig. 6 but most clearly in the steady increases in employee numbers that follow any significant cuts.

## 5 Discussion

This study advances an understanding of the impacts of cost of capital restrictions in the regulation of natural monopolies through an application of the theory of institutional isomorphism. Regarding the relevant stakeholders, the impact on shareholders, consumers, and employees of water companies are considered. With regards to shareholders, the results clearly demonstrate evidence of isomorphism in the context of how companies anticipate responding to PR14. This study confirmed the demand for dividends by shareholders in the water industry, and the isomorphic pressure of dividend policies intra-industry. This “dividend demand” will still be apparent post-Reduction, but it will likely be tempered through dividend mimicry in the form of returns to investors being lower than pre-Reduction levels. However, as the analysis states, there will still be pressure from shareholders (which is essentially normative now within the industry) to maintain returns.

Regarding consumers, the nature of the UK water industry dictates that strong regulatory coercive pressures must apply to protect the service levels provided to consumers and the price charged from the threat of profit maximisation and efficiencies. The results herein suggest that this regulatory pressure outweighs the coercive pressure of profit maximisation and the normative demand for dividends faced by water companies.

Employees, however, are not protected through the price cap regulatory regime, and it is foreseeable that the coercive nature of fiduciary duty (in the absence of regulatory coercive pressure) could lead to efficiency gains at their expense. In fact, the majority of efficiencies discussed by participants involved the sacrifice of employees in some way. However, it is difficult to imagine that efficiency improvements obtained through reduced employment levels would not affect service levels in the long term. For example, one participant stated that employment costs could be saved by conducting one single meter reading per year, rather than two. Notwithstanding minimal short-term impacts, this will likely lead to increased costs and/or decreased service levels in the long term due to the reduced awareness of leakage levels leading to inefficiencies within the system, thus supporting concerns raised by Jamison (2007).

Furthermore, decreased service levels could negatively impact the profitability and returns to shareholders through reduced performance rewards via the Service Incentive Mechanism.<sup>6</sup> Concerns have also been expressed as to whether such responses to price reviews are a major cause of cyclicity in productivity due to the uncertain environment this creates and the costs when companies must eventually retrain new staff (HM Treasury 2012). It is notable that the interview results reveal that considerable heterogeneity in the capital structure and specific circumstances that apply to the operation of each individual company. This could be due to the fact that each company operates within a geographical region, which includes unique hydrological and demographic characteristics. With this in mind, the homogenous behaviour exhibited by these companies becomes more relevant in the context of verifying the existence of isomorphism within the industry.

Calculating an appropriate WACC for a regulated utility industry is a complex process that is still open for considerable debate. The PR14 reduction provided a new opportunity to consider the impacts of cost of capital restrictions on stakeholders in this regulated industry. The UK water industry is clarified as a natural monopoly, with the potential for multiple market failures. This provides justification for intervention by the state to achieve more Pareto efficient outcomes, but may also result in unintended consequences through non-market failure (Wolf 1979). Intervention was analysed in the context of price-cap regulation within the UK water industry, and the importance of cost of capital regulation to this framework is demonstrated.

In terms of contributions to the existing literature, the real-world implementation of privatization in utility markets presents new opportunities for research (Vogelsang 2002). This study provides further weight to the contentions by Armitage (2012) and Willman et al. (2003) of the presence of isomorphic pressures in regulated utility

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<sup>6</sup> See Ofwat (2013b) for more information on the Service Incentive Mechanism.

industries. Addressing the case of water utilities, this paper provides insight into the understudied area of the relationship between cost of capital reductions and the decisions of regulated firms in England and Wales. We investigate what incentives might arise for water companies trying to maximize profitability following pressures due to cost of capital reductions and consider the potential outcomes to various stakeholder groups with an application of the theoretical framework of institutional isomorphism as a means of organising the results from our empirical analysis and interviews. Providing subsequent price reviews impose similar relative restraints on the WACC, it is arguable that, due to the pervading coercive regulatory pressure imposed on water companies through PR14, returns to shareholders as well as possible employee reductions will be the factors most affected by the Reduction in the long term.

There are a number of limitations to this research worthy of note. This study is limited by the restrictions related to the use of telephone interviews. Specifically, the lack of ability to observe body language hindered the authors' ability to sense reactions such as discomfort or confusion (Biggam 2011). However, the impact was minimal due to the fact the interviews were anonymous, which allowed people to feel comfortable that anything said would not be attributable. Further, the issue of bias is always potentially problematic when depending on interviews (Biggam 2011), with answers only being relevant in a particular context. This was dealt with by anonymizing interviewees and by having a cross-section of participants that reflects the stakeholders involved as relevant to the objectives. Moreover, secondary data was analysed (business plans and government documentation) to compare against interview answers to provide further perspective. Furthermore, the qualitative interview results are not representative of all water companies in the UK water industry, but instead reflect the views of the selected participants. Even though the responses are anonymous, company employees may feel pressure to filter their answer because they are participating in a formal study that may ultimately be used to influence policies affecting their industry in the future. An additional limitation of note is item is that the scope of this paper limited the number of stakeholder groups that are considered. As such, the environment as a key stakeholder in the water industry was unfortunately omitted for this reason.

Ultimately, regulation of monopolies is a complex framework, which has a multitude of variables that vary depending on circumstances. The Reduction is a factor within the wider price cap framework that could not only lead to different results in future price reviews, but also in different industries and locations. In fact, it is arguable that all price reviews will involve unique variables, so the results of this project should be read with that in mind. Regardless, there will be broader trends that at the very least will provide a starting point for future research in this area. We find institutional isomorphism to be a valuable theoretical approach, and that the methods utilized in this study are effective in addressing our hypothesis.

## 6 Conclusion

This paper investigates the potential impacts of the most recent 2014 WACC reduction on (1) potential homogeneity of regulated firm behaviour and (2) the likely impact on stakeholders, including shareholders, consumers, and employees of

regulated water companies in England and Wales through an application of the theory of institutional isomorphism. We hypothesize that firms face isomorphic pressures in the wake of WAAC reductions that influence firm behaviour regarding financing, investment decisions, profitability and returns to shareholders, service quality and consumer price, and impact on employees and employment levels. The results of the analysis of financial statements and semi-structured interviews demonstrate evidence of isomorphism in the context of how companies anticipate responding to such WACC adjustments.

As this analysis suggests, there will be pressure from shareholders to maintain returns, as well as pressure from regulators to maintain transparency and provide low cost and high-quality service delivery. Regarding debt financing, the majority of companies have stated that they will be utilising debt to fund investment in the future, with a smaller proportion of retained earnings. All eleven participants stated that PR14 would result in downward pressure regarding water companies' credit ratings; however, four participants stated it would not actually change the credit rating. The underlying theme throughout the interviews appeared to be that the WACC had minimal impact on investment decision-making. In terms of profitability and returns to shareholders, the most common theme throughout the interviews was the view of participants that PR14 will reduce profitability. Nine of the eleven participants concluded that returns to shareholders will be reduced. The answers to the questions on service and price reveal that ten out of eleven participants stated that there would be little or no change in service levels. Ten participants expected prices to stay the same or decrease, with only one proposing a real price increase. Addressing employees as a primary stakeholder group, three of the participants stated that the PR14 reduction could lead to reorganisation resulting in redundancies or the merging of departments.

This study is a critical first attempt to better understand the interplay between price cap regulation and firm behaviour in the context of UK water regulation. In terms of future research, further investigation is warranted around whether the normative and coercive pressures outlined in this study are pushing water companies towards greater homogeneity and whether recent steps taken by Ofwat might harness such forces to reduce the unintended consequences of regulation (Ofwat 2012). The fields of isomorphism and price-cap regulation would both benefit from an historical assessment of the impacts of previous reductions in WACC, as well as analysis of the impacts of PR14 over a longer timeframe in the future. This would further empirically verify isomorphism, particularly in the context of regulated industries as an institutional field; and, the regulation of natural monopolies would benefit from analysis of the impacts of cost of capital changes, a factor acknowledged as crucial to the success of a regulatory regime. Furthermore, future analysis may take into account a wider range of stakeholders, including the environment. Although beyond the scope of this study, further research could also compare the practices of public companies to those of their privatized counterparts, which may reveal divergent strategies that are implemented to meet overarching requirements (Bauer et al. 2008).



## 7 Data Sources

Pennon Group, Severn Trent, United Utilities, Dee Valley Group PLC. Historical Equity Information. Retrieved from Thomson Reuters Datastream (2015/2016).

## Appendix: Interview questions

### Introduction

- How will the reduction affect your water company?
- What is the biggest impact from the reduction on your water company? Why?
- What other possible impacts are there?

### Finance

- Where do you get your funding for investment (equity, debt (and from where (internal/external)?)
- Will the reduction affect the credit rating of your company? If so, how and why?
- Will your ability to obtain finance be affected?

### Investment balance

- If the ability to obtain funding will change, what might be the change in the balance of investment between infrastructure and incentive instruments?
- Will there be more focus on operations that don't involve capital expenditure?
- What might be the impact on decisions as to whether to improve operations rather than capital expenditure?

### Profitability

- What is the anticipated impact of the reduction on profitability of the company? Why?
- What is the anticipated impact on returns to shareholders?

### Service and price

- With the cap on tariffs, and fixed service delivery requirements, how do the above issues affect the future price charged, and service provided to consumers?
- How does the regulatory regime affect your ability to alter the service provided and price charged?

## Employees

- Will there be any impact be on employees?
- Will there be the impact on skill requirements in regards to improved operations as opposed to capital expenditure?

Please note, not all questions will be asked to all interviewees. Selection and framing of the questions will be based on relevancy to interviewee.

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