Many Happy Returns?

The Consumer Impact of Price Controls in Regulated Networks

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Edited by Richard Hall

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Written by Simon Moore

Executive summary

Consumers are charged millions of pounds each year in unnecessary payments to big infrastructure firms. These costs are hidden in water and energy bills, or factored into the prices of tickets for travel. The extent of overpayment has increased since the financial crisis as regulators, who set costs and charges to consumers, have not adjusted sufficiently to the change in financial circumstances. As regulators contemplate future price controls, or begin work on mid-term reviews for those already underway, they must take a hard look at the profitability of infrastructure providers.

These licensed monopolies face no competitive pressure in their core business. The security of their market share is guaranteed by regulation. Yet despite the inherently low-risk nature of their business, they have been able to make generous returns – frequently double-digit returns, in the case of energy. At a time when the cost of living has become a prominent public concern, these profit margins far exceed what is needed to ensure the continued provision of essential services. Network charges have contributed to rising utility bills in recent years. The average household pays around £390 per year for their water bills, and around £300 for gas and electricity networks as part of their energy bills (22% of the average dual fuel bill). The energy networks will bring in revenues of about £71 billion of spending over the next eight years.

In regulated industries, seemingly small decisions by the regulator can have significant consequences for consumers. Changing a variable in a calculation by 0.1 of a percentage point can mean tens or hundreds of millions of pounds being added to or removed from consumers' bills – for example, a 0.1 percentage point change in the risk-free rate used to calculate returns in water and energy would alter bills by £200 million per year. This report investigates the rates of return received by different regulated monopolies. It finds that regulators have struggled to contend with seismic changes in the financial marketplace, and that, when faced with uncertainty, they have tended to favour companies over consumers in their decisions.

The energy regulator, Ofgem, says it regards 'an appropriately calibrated price control package as one in which the reward available for the best-performing companies provides the potential for double-digit returns while the downside is at or below the cost of debt'. Yet, double-digit returns on equity have been commonplace in the energy sector and examples of the downside mentioned are few and far between. Exceptional performance is not being rewarded if everyone gets the prize. Run-of-the-mill levels of competence are being rewarded as if they were extraordinary.

Regulators have promoted settlements to the public by spotlighting a baseline return that is far below actual returns, leaving a large gap between what the public is told and what companies ultimately receive. Ofgem has recently introduced new regulatory arrangements, but early indications suggest this pattern is likely to be repeated. Ofgem head, Dermot Nolan, told Parliament in late 2014 that returns in the first year of the new gas and electricity transmission price controls were "somewhat higher than expected".

Further evidence that companies are being over-rewarded can be found in market valuations of regulated companies. Share prices and recent sales of companies show that the market values utilities higher than the value attributed to them by their regulators, suggesting that the market believes that companies have highly favourable regulatory settlements at present and in the foreseeable future.

When regulators set revenues for regulated companies, they do so with reference to a formula for calculating their financing costs, known as the Weighted Average Cost of Capital, or WACC. Regulators have struggled to keep key components of the WACC in line with the real world, as the financial crisis has sharply revised expectations about risk and return for investors. Estimates made by regulators for key variables, including the risk-free rate (how much return an investor should need to invest in a theoretical product that carries no risk) and the debt premium (what is needed in excess of the risk-free rate to be a debt investor in a particular sector) have proven to be much higher than prevailing market rates, making investing in regulated utilities more attractive for investors but driving up charges for consumers.

Government-backed debts (gilts) often compete with utilities as a destination for investors looking for a secure, reliable investment product. Explaining recent decisions, Ofwat and Ofgem were worried that recovering gilt yields would pull investment away from utilities. Regulators were reluctant to set their risk-free rate at levels as low as those indicated by recent gilt yields, in case gilts picked back up and investment deserted the utilities. But as a short slump has turned into a long one, regulators are only edging their determinations down towards the levels indicated by gilt yields.

Furthermore, it is not as if regulators are just tipping the balance in the companies' direction. By comparing the amount of time after risk-free rates were set by regulators with observed gilt yields, we found that the rates set by regulators were only within the market range of gilt yields on 2 per cent of trading days. In other words, 98 per cent of the time, companies were being given too much money and consumers were picking up the tab.

These key indicators show that regulators should be tipping the balance between company and consumer interests back towards consumers. Regulators must base their judgements more on the world as it is and less on the world as it used to be.

Recommendation 1: To return the regulatory settlements to the value-neutral balance implied from the outset, regulatory returns should be recalibrated, with this evidence taken into account to lower the cost of equity side of the WACC in future regulatory decisions. Regulators should be striving for settlements in which only outperformance gets rewarded, not any performance. Incentives need to be challenging, and the risk of penalties must also be real rather than theoretical. The National Audit Office should carry out a value-for-money study of the price control process and ensure that future price controls provide the best value for bill payers.

The record of professional regulatory forecasters in assessing real risk-free rates is poor. However, indexation of key variables can reduce the cost to consumers from overestimations of the risk-free rate and cost of debt, without risking damaging underinvestment in utilities. It is possible to structure price controls in such a way that relevant parts of the WACC (the risk-free rate, or the combined cost of debt) are indexed against real-world benchmarks.

Ofgem has introduced cost of debt indexation, albeit with a lagging index that is perhaps too long term in its 20-year span. Ofwat should follow its lead, and adopt indexed cost of debt in future settlements. Now that firms have had the opportunity to get used to indexation, both regulators should aim to shorten the time encompassed by the index in future settlements to period of around five years.

Presently, consumers are required to pay an effective insurance premium, which is reclaimed only in the case of rapid rises in interest rates. This premium is expensive, and it has proven itself to be particularly poor value over a period of history where interest rates have fallen steadily. Indexation offers consumers all the benefits of that policy (that is, essential utilities are protected against financeability problems that could otherwise cause them to fail), but at a much lower price tag. Indexing the risk-free rate and/or debt premium components of the WACC should, in the near term, reduce the amount consumers need to pay to utilities' financiers. However, given how low rates currently are, at some point they will rise (since there is essentially no scope left to fall further). At that point, consumer costs would begin to track up, but crucially, this should be exactly in line with market conditions, rather than depending on unreliable expert estimates. When costs rise, it will be by no more than they have to.

It is also hard to be confident, in a hypothetical case without indexation where regulators had set a risk-free rate or cost of debt that was below prevailing market trends, that companies would not be able to demand a review to force up those WACC components. Without confidence that regulators would hold their nerve with a consumer-friendly settlement, indexation offers the next best deal for consumers.

Recommendation 2: Elements of the WACC that have real-world corollaries, most notably the cost of debt and the risk-free rate, should be indexed in all future price controls.

Incentives

New price controls have taken greater account of customer service outputs in deciding how much to reward companies. It is good for consumers when companies are more attentive to their needs, and incentivising better performance is an appealing feature of Ofgem's 'Revenue = Incentives + Innovation + Inputs' (RIIO) and Ofwat's RIIO-like price controls. However, it is not good if consumers are paying companies to do things they would have done anyway, or are paying a lot for things that are cheap for the utilities to do. Incentive programmes should, at the very minimum, abide by these six principles:

1. They should encourage companies to take decisions that are in the long-term interests of their customers: they should be **beneficial**.
2. They should encourage firms to do things they would not have done otherwise: they should be **additional**.
3. They should reward firms with the amount of money required to get them to change their behaviour, but no more than that: they should offer **value for money**.
4. They should encourage improvements in performance – and not reward standing still. So improvements made by firms in one price control should not be further rewarded in the next. Those improvements should be treated as standard actions going forward: they should be **bankable**.
5. It must be possible for regulators and third parties to assess performance against clear and objective criteria: they must be **measurable**.
6. Companies should provide regular updates on their progress towards meeting their incentives measures, to enable appropriate scrutiny from the regulator and third parties, and release of this information and its accessibility should be a criterion on which performance is assessed: there should be **regular reporting**.

There will always be a trade-off between encouraging better performance and avoiding overpaying for it. However, there are some steps that should be considered by regulators to better ensure the implementation of the six principles.

In sectors with multiple companies in different regions (electricity and gas distribution, and water) regulators could structure incentives around relative, rather than absolute, measures of performance. If a fair indicator could be found for a particular aspect of customer performance, the best company, or a defined and challenging fraction such as the top quartile of companies, could be given tiered rewards while other companies would not be. By adding a competitive, almost prize-driven, element to performance incentives, regulators could drive greater

emphasis by firms on customer performance. Since they would not have to clear a pre-defined hurdle, but rather perform better than their peers, companies would be unable to be complacent about performance.

In its 2014 price review, Ofwat used upper quartile performance in 2013 as a benchmark for setting outcome incentives and penalties. However, we understand this benchmark to be static rather than dynamic. It may be possible for everybody to outperform it, and what look like challenging targets now may come to seem quite dated by 2019.

A next step for future price control settlements would be to consider whether such benchmarks should become dynamic, in order to ensure stronger incentives for continuous improvement throughout the price control period. This may also mitigate the perception, strongly reinforced by the data presented in this report, that even the worst performing companies in regulated sectors have tended to be rewarded for outperforming benchmarks. In an era of unprecedented scrutiny of cost-of-living issues, this perception could create genuine question marks over the sustainability of the regulatory framework.

Recommendation 3: Ofwat and Ofgem should investigate whether a dynamic benchmarking system is suitable for ensuring that all companies are held to the standards set by best performers, and that gains made in previous price controls are banked in future ones.

This approach becomes difficult, though, if incentive measures become too fragmented. With companies being encouraged to decide, in partnership with regulators, a bespoke set of measures against which they are to be judged, there is a risk that comparability between networks will erode and may eventually disappear. Complexity also increases the burden for regulatory and third party oversight, ultimately risking reduced transparency. Without common metrics of performance, the 'league table' approach to regulatory incentives becomes impossible.

Recommendation 4: Ofwat and Ofgem must ensure that the move to tailored incentives does not come at the cost of effective scrutiny of activities and does not limit options for introducing more elements of intra-sector competition in future price controls.

The UK approach to price regulation is intrinsically incentive based – that is, it incentivises outperformance against the control. In principle, the methodology used by Ofwat and Ofgem is supposed to create a symmetrical balance of rewards for good performance and penalties for poor performance. However, in practice, this symmetry seems largely absent. Most companies outperform the targeted return in water, while outperformance is almost uniform in energy. This suggests the balance of incentives and penalties is skewed towards the former, quite fundamentally so in the case of energy. Some incentives go further, making this

explicit. For example, the losses incentive under the new price control for electricity distribution networks (RIIO-ED1) gives the networks access to a £32 million upside should they perform well, but they are only exposed to a 'reputational' downside if they perform badly. This produces an asymmetry in the price settlement where there is upside but no downside for the business – further reducing the already-minimal risk they face as a monopoly. Indeed, it is far from clear what deterrent effect reputational incentives pose for a monopoly business that cannot lose market share. The principle of symmetrical rewards and penalties under incentive programmes is sound, but in practice that symmetry simply does not exist.

Regulators must also take care to ensure that, as incentive-based price controls become more common, they do not undermine the initial policy logic behind monopoly regulation. Part of the 'social contract' that makes regulation desirable is that, in exchange for guaranteed revenues and protections that other companies in conventional markets do not have, regulated monopolies act as they would if they faced genuine competition. Better performance for customers is part of that replication of competitive behaviour. It should not come to be seen as an expensive luxury to be bought on top of the standard components of the price controls; it is an integral part of it. While the trend for specifying and targeting rewards for particular improvements to customer service is helpful, we must avoid a situation where more and more of the utilities' actions have to be deliberately sought and bought by the regulator.

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Chapter 1: Introduction

Consumers are charged millions of pounds each year in unnecessary payments to big infrastructure firms. These costs are hidden in water and energy bills, or factored into the prices of tickets for travel. The extent of overpayment has increased since the financial crisis as regulators, who set costs and charges to consumers, have not adjusted sufficiently to the change in financial circumstances. As regulators contemplate future price controls, or begin work on mid-term reviews for those already underway, they must take a hard look at the profitability of infrastructure providers.

These licensed monopolies face no competitive pressure in their core business. The security of their market share is guaranteed by regulation. Yet despite the inherently low-risk nature of their business, they have been able to make generous returns – frequently double-digit returns, in the case of energy. At a time when the cost of living has become a prominent public concern, these profit margins far exceed what is needed to ensure the continued provision of essential services. Network charges have contributed to rising utility bills in recent years. The average household pays around £385 per year for their water bills, and around £300 for gas and electricity networks as part of their energy bills (22% of the average dual fuel bill).[1] The energy networks will bring in revenues of about £71 billion over the next eight years.[2]

In regulated industries, seemingly small decisions by the regulator can have significant consequences for consumers. Changing a variable in a calculation by 0.1 of a percentage point can mean tens or hundreds of millions of pounds being added to or removed from consumers' bills – for example, a 0.1 percentage point change in the risk-free rate used to calculate returns in water and energy would change bills by £200 million per year.

Since privatisation, a substantial volume of UK infrastructure, including electricity and gas networks, water utilities and transport infrastructure (including railways and airports) has been financed using regulatory price controls. These price

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[1] Ofwat. (2015) *Forecast Average Household Bills For 2015/16*, https://dl.dropboxusercontent.com/u/299993612/News/Latest%20news/Customers/Water%20charges/Forecast%20average%20household%20bills%20for%202015.pdf. Page 2 and Ofgem. (2014) *Outlook For Costs That Make Up Energy Bills*, available at: https://www.ofgem.gov.uk/publications-and-updates/charts-outlook-costs-make-energy-bills

[2] The RIIO T1 (gas and electricity transmission) and GD1 (gas distribution) settlements, have revenues of £32.0 billion over the years 2013-2021 (2012 prices) http://tinyurl.com/oju6vh, http://tinyurl.com/od49j8y, and http://tinyurl.com/pm2gxdw. The RIIO ED1 (electricity distribution) settlement accounts for £39.3 billion in revenue over the years 2015-2023, with £28.5 billion going to the slow-tracked companies http://tinyurl.com/lq8wggn and £10.7 billion to Western Power Distribution http://tinyurl.com/keba8hu.

controls assess companies' assets (the regulated asset base, or RAB) and their financing costs (using the weighted average cost of capital – WACC) in what is sometimes known as RAB-WACC regulation. Most of these sectors are natural monopolies, where the cost of developing a competitor network would far outweigh the gains that might be achieved from the ensuing competition. The few areas that arguably are not (airports being the clearest example, where some inter-airport competition is achievable, especially around London and south-east England) are still heavily constrained by their reliance on government decisions, which affect competition in practice (as can be seen, for instance, in the fight between Heathrow and Gatwick airports for the right to build an additional runway).[3]

Consumer charges that fund these networks are similar to taxes in several ways. For essential services, including energy and water, these charges are unavoidable (excepting a tiny number of households who choose to live 'off the grid'). Consumers cannot choose not to pay, at least not without facing legal repercussions, and they cannot choose to pay someone else. The amount they pay is determined by the regulator, backed by law, and transfers resources from customers to companies and on to their shareholders.

Companies operating in these sectors are also unlike most companies operating in conventional markets. They are protected from competition by both regulation and the fundamental nature of their sectors. They are assured of demand for their product. Risk of bankruptcy is relieved with 'financeability' rules that ensure regulators do their utmost to provide efficiently-run companies with enough capital to stay afloat. They are insulated from risks faced by 'normal' businesses. Further risk is often stripped out of the business by using uncertainty mechanisms or re-openers in the price controls agreed with regulators, which allow the regulator to step in if the company is struggling and grant it further income.

Lower-risk companies should be able to survive on lower returns. Their financiers know it is much more likely that their money will be returned to them, and so ought to accept lower rates of return than those who invest in ventures without the same protection. Consumers with no choice about paying up should be protected from unnecessary costs. This principle has applied to regulation of monopolies since privatisation. Yet returns currently enjoyed by many utilities in the UK suggest that regulators are not striking the right balance. Rates of return vary both between and within sectors, but a combination of weak baselines and generous incentive regimes mean that outperforming the baseline settlement is normal and double-digit returns are commonplace in the energy sector.

This report investigates the rates of return received by different regulated monopolies. It finds that regulators have struggled to contend with seismic changes

[3] The Airports Commission, https://www.gov.uk/government/organisations/airports-commission

in the financial marketplace and that, in the presence of uncertainty, they have tended to favour companies over consumers in their decisions. The report recommends that regulators do more to reduce exposure to inaccurate financial forecasting by index-linking crucial elements of regulated utilities' financial settlements.

Rates of return in the regulated sectors

Regulation in monopoly sectors is designed to ensure that monopoly firms are not able to charge the excessively high prices that would normally arise from being able to exercise monopoly market power, nor to under-deliver essential services in the absence of market pressures. Exactly how this is done varies from place to place. In the United States, for a long time rates of return were regulated directly. Every item of expenditure was allowed to be recouped along with a margin (return) to cover financing costs, provided the regulator signed off on the spending plans. The problem with this method of regulation was that allowing regulated entities a practically guaranteed return on all their activities incentivised high capital expenditure programmes and gold plating.[4]

Partly in response to these fears, and partly in response to the political and policy climate at the time of privatisation, UK regulatory culture evolved in a slightly different direction. British regulators have been reluctant to formally specify returns in regulated sectors, but rather have done so implicitly as part of a package of measures designed to not only ensure fair returns on efficient investment, but also to attempt to encourage more efficient operational (and to a lesser extent capital) spending plans. Under the RPI-X system (the prevailing approach to regulation since the privatisation boom of the 1980s), during each price control period, prices are allowed to rise by inflation (as measured by the retail price index, RPI) minus an 'X' factor. The 'X' factor represents the degree of efficiency savings that the regulator thinks attainable during the period. The cap protects consumers against excessive price rises; companies who were able to make efficiency gains in excess of the 'X' factor are allowed to hold on to the resulting profits (with the understanding that when the next price control comes around, those efficiency savings will be incorporated into the settlement, passing the future gains on to consumers).

As time has passed, different sectors have seen new policy priorities emerge. Energy has witnessed the most pronounced shift. A combination of ageing infrastructure and the new imperatives of the need to address climate change has

[4] Averch, Harvey and Johnson, Leland L. (1962) 'Behaviour of the firm under regulatory constraint'. *American Economic Review*. 52(5). pp. 1052-1069

seen a change in emphasis from realising cost efficiencies to encouraging new investment. Moving from optimising the use of existing assets to optimising the investment programme in new assets changes the game for all participants in the industry. Consumers are no longer able to rely on continued efficiency gains and asset sweating, as happened during the 1980s and 1990s. In the coming years, networks will have to build, and to find finance, at volumes not seen for decades. Ofgem has to find a new way to balance these priorities.

The result of this approach is 'Revenue = Incentives + Innovation + Inputs' (RIIO), the new regulatory model adopted by Ofgem for the four network sectors it governs (the transmission and distribution networks for gas and electricity). It is intended to offer stronger incentives to regulated networks to improve measurable outcomes for consumers and to invest in innovative network assets.[5] Motivated in part by the transformative levels of investment anticipated as Britain decarbonises its energy system, RIIO builds on the price-cap approach established under RPI-X but deepens the layer of performance-based metrics and incentives that sits on top, and encourages the regulated firms to propose incentives tailored to them and their customers. RIIO also lengthens the price control period, combines capital and operating expenditure into a single regulated total expenditure (totex), and focuses more extensively on a variety of outputs. In other aspects, though, it retains the most prominent elements of the old RPI-X system: setting allowed revenues in advance, and then allowing a company to retain (part of) the profit if it delivers on its outputs at lower costs with real improvements to efficiency. Although other regulators have not rebranded their method of regulation in the same way, Ofwat, for example, has begun to mimic RIIO by allowing water companies to put forward incentives based on customer feedback.

One measure used by regulators to assess the impact of regulation and price controls on firms' performance and returns is 'Return on Regulated Equity' (RoRE). Although British regulators tend to steer clear of formally specifying rates of return, as described above, the decisions they make affect those returns and tend to be shaped by targeting a benchmark RoRE. According to Ofgem, RoRE describes 'the financial return achieved by shareholders in a licensee during a price control period from its outturn performance under the price control', and it goes on to explain:[6]

> 'The return is measured using income and cost definitions contained in the price control regime (as opposed to accounting conventions) and is expressed as a percentage of (share) equity in the business. Importantly, in the calculation the gearing (proportions of share equity and debt financing in the RAV) and cost of debt figures used are those

[5] Ofgem. (2010) *RPI-X@20 Conclusions*. https://www.ofgem.gov.uk/ofgem-publications/51870/decision-doc.pdf. Page 3

[6] Ofgem (2014). *Glossary Of Terms*. https://www.ofgem.gov.uk/ofgem-publications/48279/glossary.pdf

given as the 'assumed' levels in the relevant price control final proposals. The aim of the RoRE measure is to provide an indication of the return achieved by the owners of a licensee which can be compared to the cost of equity originally allowed in the price control settlement and to the return achieved by other licensees on an equivalent basis.'

Because RoRE can be compared across companies (and theoretically, across sectors), it is a valuable performance assessment tool. It excludes the effects of any financial engineering performed by the company that deviates from regulators' assumptions, meaning that it ignores different individual circumstances of the firms in a sector and provides a uniform measure of performance.

Ofgem says it regards 'an appropriately calibrated price control package as one in which RoRE upside (that is, the reward available for the best-performing companies) provides the potential for double-digit returns on (notional) equity, and RoRE downside (that is, the penalties that would apply to the worst-performing companies) is at or below the cost of debt'.[7] Yet, given the combination of baseline WACC (a key regulatory decision – see Chapter 3) and incentives in its recent decisions, it looks as if Ofgem has not calibrated appropriately in recent times. Double-digit returns on equity have been commonplace and examples of the RoRE downside mentioned are few and far between. It is also not clear why double-digits constitute the target for a top company – the logic of why that should be 10 per cent rather than 9 per cent or any other number is vague, to say the least. It is early days in the new RIIO system, but early indications suggest this pattern is more likely to be repeated than broken. Ofgem head, Dermot Nolan, told Parliament in 2014 that he had "looked at the first year returns and … they are somewhat higher than expected". However, he argued that: "It is far too early to judge the price control at this point."[8]

This is troubling. The trade-off inherent to monopoly regulation is that the regulator reduces the risks faced by the regulated firm, but it also reduces the profit it is able to make. However, if the potential downsides for firms are never encountered in practice, and if firms are routinely able to make returns well in excess of the standard set by the regulator, then the trade-off breaks down. Companies accrue more of the benefits in the regulatory settlement while consumers are stuck bearing higher costs.

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[7] Ofgem. (2012) *RIIO-T1: Final Proposals For National Grid Electricity Transmission And National Grid Gas.* https://www.ofgem.gov.uk/ofgem-publications/53602/4riiot1fpfinancedec12.pdf

[8] Nolan, Dermot at Commons Select Committee on Energy and Climate Change. (2014) *Minister For Energy Discusses Network Costs*. http://www.parliament.uk/business/committees/committees-a-z/commons-select/energy-and-climate-change-committee/news/network-costs-ev-session1

Chapter 2: Real world rates of return

Gathering information about the returns made by regulated companies is not straightforward. Different regulators operate differing disclosure standards and timetables. Some regulated monopolies are obliged to publish nothing beyond the oft-impenetrable code of corporate accounting, which omits key measures of returns to regulated activities.[9] Ofgem publishes comparable data based on the 'return on regulated equity' concept, but sporadically and buried in appendices of special reports. Ofwat publishes annual updates on a dedicated webpage. Though patchy, these are still some of the most valuable data for assessing how companies' earnings correspond with regulators' intentions.

Comparison across sectors is also tricky. Regulators' varying treatment of all sorts of variables, including pension liabilities, legacy debts, or the risk profiles of different companies or sectors, mean that the headline numbers for the various sectors do not reflect identical underpinning assumptions. A firm in one sector may have a higher headline return on capital, but may be required by its regulator to hold a greater share of the risk around its pension liabilities, for example, than an equivalent firm in another sector. Comparisons within price control sectors are more straightforward, as they are usually based on the same assumptions for all the covered firms. This should be taken into account when assessing the results below.

Water

The last price control for the water sector set a target rate of return on capital for investors of 5.1-5.5 per cent.[10] The current price control runs from 2010 to 2015, so we do not yet have data for the full price control available. Nonetheless, the available information (Table 2.1) shows that around half of firms have exceeded the target rate of return in every year of the price control so far (underperformance is marked in **bold**).

[9] Ofgem's RIIO accounts programme may seek to mandate reporting returns to regulated equity for electricity distribution companies in the new price control period.

[10] Bristol Water's decision was subsequently changed to 4.9% by the Competition Commission.

Company	Return 2010-11[11]	Return 2011-12[12]	Return 2012-13[13]	Return 2013-14[14]	Expected return 2010-11 to 2014-15[15]
Anglian		**4.7**	**4.2**	**4.7**	5.1
Dwr Cymru	5.6	5.6	5.2	**5.0**	5.1
Northumbrian (including Essex and Suffolk Water)	5.2	5.7	5.2	5.3	5.1
Severn Trent		5.7	6.7	6.4	5.1
South West		5.4	**5.0**	5.4	5.1
Southern		**4.2**	**4.0**	5.2	5.1
Thames		6.3	**4.3**	**4.9**	5.1
United Utilities		**5.0**	**4.8**	**4.7**	5.1
Wessex	6.5	6.6	6.0	5.9	5.1
Yorkshire		5.1	**4.9**	**4.3**	5.1
Affinity Water (3 divisions of Veolia Water until 2012)		6.6-7.0	5.5	5.8	5.3
Bristol	**4.2**	**4.5**	4.9	**3.9**	4.9

[11] Because Ofwat's requirement to report this statistic came into effect partway through the regulatory period, information about 2010-11 is patchy. Data here are assembled from various company annual reports where available. Full references available on request.

[12] Ofwat. (2012), *Additional Data On Companies' Performance 2011-12.* http://www.ofwat.gov.uk/regulating/casework/reporting/rpt_los2011-12addfinancial

[13] Ofwat. (2013) *Companies' Performance 2012-13.* http://ofwat.gov.uk/regulating/casework/reporting/rpt_los2012-13financial

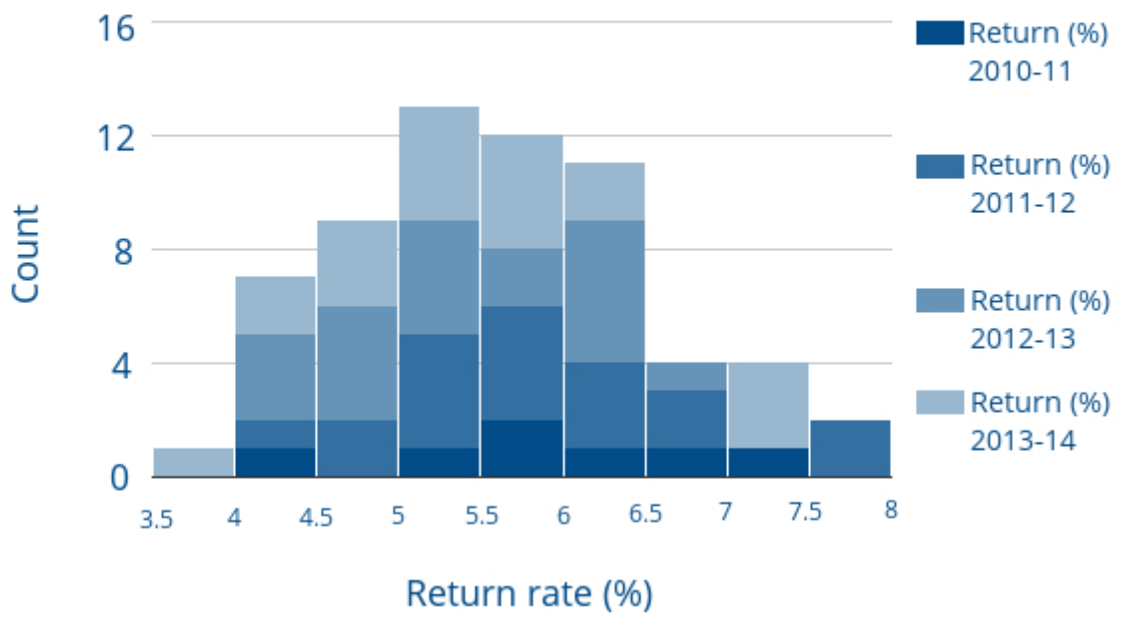
[14] Ofwat. (2014) *Companies' Performance 2013-14.* http://www.ofwat.gov.uk/regulating/casework/reporting/rpt_los2013-14financial

[15] Ofwat. (2012), *Additional Data On Companies' Performance 2011-12.* http://www.ofwat.gov.uk/regulating/casework/reporting/rpt_los2011-12addfinancial

Dee Valley		7.6[16]	6.1	7.3	5.5
Portsmouth		5.5	**4.6**	**4.4**	5.5
Sembcorp Bournemouth		7.6	6.3	7.4	5.5
South East		5.3	**5.1**	6.4	5.3
South Staffs	5.8	6.1	6.0	5.8	5.5
South Staffs (Cambridge)	7.2	6.7	6.2	7.3	5.5
Sutton & East Surrey	6.1	6.3	5.7	5.8	5.5

▲ Table 2.1: Rates of return on capital for water companies

Figure 2.1 shows this pattern more clearly, with returns spread relatively evenly but averaging returns higher than the Ofwat benchmarks.



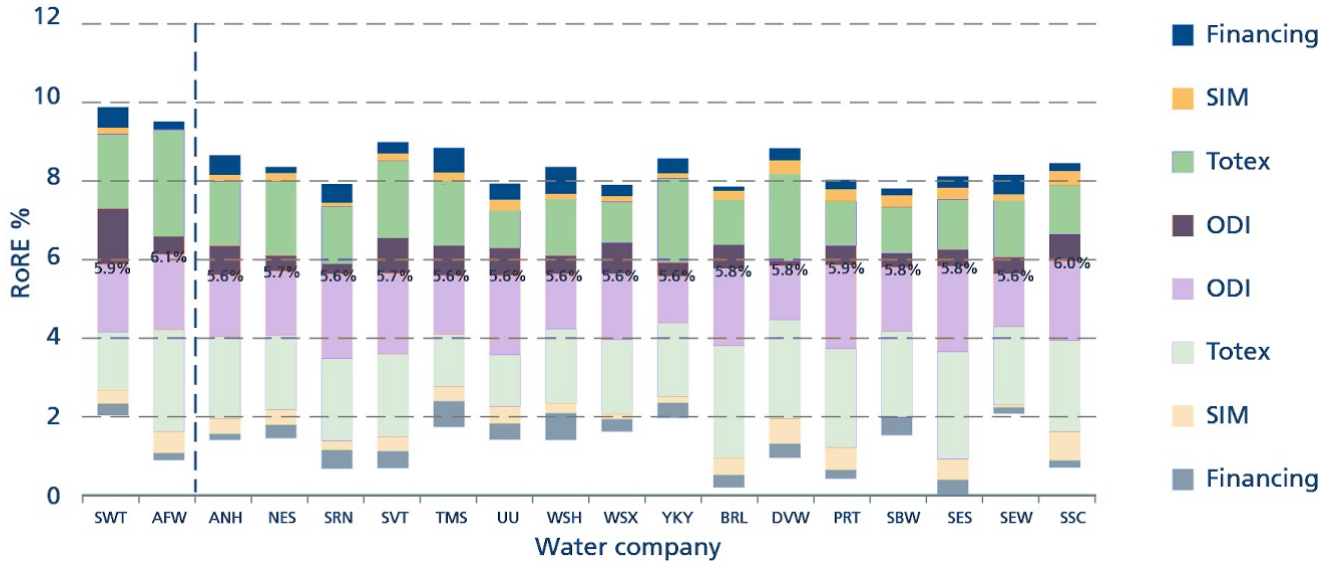
▲ Figure 2.1: Distribution of water company annual returns, 2010-2013

In the 2014 price review (PR2014), Ofwat published its expectations for returns on *regulatory equity* over the forthcoming price control period (Figure 2.2). The central

[16] Corrected from Ofgem figure to reflect update in company accounts. Dee Valley Water (2013). *Key Performance Indicators Overview* http://www.deevalleywater.co.uk/article_files/165/english/key-performance-indicators-2012-13.pdf. Page 5

values there are higher than the expected returns on *all capital* (debt and equity combined) had been in the previous price control, but are similar to the average value for actual returns to all capital during that period. However, Ofwat has not published historical data for a standalone assessment of returns to equity. Without this, it is hard to perform a fair comparison with RoRE data from other sectors, or to assess how the upcoming price control compares to its predecessor.

It remains to be seen to what extent the incentives offered by Ofwat for spending and financing efficiency and customer performance will affect actual returns during this forthcoming price control. Ofwat's portrayal of the balance of incentives shows greater room for returns to be below rather than above the central values, but it does not give an indication of the relative probability of being in the bigger underperformance range versus the smaller overperformance range.



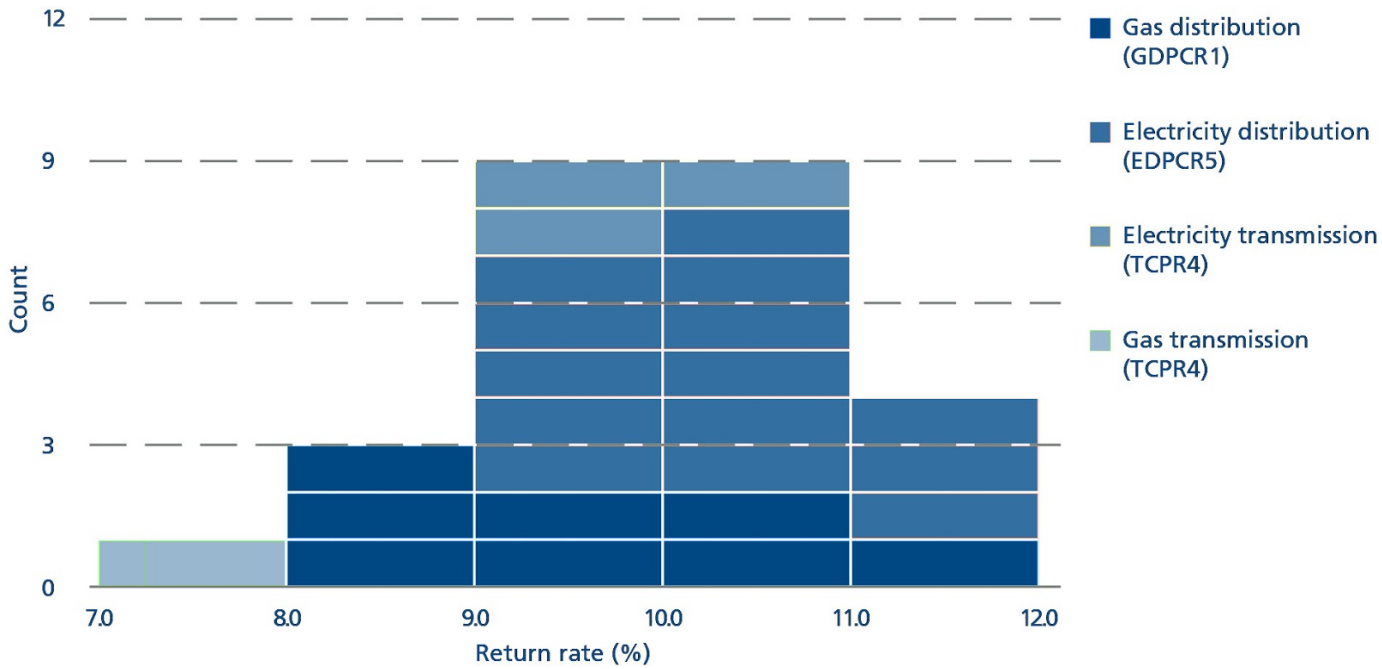
▲ Figure 2.2: Revised RoRE ranges - projections for the water sector 2015-2020[17]

Energy

Ofgem was the first regulator to embrace the RoRE metric for assessing companies' performance and, as a result, there is more information available about RoRE performance for energy utilities than there has been historically in the water sector (though Ofwat's adoption of RoRE in its most recent reports indicates this difference should be eliminated in the future). The target returns of 6.75 per cent for electricity distribution, 7 per cent for gas and electricity transmission and 7.25

[17] Ofwat. (2014), *Final Price Control Determination Notice: Policy Chapter A7 – Risk And Reward*. http://www.ofwat.gov.uk/pricereview/pr14/det_pr20141212riskreward.pdf. Page 13

per cent for gas distribution have been exceeded by all firms in the sector except UK Power Networks' South East and Eastern divisions, which made exactly 6.75 per cent (and were boosted by the 10.4 per cent made by UK Power Networks in London). These are shown in Figure 2.3. The different colours indicate the different types of regulated energy networks.



▲ Figure 2.3: Distribution of rates of return in regulated energy sectors

The transmission companies were set baseline rates of 7 per cent during the last price control period, TPCR4, which ran from 2007 to 2013 (Table 2.2). Electricity transmission companies outperformed this by at least a third. The rewards in gas transmission, generally considered a less capital-intensive network and less reliant on new investment, were a more modest 7.4 per cent.

Company	Baseline rate of return	Actual return including incentives
National Grid Electricity Transmission	7.0	9.2
Scottish Power Transmission	7.0	9.9
Scottish Hydro Electric Transmission	7.0	10.1
National Grid Gas	*7.0*	*7.4*

▲ Table 2.2: Baseline and actual rates of return on equity for electricity and gas transmission companies, price control review period 4 (2007-2013)[18]

However, the supposed stability and low-return nature of the gas business did not extend into the distribution companies during their price control period from 2008-2013 (GDPCR1). As Table 2.3 shows, three companies were able to make actual returns in excess of 10 per cent: Northern Gas Networks, Wales & West Utilities, and Scotia Gas Networks' Southern division. National Grid Gas was the only one of the four controlling companies not to make at least 10 per cent from any of its divisions during the price control period.

Company	Division	Baseline Rate of Return	Actual return including incentives
National Grid Gas	East of England	7.25	8.35
	North London	7.25	8.19
	North West England	7.25	8.88
	West Midlands	7.25	9.21
Northern Gas Networks		7.25	11.18
Wales & West Utilities		7.25	10.14
Scotia Gas Networks	Southern	7.25	10.10
	Scotland	7.25	9.72

▲ Table 2.3: Baseline and actual rates of return on equity for gas distribution companies, price control review period 1 (2008-2013)[19]

[18] Ofgem. (2014) *Transmission Networks: Report On The Performance Of Transmission Owners During The Regulatory Periods TPCR4 And TPCR4RO*.
https://www.ofgem.gov.uk/ofgem-publications/86750/tpcr4andtpcr4rocloseoutreportv3.pdf
[19] Ofgem. (2014) End Of Period Review Of The First Gas Distribution Price Control (GDPCR1).
https://www.ofgem.gov.uk/ofgem-publications/86749/gdpcr1closeoutreportfinalv2.pdf

In the first set of annual reports for the current regulatory settlement period (RIIO-GD1 and RIIO-T1), Ofgem has released forecasts for utility returns. Forecast RoREs for gas distribution companies range from 8.92-11.75 per cent, with two companies (Scotia Gas Networks and Northern Gas Networks) seeing across-the-board double-digit returns set against cost-of-capital benchmarks of 6.7 per cent. Transmission companies' eight-year returns are forecast to range from 7.22-8.6 per cent, though the benchmark cost of capital varies between 6.8 and 7.0 per cent.[20] From these forecasts, the high returns of the previous price control have not been eroded, and some companies are now in an even more lucrative position.

Electricity distribution is the part of the energy system that had the lowest baseline rate of return set during its last price control (EDPCR5), with a baseline rate of 6.75 per cent. Yet, as can be observed in Table 2.4 and Figure 2.3, it has been in recent years the part of the system that has reliably led to the highest actual rates of return received by investors, with nobody making less than 9 per cent over the first four years of the price control (data for the final year of the price control, 2014-15, is not yet available).

Company	Division	Baseline rate of return	Actual return allowing for totex and other main variables, total EDPCR5[21]
Western Power Distribution	West Midlands*	6.75	9.6
	East Midlands*	6.75	9.0
	South Wales	6.75	11.2
	South West	6.75	10.2

[20] Ofgem. (2014) RIIO GD-1 Annual Report 2013-14. https://www.ofgem.gov.uk/ofgem-publications/93973/riio-gd1annualreport2013-14-final-pdf and RIIO Transmission Annual Report 2013-14. https://www.ofgem.gov.uk/ofgem-publications/93999/riiotransmissionannualreport2014final-pdf

[21] Ofgem. (2014) RIIO-ED1 Final Determinations For The Slow-Track Electricity Distribution Companies. https://www.ofgem.gov.uk/ofgem-publications/91564/riio-ed1finaldeterminationoverview.pdf. Page 110.

Electricity North West		6.75	10.8
Northern Powergrid	North East*	6.75	10.8
	Yorkshire*	6.75	11.8
Scottish & Southern Energy	Southern Electric Power Distribution	6.75	11.8
	Hydro (Scotland)	6.75	10.0
Scottish Power	Distribution	6.75	9.4
	Manweb	6.75	10.2
UK Power Networks	South East	6.75	10.6
	Eastern	6.75	9.0
	London	6.75	9.9

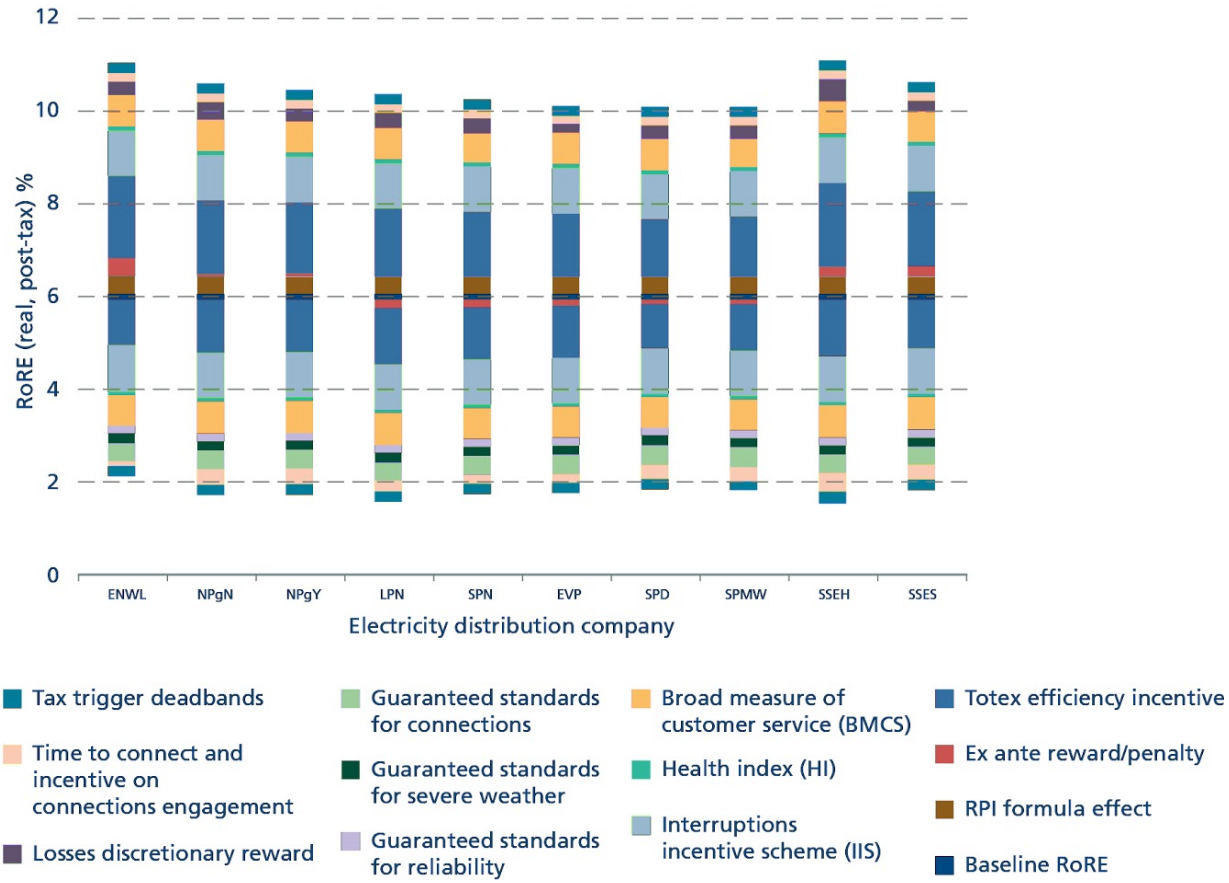
* Several companies changed ownership during the course of the price control period. Western Power Distribution's West Midlands and East Midlands divisions were previously run by Central Networks. Northern Powergrid was previously CE Electric Ltd.

▲ Table 2.4: Baseline and actual rates of return on equity for electricity distribution companies, price control review period 5 (2010-2014)

Ofgem has repeatedly said, in the context of different regulatory reviews, that well-run companies 'could achieve double-digit returns on (notional) equity for exceptional performance', with downside returns at or above the assessed cost of debt. But it is hard to accept this is what is occurring when Table 2.4 shows that more than half the electricity distribution companies have made double-digit returns and all are above 9 per cent. 'Exceptional performance' is not being

rewarded if everyone gets those returns – run-of-the-mill levels of competence are being rewarded as if they were extraordinary.

Ofgem has projected expected returns for the electricity distribution companies price control (RIIO-ED1), which sets prices for the next eight years (Figure 2.4). Unfortunately, Ofgem has not accompanied the chart with any indication of the probability of firms falling into the higher or lower reaches of the chart. However, in the overwhelming majority of cases (and in every one of the most recently concluded round of price controls), regulated energy networks have made more than the baseline RoRE. Two firms – Central Networks West and Scottish Power Manweb – out of the twelve that existed at the time, underperformed against the benchmark RoRE in DPCR4, which ran from 2005-2010. That was the last time this happened.[22]



▲ Figure 2.4: Ranges for RoRE over RIIO-ED1 period[23]

It is not yet clear how soon information about performance through RIIO ED-1 will become available, as reporting practices are still being finalised at time of writing. One aspect that has been revealed is the use of an annual iteration process to adjust indexed elements of the price control (see Chapter 3). This potentially

[22] Ofgem. (2011) *Electricity Distribution Annual Report For 2008-09 And 2009-10*. https://www.ofgem.gov.uk/ofgem-publications/46630/electricitydistributionannualreportfor2008-09and2009-10v21.pdf. Page 13.

[23] Ofgem. (2014) *RIIO-ED1 Final Determinations For The Slow-Track Electricity Distribution Companies*. https://www.ofgem.gov.uk/ofgem-publications/91564/riio-ed1finaldeterminationoverview.pdf. Page 46.

provides a route by which information about companies' performance can be flushed out early in the price control. Potentially, this could give Ofgem the opportunity to adjust if rampant overperformance is evident, although the extent to which it might use that flexibility remains to be seen.

Competing investment options

As was mentioned at the start of the chapter, precise cross-comparison of results in different sectors is difficult. But the results here show some clear findings that stand out even when those caveats are taken into account. Taken together, these numbers show a comfortable degree of profitability in the regulated monopolies. Losses are virtually unheard of. Companies routinely exceed benchmark or baseline rates of return. Sharing systems mean consumers can see a portion of company overperformance returned to them, but this frequently looks like consumers being returned a portion of money they should never have needed to pay out in the first place.

Equity returns in particular seem unnecessarily generous. The returns to regulated equity made by utilities in recent price control periods beat the long-term performance of UK and global stock markets. Regulated utilities are allowed to make more than notionally average blue chip firms do, even though utilities are markedly less risky than the average listed company. While investors in a single company are more exposed to the risk of that company going bankrupt than portfolio investors, in the case of utilities that risk is balanced by the comparative lack of volatility in utility investments compared with wider market returns. Ofgem reported a summary of long-term stock market trends, including both appreciation of shareholdings and dividend payments, which is reproduced in Table 2.5.[24]

[24] Wright, Stephen and Smithers, Andrew. (2014) *The Cost Of Equity Capital For Regulated Companies: A Review For Ofgem*, https://www.ofgem.gov.uk/ofgem-publications/86100/wrightsmithersequitymarketreturn.pdf

Time	Compound average real returns, % per annum				
	UK (£)	UK (converted US$)	World (US$)	World, excluding US (US$)	US (US$)
1899-2000	5.78	5.61	5.42	4.68	6.89
1899-2012	5.23	5.23	5.01	4.42	6.26
1955-2012	6.58	7.32	5.58	6.04	5.78
2000-2012	0.67	2.08	1.55	2.27	1.08

▲ Table 2.5: Summary of long-term real returns on UK and global stock markets

The data show long-run returns in the UK between 5 and 6 per cent, which hold up when measured either in real sterling terms or real dollar terms (that is, with currency movements making little difference to rates of return). Yet benchmark returns on equity across the energy sectors have been set higher, with observed returns higher still. Benchmark returns in water have been set at a lower rate than in energy, with most companies falling within the 5-6 per cent range also seen in the wider marketplace. But even here there is considerable scope in the 2014-2019 price control for actual returns well in excess of those seen market-wide.

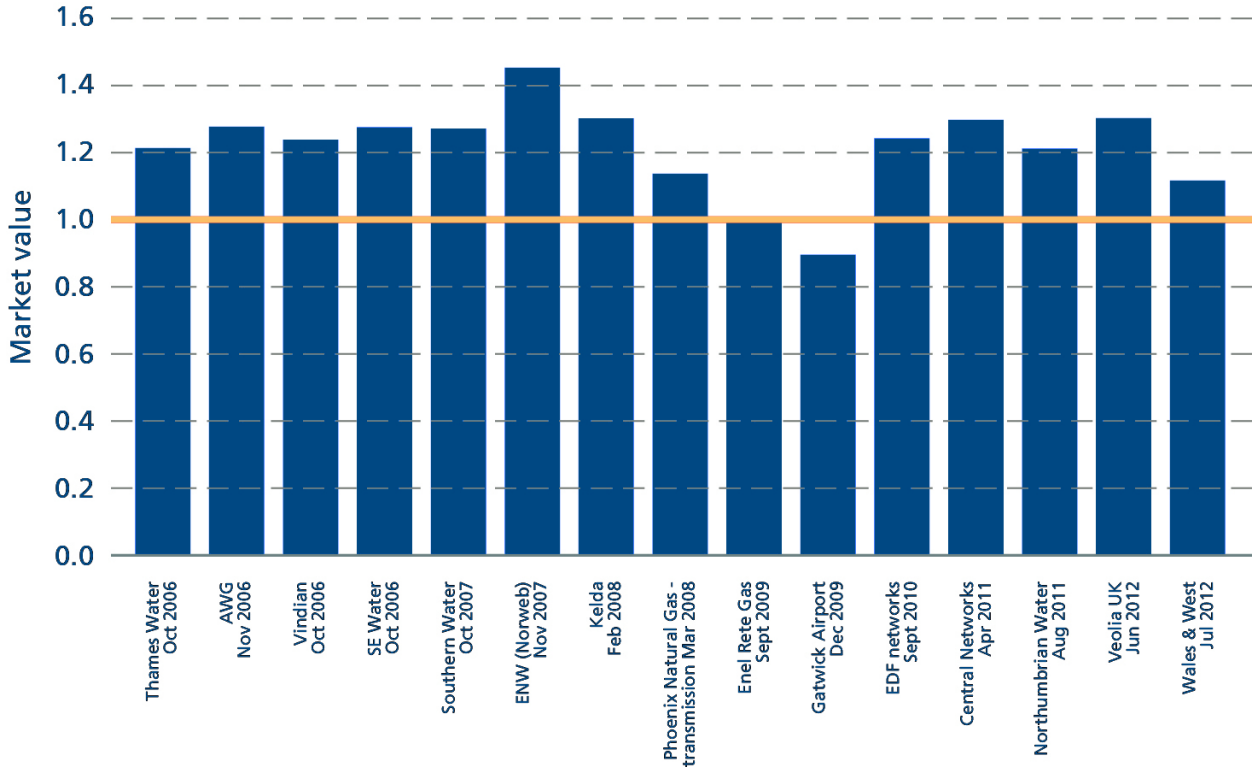
The inherent trade-off in utility regulation is of reduced risk for reduced reward. However, while utility firms have succeeded in transferring risk to consumers, consumers are still being made to reward them as if they were operating far less predictable businesses.

Market valuation

We can see further evidence that the market thinks utilities are being generously rewarded by comparing companies' market valuations with the value of their RAB. When consultancy Oxera assembled data on 15 transactions that have occurred in the utility sector since 2006 (Figure 2.5), it found that 13 of those 15 were valued by the market at a price higher than the company's RAB.[25] Furthermore, the only transaction that occurred at a value significantly below the RAB value – the sale of Gatwick Airport in 2009 – was a forced divestment: BAA had been ordered by the

[25] Oxera. (2014) *The Utility Valuation Puzzle*

Competition Commission to put it up for sale, explaining why it appears as an outlier.[26]



▲ Figure 2.5: Valuation of utilities at takeover as a proportion of their RAB (2006-2012)

Data from PwC, provided as part of Ofwat's 2014 price control consultation, reinforces this evidence (Table 2.6). Over a longer time span, the average regulated sector transaction occurred at an 18-point premium over RAB valuation, with the water and electricity distribution sectors witnessing average premiums of nearly a quarter of the RAB value.

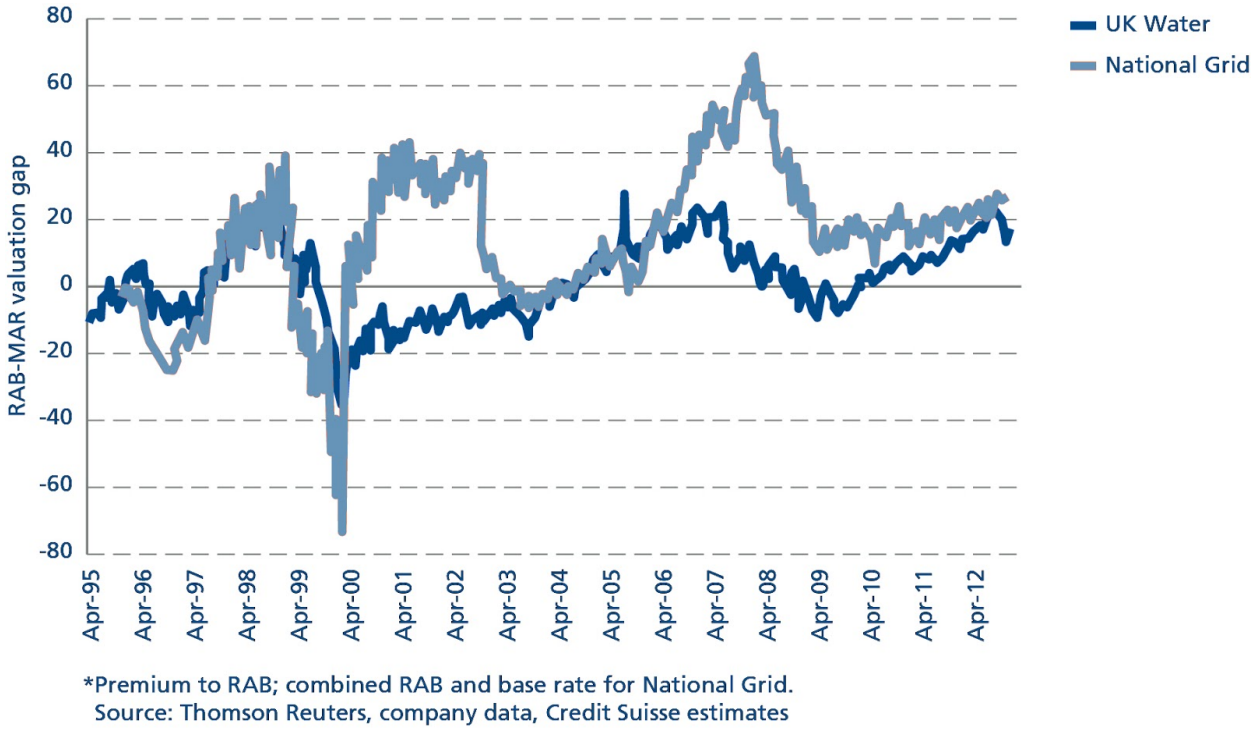
Regulated Sector	Average MAR
Electricity distribution	1.24
Water	1.23
Gas distribution	1.16
Airports	1.08
Average	**1.18**

[26] BBC News. (2009) *BAA Agrees Gatwick Airport Sale*. http://news.bbc.co.uk/1/hi/8317662.stm

▲ Table 2.6: Average market-to-asset ratio (MAR) by regulated sector (1998 to 2012)[27]

Examining the data in Figure 2.5 and Table 2.6, it could be concluded that this premium only occurs during takeover processes. This should be dispelled by Figure 2.6, which shows the valuation gap during regular trading of shares in National Grid and in listed UK water companies between 1995 and 2012. Again, it shows that, for most of the time, the two have been traded with an implied valuation in excess of their respective RABs – albeit much more marked for National Grid, with its more extensive non-regulated activities (for example, its US operation), than for the water firms.[28]

Figure 2.6 also shows the unusual period around the turn of the Millennium, when infrastructure assets were a much less fashionable investment class and traded at a discount to their RABs. During this period, five water companies were sold at a deficit against their RAB valuation. It was as a result of that period that Welsh Water transformed into a not-for-profit company, creating a new model for the industry (as described in Box 3.1 in the next chapter).



▲ Figure 2.6: National Grid/UK water sector valuation gap, 1995-2012

[27] PWC for Ofwat. (2013) *Cost Of Capital For PR14: Methodological Considerations.* http://www.ofwat.gov.uk/pricereview/pr14/rpt_com201307pwccofc.pdf. Page 16. This report also shows a more comprehensive listing of water sector transactions than Figure 2.6 shows. Of particular note is the period between 2000 and 2003, when five water transactions took place at a deficit to RAB valuation. These were the only ones to do so in the time from 1998 to 2012.

[28] Credit Suisse. (2012) *UK Utilities Outlook*.
https://doc.research-and-analytics.csfb.com/docView?language=ENG&format=PDF&source_id=em&document_id=1005303291&serialid=8BThuAAuU%2fvs6uqEfGIklVCa%2b2cNqY56U1zWWyrQlyg%3d

PwC offered up three possible explanations for these MAR discrepancies in its analysis for Ofwat:[29]

- 'Expected outperformance attributable to the unregulated components of … companies;
- Synergies available to the new entity not allowed for by the regulator, where transactions involve a business combination of two … companies; and
- Finally, expected outperformance may be due to the allowed revenue for the regulated company being set … at a level higher than finance providers require. This outperformance may arise from operational or financial factors, suggesting operational targets were easy to outperform, and/or the WACC was set too high relative to the actual costs of financing. Such outperformance could relate to the current price control period (where regulatory assumptions are known) or future price control periods.'

They conclude that the third is the most likely explanation for MAR ratios in the water sector. While the balance of the three (in particular, the significance of non-regulated activities) may differ from sector to sector, and gives reason to be cautious in the interpretation of MAR values alone, their conclusion appears likely to hold for other sectors too. Furthermore, the MAR data shows what would be expected if WACC numbers exceed what is required. And, as Chapter 3 shows, there is also considerable evidence that the components of the WACC have been set, across industries and over time, at levels that exceed market indicators. The MAR data reinforces the interpretation that regulators have been unduly generous to utilities.

To return the regulatory settlements to the value-neutral balance implied from the outset, regulatory returns should be recalibrated, with this evidence taken into account to lower the WACCs in future regulatory decisions.

The next chapter looks at the components of the WACC, to show where these excessive rewards have come from.

[29] PWC for Ofwat. (2013) *Cost Of Capital For PR14: Methodological Considerations*, http://www.ofwat.gov.uk/pricereview/pr14/rpt_com201307pwccofc.pdf. Page 17.

Chapter 3: Returns and the WACC

Chapter 2 showed the real returns that are achieved by regulated networks, and contrasted them with the baselines set by regulators. But how are those baselines developed in the first place? How do regulators arrive at a valuation of 'reasonable' returns? And are there any problems with that process? These are the questions this chapter will address.

While the specific details of regulatory settlements vary from sector to sector and price control to price control, the same broad approach is used in all the sectors analysed in this report. Baseline returns to regulated utilities are conventionally determined with reference to the WACC formula. The WACC is multiplied by companies' RAB (a totting up of all the allowed capital investment the company has made over time, or inherited at the time the company was purchased, less the amount of depreciation which has occurred) to give a periodic return. This tool allows regulators to provide regulated monopolies with the investment they need to keep operating, and is meant to provide investors with the rewards they would achieve in a competitive market, but not to permit them to exercise their monopoly power to earn more than this.

However, the actual returns to equity made by companies can deviate from the returns built into the WACC process in several ways: performance incentives may offer additional sources of revenue (see Chapter 4); changes in taxation during a price control could increase or reduce its post-tax profits; and the regulator may estimate variables such as real interest rates which turn out to be inaccurate.

Debates about the choice of WACC are central to the process of most regulatory determinations. Too large a WACC could see investors rewarded more than they need to be, at consumers' expense. Too small a WACC could see investors deterred from participating in a particular sector, curtailing investment. Consumers can also suffer in these circumstances if security of supply or quality of service deteriorates. For a regulator with consumer interests in mind, this clearly poses a challenging balance to strike. Miss the mark in either direction, and it will have failed in its core duty.

The WACC formula comprises two halves: one component deals with the cost of debt, the other with the cost of equity. These are as follows:

$$\textit{Cost of debt} = \textit{Risk free rate} + \textit{debt premium}$$

$$\textit{Cost of equity} = \textit{Risk free rate} + \textit{equity risk premium} \times \textit{equity beta } (\beta)$$

The WACC combines these, weighting them for the relative proportion of debt (gearing rate) and equity (1- gearing) in the given firm, as follows:

$$WACC = Cost\ of\ debt \times gearing + cost\ of\ equity \times (1\text{-}gearing)$$

The **risk-free rate** is the theoretical return to an investment that carries no risk, or put another way, the interest an investor would expect from a risk-free investment over time. Since government bonds (at least those of relatively stable countries) are considered as low-risk an investment as it is possible to find, the risk-free rate is often referenced using government bonds (gilts).

The **debt premium** describes the difference between the risk-free rate and the return on debt issued by companies analogous to the one being assessed – usually companies in similar business sectors with similar credit ratings.

The **equity risk premium** provides a similar measure of the difference between risk-free investments and equity investments across the economy, indicating the extra reward investors need in order to invest in equity holdings.

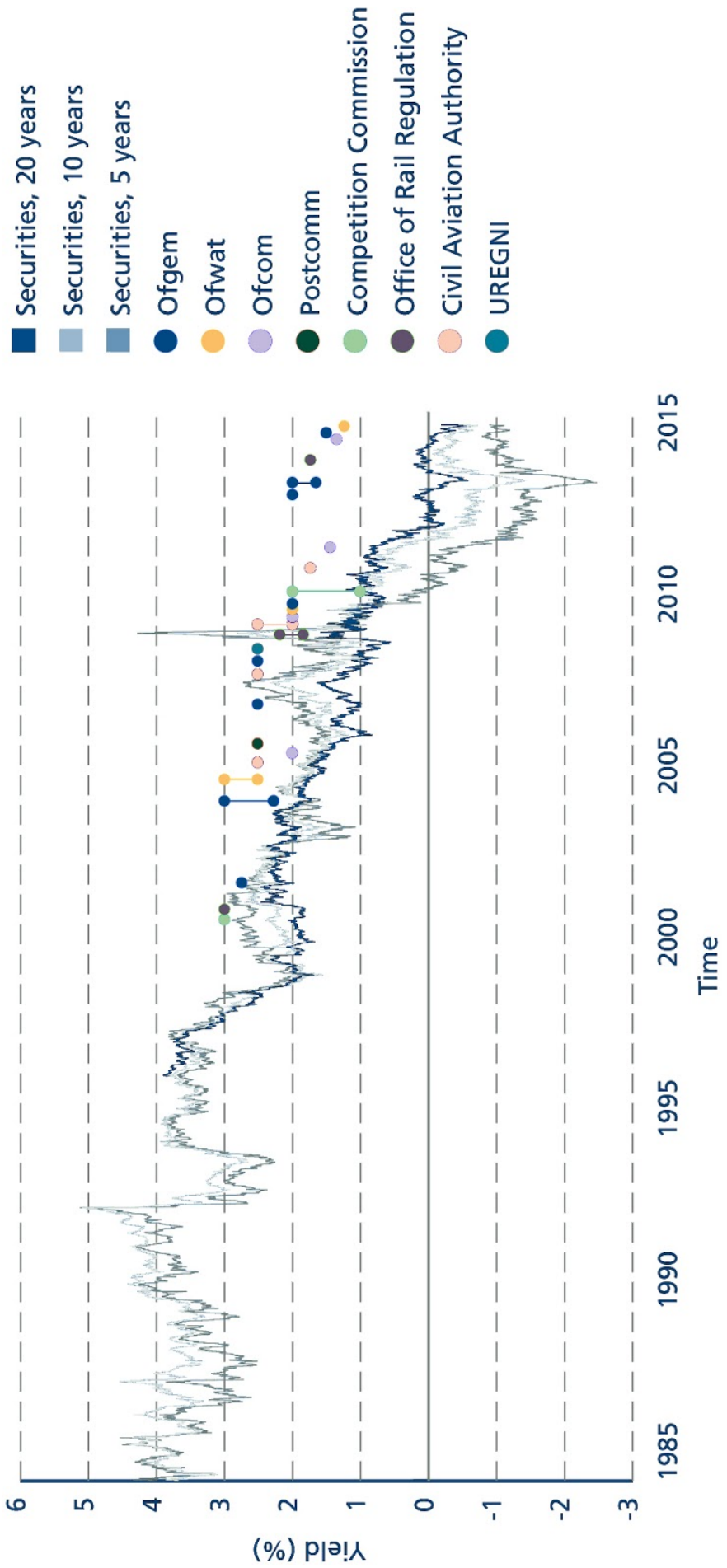
Finally, the **equity beta** represents the specific risk factors associated just with the company whose WACC is being determined (rather than the market as a whole). A company with lower risk than the market average would carry a beta of <1; a high-risk company would have a beta of >1.

Estimating each of these values requires an element of judgement. Determining which classes of debt or equity investments are analogous to the company being assessed, and thus provide a credible benchmark, is not a perfectly scientific process. Some are more straightforward than others to find an empirical, observable counterpart for. The risk-free rate is perhaps the simplest of these. This is helpful, because as can be seen from the formulae above, it is also the component that makes the biggest difference to a company's assessed WACC.

The risk-free rate

While there may not be such a thing as an entirely risk-free investment, government bonds, or gilts, are as close as the real world gets to this. In describing their WACC decisions, regulators commonly make reference to government gilt yields when setting the risk-free rate to be used in their calculations (see Box 3.1). Yet, recent years have seen a growing split between risk-free rates characterised by UK regulators in their decisions, and the rates of return observed in the gilts marketplace (see Figure 3.1).[30]

[30] Developed from analysis in Oxera. (2013) *What WACC For A Crisis?* (updated to incorporate recent determinations). http://www.oxera.com/Oxera/media/Oxera/downloads/Agenda/What-WACC-for-a-crisis_.pdf?ext=.pdf. Full listing of sources for this figure available on request.



▲ Figure 3.1: Regulatory risk-free rate decisions compared with index-linked gilt yields

The grey lines in Figure 3.1 show the returns on gilts of different investment lengths sold by the Bank of England since 1985. Over these time periods, the returns commanded by gilt investments have fallen considerably. Between 1985 and 1998, yields rarely strayed outside the 3-4 per cent band. However, aside from a short spike as Lehman Brothers collapsed, gilt yields were last above 3 per cent when Tony Blair had been in Downing Street less than a year, Google had yet to receive its first seed money and Celine Dion was topping the charts with 'My Heart Will Go On'. Since then, yields have continued to decline. The 2 per cent mark has only been surpassed during a couple of periods of frenzy as the financial crisis unravelled, and for most of the past 3 years, 5- and 10-year gilts have carried negative real returns (that is, investors are paying governments for the privilege of holding their debt) while the 20-year rate has hovered around the zero-mark.

The coloured points in Figure 3.1 mark decisions made by UK regulators that set the risk-free rate for regulated companies or sectors. The data include most major regulators' determinations from the year 2000. These rates have fallen over time too, but to nowhere near the extent of the observed real-world risk-free rate. As a result, the gap between what investors apparently perceive the risk-free rate to be and what regulators are prepared to offer them has grown, making investing in regulated utilities a much more rewarding proposition for investors, but driving up charges for consumers.

The role of the financial crisis in the deviating trends of government gilts and regulators' verdicts on the risk-free rate is significant. In narrations of their decisions, many regulators indicated an initial expectation that gilt yields would pick up and return to historical averages following the crash-induced slump in yields. Initially, regulators were reluctant to allow determinations of the risk-free rate to track gilts too closely in case gilts picked back up and investment deserted utilities. The excerpts which follow show how, over the last 10 years, a variety of regulators have consistently fretted that following market trends would lead to too low a risk-free rate.

> "We have used a range of 2.5 per cent to 3.0 per cent, based on a period average level of yields on medium-term index-linked gilts rather than recent yields, which appear historically low. (Real yields on medium maturity index-linked gilts have averaged at just under 2 per cent in the last six months.) However, since our draft determinations, real yields have declined further, albeit very marginally. We do not think this is sufficient to warrant a change to our approach and to simply take account of the current market spot rate would not lead to a sustainable WACC over the medium term." – Ofwat, 2004[31]

[31] Ofwat. (2004) *Future Water And Sewerage Charges 2005-10*. http://www.ofwat.gov.uk/pricereview/pr04/det_pr_fd04.pdf

"One point of view is that the forward rates represent the best available estimate of the risk-free rate… the very low rates that were seen for periods of time between 2003 and 2006 were unusual and we should not assume a return to these very benign market conditions when setting price caps … markets can be volatile and it would be unwise to place too much reliance on just the most recent figure. For example, BAA updated its estimate of the risk-free rate during the course of the inquiry from 1.75-2.0 per cent to 2.6-3.0 per cent because of market movements … Taking all of these factors into account, we believe that it is appropriate for us to use a risk-free rate of 2.5 per cent in our calculations of the cost of equity. This seems to us to strike a sensible balance between giving recognition to the recent changes in financial markets and avoiding an over-cautious view of the long-term implications of investors' attitudes towards risk." – CAA, 2007[32]

"Given turbulence in markets since Lehman's collapse there is uncertainty surrounding future market conditions and, in particular, whether the risk-free rate is as low as current index-linked gilt yields suggest. Furthermore, as previously noted by the CAA and the Competition Commission, due to market segmentation index-linked gilts yields may underestimate the risk-free rate especially for longer maturities" – CAA, 2010[33]

"We were mindful of the potential negative effects of placing too much weight on current evidence of risk-free rates … particularly at a time when current low rates may have been distorted by specific, temporary factors such as quantitative easing." – Ofcom, 2011[34]

"We note that there is increasing evidence to suggest that long-term estimates of the risk-free rate are currently lower than the 2.0 per cent we set in DPCR5 and in the final proposals for RIIO-T1 and GD1. However, it has been argued by some, that the Bank of England's quantitative easing policy has pulled down the yield on ILGs [index-linked gilts] by as much as 100 bps … Hence, we have kept 2.0 per cent as the upper bound of the range to be consistent with the long-term averages used in the equity risk premium estimate [another component of the WACC] and to allow for the possibility that

[32] Civil Aviation Authority. (2007) *BAA Ltd*. http://www.caa.co.uk/docs/5/ergdocs/ccreport_appf.pdf

[33] Civil Aviation Authority. (2010) *NATS (En Route) PLC Price Control*. https://www.caa.co.uk/docs/5/ergdocs/nerlformalproposals.pdf

[34] Ofcom (2011), *WBA Charge Control*. http://stakeholders.ofcom.org.uk/binaries/consultations/823069/statement/statement.pdf

> the downward trend [in gilt yields] or quantitative easing are reversed during RIIO-ED1." – Ofgem, 2013[35]

As a short slump has turned into a long one, regulators are only edging their risk-free rate determinations towards the levels indicated in the bond market. The excerpts highlight two of the ways that the current period has been perceived as exceptional, rather than, as increasingly appears to be the case, a 'new normal'. The collapse of Lehman Brothers in 2008 spurred a flight to safety as investors sought to shield themselves from the crisis. The subsequent programme of quantitative easing launched by the Bank of England in 2009 helped drive down yields into negative territory. Clearly these were times of significant, if not unprecedented financial turmoil. Yet, regulators have been struggling to get to grips with declining gilt yields for far longer, as the quotes from 2004 and 2007 demonstrate – as does Figure 3.1, which shows yields have been falling fairly steadily since the late 1990s. Regulators have spent that period anticipating a return to an historical mean which has not materialised, and which cannot be pinned entirely on the financial crisis. Regulators are not alone in not knowing where this trend will end up – central banks and economics departments of universities around the world are debating whether there has been a definite long-term break in macroeconomic conditions or whether the current period is an anomaly. But for now, and for the duration of the price control periods in which their decisions matter, regulators must base their judgements more on the world as it is and less on the world as it used to be.

This is not a slight tilting of the balance in companies' favour. By comparing the amount of time after risk-free rates were set by regulators with the real rates observed on different gilt yields, we can calculate that the rates set by regulators in the sample of judgements from Figure 3.1 were only within the market range of gilt yields on 2 per cent of trading days. In other words, 98 per cent of the time, companies were being given too much money and consumers were picking up the tab. Furthermore, that 2 per cent is accounted for almost entirely by the spike resulting from the Lehman Brothers collapse – and since it is unlikely that the regulators foresaw that event, it does not seem unreasonable to conclude that even that 2 per cent was a fluke. As was shown in Box 3.1, regulators have been aware of the risk of over-rewarding firms for a long time yet have continued to choose to do so.

The debt premium

Despite the ongoing overestimation of the risk-free rate, some regulators' decisions are moving in a direction that reduces the impact of those forecasting errors. Ofgem has led the way, introducing in its last suite of price controls a method for indexing the entire cost-of-debt portion of the WACC (which encompasses one of

[35] Ofgem. (2013) *Strategy Decision For The RIIO-ED1 Electricity Distribution Price Control.* https://www.ofgem.gov.uk/ofgem-publications/47071/riioed1decfinancialissues.pdf

the two uses of the risk-free rate). In previous price controls, both Ofgem and other regulators had faced similar issues to the risk-free rate in forecasting debt costs that turned out to be very generous to utilities.

Just as with the risk-free rate, changing circumstances in the marketplace have meant that old expectations about 'normal' premium levels have become increasingly outdated. Market measures of debt costs have fallen considerably since the late 1990s (see Figure 3.2), and regulatory determinations have again been slow to track that fall. Regulators attempted in their decisions to target a 'reasonable' allowed cost of debt, but this has frequently exceeded the debt premium observed for similarly rated debt investments.[36]

▲ Figure 3.2: Market yields on corporate bonds over time[37]

As with judgements around the risk-free rate, UK regulators appeared to be acting in a manner that is overly generous to utilities and their investors, and overly cautious about the risk – faced by consumers – that too tight a settlement could see investor flight from the utilities sectors. Consumers have been forced to bear these high costs, effectively to insure themselves against the possibility of a steep rise in debt costs.

[36] CEPA. (2007) *The Allowed Cost Of Capital.* http://www.cepa.co.uk/corelibs/download.class.php?source=PB&fileName=sysimgdocs/docs/DH094a-Ofgem-Jul07_pb16_1.pdf&file=DH094a%20Ofgem%20Jul07.pdf. Page 13.

[37] Iboxx index of corporate non-financial bonds (all maturities) via Oxera. (2013) *Debt In Depth: The Cost Of Debt In Regulatory Determinations*. http://www.oxera.com/Oxera/media/Oxera/downloads/Agenda/WACC-and-the-cost-of-debt.pdf?ext=.pdf

Regulator and decision	Treatment of Cost of debt
Ofgem - RIIO-GD1	Annually updated, 10-year trailing index.
Ofgem - RIIO-T1	Annually updated, 10-year trailing index.
Ofgem - RIIO-ED1	Annually-updated, 'trombone' 10-20-year trailing index (except Western Power Distribution, which is on a 10-year trailing index).
Ofwat - PR2014	Fixed, 2.65% for embedded debt, 2.0% for new debt.

▲ Table 3.1: Treatment of cost of debt in regulatory determinations

This could be beginning to change. In each of its RIIO determinations, Ofgem has adopted an indexation mechanism for the cost of debt (Table 3.1). This includes a simple 10-year rolling average for transmission and gas distribution firms, and a more complex solution for electricity distribution firms. Western Power Distribution, which was granted a fast-track decision, still sees its cost-of-debt rate set with reference to a 10-year average of benchmark corporate bond indices. The slow-track companies, though, will have their cost of debt calculated with a revised formula; one that will extend the time of the trailing average, referred to by Ofgem as the 'trombone' (for 2015/16, the cost of debt will be based on a 10-year trailing average, but in 2016/17 an 11-year trailing average will be used, 12 years in 2017/18, and so on).

The trombone mechanism will lead to two important consequences in relation to the slow-track companies: firstly, allowed cost of debt will be less sensitive to future changes in the benchmark indices; secondly, and more relevant here, if the index remains below the historical average, slow-track firms will be allowed a higher cost of debt as the trombone stretches back to keep in higher index years.[38]

While the mechanics of the trombone soften the blow for companies when compared to a shorter-term assessment of the cost of debt, it is welcome that Ofgem has embraced the concept of indexation. Its regulatory settlements have begun to adopt the principle that the benefits of falling interest rates can be passed through to consumers without the need for another price review. Nevertheless, the use of very long-term indexes (up to 20 years under the trombone) may dull those benefits for consumers. There is also a concern, not alleviated by historical examples, that the trombone will be preserved so long as it operates in companies'

[38] FTI Consulting. (2014) *Ofgem's RIIO-ED1 'Slow Track' Draft Determinations*. http://origin.fticonsulting.co.uk/global2/media/collateral/united-kingdom/ofgems-riio-ed1-slow-track-draft-determinations.pdf

favour (that is, by keeping high interest rates in the index at a time of falling rates and allowing them effectively windfall profits). However, in the event of a sharp increase in interest rates, would the regulators be able to hold their nerve against protestations from the companies that the trombone was preventing them fulfilling their financing obligations as they made windfall losses? There is a risk that customers are lumbered with the costs of outdated, higher interest rates when rates are falling, and the costs of contemporary higher rates when they are rising, leaving them facing the downside in both possible sets of circumstances. Using the trombone's long-term average, rather than contemporaneous debt cost data, will be less volatile. But that stability only helps consumers if it is secured at a reasonable price. If consumers get locked into always paying for headroom, they may be better off with a more volatile short run indexation, but consumers' preferences on this balance are unclear and have gone largely untested.

Ofwat has not yet followed Ofgem's lead. In the 2014 water price control review, Ofwat has set down a fixed cost of debt to apply for the next five years. Hopefully Ofwat (and other regulators) will become more comfortable with indexation after Ofgem's current piloting of the approach.

Cost to the consumer of WACC decisions

When setting the components of the WACC, as consultancies CEPA and First Economics, amongst others, have pointed out, regulators have constantly 'erred on the side of caution in order to avoid putting at risk the ability of the regulated companies to finance themselves', such that 'the benefits of a historically low cost of debt have not been shared with customers'.[39] CEPA pin the blame for this in large part on financeability duties faced by regulators. In most sectors, regulators are required to ensure that regulated businesses can finance their activities (to lower the risk of supply disruptions). Ofcom, which tends to be the toughest of the main regulators when it comes to setting risk-free rates, does not face this constraint. In contrast, other regulators, in sectors where supply constraints are potentially more serious, have acknowledged that they perceive an 'asymmetric risk' when setting the WACC: they see the costs of setting too low a WACC as being far greater than those of setting too high a WACC. In their eyes, too high a WACC and consumers have to pay a 'small' amount extra; too low and businesses will be unable to finance

[39] Cambridge Economic Policy Associates (CEPA) for ORR and Ofwat. (2007) *Indexing The Allowed Rate Of Return* http://www.ofwat.gov.uk/pricereview/rpt_com_indexratereturn.pdf;

First Economics. (2007) *Automatic Annual Adjustment Of The Cost Of Capital: A Discussion Paper* http://www.first-economics.com/files/68366403.pdf

their activities, resulting in potential long-term underinvestment or short-term supply constraints. Consequently:

> 'So long as regulators continue to set a fixed ex ante allowed WACC for five years and view the risk of getting the allowed WACC 'wrong' as asymmetric, they are likely to continue to 'aim high'. The result will be that customers/users will continue to pay a high 'insurance premium' for the privilege of not sharing in the small risk of a large, sustained rise in real interest rates over the price control period.'[40]

Also, if that is the balance that regulators are inclined to choose, that eliminates any possibility of the rates being allowed to swing in consumers' favour if real risk-free rates rise.

In the abstract, it can be difficult to assess the impact of these decisions on consumer bills. Seemingly small numbers can have large effects on consumers. When they are applied in price controls, the various WACC variables are multiplied by RABs (also known as RAVs or RCVs in different sectors), which have values in the water and energy sectors of many billions of pounds. Thus, in the water sector where the industry-wide RAB has a value of just over £64 billion, increasing or decreasing the cost of debt by 0.1 percentage points could cost or save consumers £40 million per year. Doing the same to the cost of equity would cost or save around £24 million per year. An across-the-board 0.1 percentage point reduction in the assessed risk-free rate would save consumers £80 million per year.[41] In the energy sectors combined, the industry-wide RAB is valued at about £48 billion, so increasing or decreasing the cost of debt across the board by 0.1 percentage points could cost or save consumers £31 million per year. The equivalent figure for the cost of equity would be around £16 million per year and a 0.1 percentage point reduction in Ofgem's assessed risk-free rate would save consumers £96 million per year.

Because WACC variables are being combined with such huge RABs, costs quickly accumulate. Every small amount that can be shaved off the assessed values results in big savings overall.

Emergency exit?

Monopoly regulation exists, in part, to ensure that essential services are continuously provided. When regulated monopoly firms get into financial trouble, it

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[40] *Ibid*

[41] Ofwat's only calculate 25% of the cost of debt using CAPM parameters like the risk-free rate. The rest is worked out by reference to 'embedded debt costs'. Were the entire sum calculated using the CAPM rather than by reference to embedded debt, a 0.1 percentage point change in the risk free rate would change bills by £128 million per year.

can have major impacts on customers and potentially on the taxpayer, who is forced to step in as a last resort. Exit from these sectors is extremely rare, but could be disruptive for customers if handled badly.

Customers have to be assured that essential services will be provided without interruption. Likewise, the existence of licensed monopolies leaves no space for new companies to gain market share. Market entry and exit cannot provide much useful information about the state of the regulated sectors. But firms can be sold to new owners, and from these transactions (or, perhaps, from the relative lack of them), some implications may be able to be drawn about how easy or difficult it is to do business in these sectors.

Given what we have seen in the rest of this report, it would be unexpected to see significant numbers of companies getting into financial difficulty and needing to sell on their license under duress. But, as was shown in Figure 2.6, most sales that have occurred have seen the regulated companies sold for a value greater than their RAB. Far from being distressed sellers, when utilities have been sold it has enabled the selling party to bank gains in the company's value versus the value it would theoretically be expected to have. Utilities are shielded from many standard business risks and provided with guaranteed revenues. And the case of Welsh Water, in Box 3.1, shows that even when companies are doing less well, a change of ownership can lead to a better outcome for the consumer.

Box 3.1: Welsh Water – another way of doing business

Since 2001, Welsh Water/Dŵr Cymru has been run as a not-for-profit company, with no shareholders, and with any profits being used to invest in the business or returned to customers. It has achieved this while also slashing the company's debt, cutting bills in real terms since 2000 and achieving the lowest complaints rate of any of the big water companies. Despite this, its structure remains unique among UK water and sewerage companies. It may not expand – Welsh Water may not diversify into other parts of the country nor take on new business activities. But nor have any others followed its example.

Much of its efforts have been devoted to lowering its cost of capital, reducing the need for consumers to cover financing through bills. Eliminating shareholder dividends has allowed surplus cash to be used to pay down debt and build up credit quality, reducing current and future debt servicing costs. It describes its strategy as being 'to deliver a secure, long-term credit quality to investors (such as pension funds and insurance companies) so as to raise the finance it needs at the cheapest possible cost'. It's heavy weighting towards bond finance has become more common in the sector since the takeover, but Welsh Water led the way in moving away from debt financing.

According to Welsh Water's chief executive, Chris Jones, this has enabled the company to return about £300 million back to customers in different ways: 'customer dividends' (charging less than regulatory price caps allow); investing in the business over and above what Ofwat has allowed for; and a generous package of help measures for some 56,000 vulnerable customers, at a cost of £6 million a year.'

Naturally, the Welsh Water model has become an attractive one for consumer groups. Yet, despite its successes, it has not been replicated elsewhere. This is a pity. It is difficult for government or regulators to force private entities to either transform themselves or sell to other parties who have not-for-profit structures. While such moves could be incentivised in price controls, current shareholders are under little pressure to give up the fat returns they are currently making. Indeed, the improved fortunes of the utility sector have become a barrier to similarly consumer-friendly structures. At the time Welsh Water was taken over, in 2001, water companies were commonly trading at a deficit compared to the RAB (see Figure 2.6). Now, though, they trade at a significant premium. This reflects how well shareholders are doing from the current arrangements, which corresponds with how unwilling they are to relinquish those benefits to others, including customers. Tighter regulatory settlements could, then, have a double benefit for consumers. In the short term they would reduce the amount being transferred from consumers to shareholders, but in the medium term they could see more companies looking to follow in Welsh Water's footsteps.

Not-for-profit status could be a middle path between the prevailing private ownership structure, and the problematic (albeit popular) suggestion of returning utilities to state control. With infrastructure investment in the coming decades looking like an increasing driver of household costs, keeping the public on-board and happy with the people providing these services should not be underestimated. It is hard to say whether the Welsh Water structure could be replicated elsewhere, but there are potential upsides that merit further investigation.

Regulation should strike a balance between ensuring reliable supply for customers without removing utility firms from any penalty for mismanagement. Hence, regulation is supposed to focus on the returns required by a well-run company, to

avoid creating moral hazard wherein firms are encouraged into inappropriately risky decisions by the knowledge that regulation will protect them against losses or bankruptcy.

Measuring how well this balance has been struck is a challenging task. Failure in one direction would be very visible – utility firms exiting the sector in distress would be plain to see. But over-protecting firms would not lead to so public a spectacle. Rather, failure would show up as higher-than-anticipated profit margins, a low rate of sales of utility firms (with those that do proceed fetching a price in excess of the expected value) – in other words, all things that can currently be observed in the utility sectors.

But these are also outcomes that could be observed for other reasons – better-than-expected ability of utilities to find spending efficiencies; WACC settlements that are generous, not because of a desire to protect utilities against failure, but because of a failure to predict trends in the wider economy, or a desire to reward customer service highly. While this paper has shown that each of these outcomes is occurring, identifying the precise motivating cause, or combination of causes, is not possible. Happily, though, no matter which of those causes has led to the current situation, the appropriate remedies are the same.

Smaller numbers

There is a range of possible remedies to reduce the over-rewarding of regulated firms. The first, and simplest, is for the regulators to set lower rates when issuing their determinations. In many documents, the regulator dismisses almost out of hand lower conceivable values for key variables. For example, from one Ofwat document alone, the regulator explains the following:

- 'Our range for debt spread is 0.8 per cent to 1.4 per cent, but our view is that the bottom of the range would represent historically low borrowing costs'
- 'Our range for the real pre-tax cost of debt for water and sewerage companies is 3.3 per cent to 4.3 per cent. We have used 4.3 per cent as our point estimate'
- 'Our advisors conclude that the evidence supports a feasible range of 3.5 per cent to 5.0 per cent, with the very top end of the range being more appropriate'

In each instance, Ofwat argued for picking the biggest number possible from the range that it or its advisors find plausible.[42] In its most recent final determination, published in December 2014, Ofwat strikes a slightly more balanced position. Its choice of cost of equity is still very favourable to the companies, as it acknowledges:

[42] Ofwat. (2004) *Price Review 2004*. http://www.ofwat.gov.uk/pricereview/pr04/det_pr_fd04_appx5.pdf. Appendix 5.

> 'We used a TMR [total market returns, a component of the cost of equity] figure of 6.75 per cent in our risk and reward guidance. This was at the top end of the proposed 6.25 per cent to 6.75 per cent range and was based upon a review of historical and forward-looking evidence … we have decided not to change the 6.75 per cent assumption for the TMR. We do however recognise that this remains at the upper end of any estimate based on the recent regulatory precedents.'

However, its cost-of-debt choices are more consumer friendly, and include a significant improvement from the consumer perspective in comparison with the draft determinations.[43]

Ofgem's recent RIIO-ED1 price control for electricity distribution network operators (DNOs) showed a similar pattern, with a high-end cost of equity (though still markedly lower than Ofwat's even more recent choice): 'We translated [the Competition Commission's] estimated range for… cost of equity to the DNOs. This gave a range of 4.0 to 6.0 per cent. Our 6.0 per cent estimate for the DNOs is at the top of that range.' Again, the cost-of-debt choice was more consumer-friendly.[44]

But even the more consumer-friendly cost-of-debt decisions exemplify the imbalance in selecting WACC variables. An industry-friendly decision means picking from the very top end of the range. The countervailing consumer-friendly decision means picking from the middle. The genuinely consumer-friendly choice of selecting from the low end of the range never occurs. As a result, the entire package is consistently skewed in the companies' direction.

There is plenty of evidence that lower returns could be set without risking disrupting supplies. There is even evidence that the regulators themselves are aware that they have over-rewarded in previous price controls (see p. 15 and 30). Yet, the course correction that has been observed has been too tentative to avoid further over-rewarding companies in upcoming price control periods. All regulators have scope to shrink the WACC to reflect the lower risk-free rate in the wider economy, and the debt premium to reflect the lower yields to corporate debt. With a lower WACC, the baseline part of the overall return to regulated equity should shrink (barring changes to tax rates, which are usually addressed separately in any case). Companies look to be strong enough to withstand these changes, and there is little evidence that the kinds of investors who back UK utilities will suddenly desire to move their money into higher-risk, higher-reward asset classes.

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[43] Ofwat. (2014), *Final Price Control Determination Notice: Policy Chapter A7 – Risk And Reward.* http://www.ofwat.gov.uk/pricereview/pr14/det_pr20141212riskreward.pdf. Pages 33-40.

[44] Ofgem. (2014) *RIIO-ED1: Draft Determinations For The Slow-Track Electricity Distribution Companies*. https://www.ofgem.gov.uk/ofgem-publications/89072/riio-ed1draftdeterminationfinancialissues.pdf

Behind the headline numbers, the details of the RIIO-ED1 determination show up a further set of industry-friendly amendments. Between the initial and final determinations, a number of changes were made. These changes included the following:

- Moving the benchmark for rewarding companies who provided it with the most accurate spending forecasts. The change results in higher rewards and smaller penalties for firms, and constitutes a £290 million transfer from consumers to networks.
- Establishing the trombone for indexing cost of debt, rather than a fixed period (see p. 36 for further details).
- Allowing revenues that networks had previously over-recovered to be paid back over time rather than immediately.[45]

Most of the changes that took place within the RIIO-ED1 price review between draft and final determination were beneficial to the networks. None were detrimental to them. In some cases, benefits will be shared between consumers and networks, either through mutual risk reduction or sharing of finances. But in those cases where benefits are not split, it is always networks that have been allowed to gain at consumers' expense.

All this combines to indicate that regulators should be tipping the balance between company and consumer interests back towards consumers. Regulators should re-consider what equity markets are telling them about necessary rates of return to invest in monopoly utilities. Returns on equity exceeding long-term averages in the wider market strongly suggest these companies are being over-rewarded, and the fairly persistent premium of MAR over RAB shows that the markets know this.

Recommendation 1: To return the regulatory settlements to the value-neutral balance implied from the outset, regulatory returns should be recalibrated, with this evidence taken into account to lower the cost-of-equity side of the WACC in future regulatory decisions. Regulators should be striving for settlements in which only outperformance gets rewarded, not any performance. Incentives need to be challenging, and the risk of penalties also needs to be real rather than theoretical. The National Audit Office should carry out a value-for-money study of the price control process and ensure that future price controls provide the best value for bill payers.

However, if they remain reluctant to do this explicitly through WACC determinations, another option would allow the revenues received by companies to

[45] Ofgem. (2014) *RIIO-ED1: Final Determinations For The Slow-Track Electricity Distribution Companies*. https://www.ofgem.gov.uk/ofgem-publications/92249/riio-ed1finaldeterminationoverview-updatedfrontcover.pdf. Pages 101-102.

respond to changing market conditions, without the need for the regulator to bet on future economic trends.

Indexation

The record of professional regulatory forecasters in assessing real risk-free rates is poor. The amount of time that their predictions over the last decade have spent just within the range of real risk-free rate proxies is tiny. However, there is a way to alleviate the cost to consumers from overestimations of the risk-free rate and debt premium without risking damaging underinvestment in utilities: indexation.

It is possible to structure price controls in such a way that relevant parts of the WACC (the risk-free rate, or the combined cost of debt) are indexed against 'real world' benchmarks.

Recommendation 2: Elements of the WACC that have real world corollaries, most notably the cost of debt and the risk-free rate, should be indexed in all future price controls.

Ofgem has already begun to index the cost of debt, albeit with a lagging index that is perhaps too long term in its up-to-20-year range. Ofwat should follow its lead and adopt indexed cost of debt in future settlements. Both regulators should aim to shorten the time encompassed by the index in future settlements. On the timing of the indexation, Dieter Helm summarises succinctly: 'Any index less than five years will improve on [fixed cost of debt] arrangements. It could be an annual adjustment, based on forward rates; it could be monthly, or even weekly or daily. The case for indexation does not depend on the exact index and time interval chosen.'[46] While he was writing at a time when indexation had not been introduced, its adoption by Ofgem included a rather longer (10-20 year) index than Helm recommended. Now that firms have had the opportunity to get used to indexation in this regulatory period, during the next, the indexing should become more reflective of contemporaneous circumstances.

We have already described the index-linked gilt market as being the best available measure of the real risk-free rate, which contributes to estimates of cost of equity (as well as debt). This link should be formally developed in regulatory practices for indexing the risk-free rate.

Were indexation to be adopted, regulators would need to make a number of decisions about how it should be applied in practice. Indexation of new debt that pays for RAB expansion would more tightly match utilities' decision-making timetable, but would provide no incentive to improve on legacy decisions. Indexation of the entire (notional) debt applied to a utility's RAB would encourage

[46] Helm, Dieter. (2009) *Utility Regulation, The RAB And The Cost Of Capital*. http://www.dieterhelm.co.uk/sites/default/files/Helm_CC_060509.pdf. Page 24.

refinancing, at competitive terms, of existing debt commitments as it falls due. Utilities have had a long period where allowed cost of debt has exceeded real cost of debt, and have been able to profit substantially on their financing terms from that. A move to whole-debt financing would allow consumers to keep more of their own money in future price control periods and be required to hand over less to utility company shareholders.

Though there is a prospect of a significant gain for consumers from indexing the risk-free rate and/or debt premium components of the WACC, it is not a simple transfer from utilities to consumers. Indexation should, in the current circumstances, make the WACC numbers smaller, and thus reduce the amount consumers need to pay to reward utilities' financiers. However, given how low rates currently are, at some point they will rise (since there is essentially no scope left to fall further). At that point, consumer costs would begin to track up, but crucially, this should be exactly in line with market conditions, rather than depending on expert estimates, which should mean costs rise by no more than they have to. Presently, consumers are required to pay an effective insurance premium, which is reclaimed only in the case of rapid rises in interest rates. This premium is expensive, and it has proven itself to be particularly poor value over a period of history where interest rates have fallen steadily. Indexation offers consumers all the benefits of that policy (that is, essential utilities are protected against financeability problems that could otherwise cause them to fail), but at a much lower price tag. Furthermore, it is hard to be confident that, in a world without indexation where regulators had set a risk-free rate or cost of debt that was below prevailing market trends, companies would not be able to demand a review to force up those WACC components. Without confidence that regulators would hold their nerve with a consumer-friendly settlement, indexation offers the next best deal for consumers. In an indexed system, returns rise only if they are commensurate with changes in the wider economy. Knowing that returns will adjust to reflect broader economic conditions, regulators could be much more confident in choosing lower cost-of-debt allowances in their price controls.

Chapter 4: Returns and incentives

As price controls have evolved, performance incentives grown in importance. Incentives allow regulators to specify a more sophisticated mix of outputs that they would like to see firms provide, and to reward firms for achieving them. Merely rewarding the most efficient ways to operate and re-capitalise the networks is no longer seen as sufficient. Instead, cost efficiency is placed alongside a variety of other desirable traits. For example, in addition to its components governing company expenditure, the last Ofgem gas distribution price control also included performance metrics based on:

- safety
- reliability
- customer satisfaction
- social obligations (that is, connecting fuel poor homes to the gas grid, and for work on carbon monoxide poisoning awareness)
- the environment (reducing leaks from the network).

Without such incentives, quality of service would be likely to suffer, as firms' profitability would solely be determined by their ability to cut costs. RPI-X regulation by itself would focus heavily on achieving deeper and deeper cost efficiencies. It would imply longer and longer sweating of existing assets, which may not always be a bad thing, if it is a choice between that and costly new capital investment, but can allow valuable investments to be deferred until many bills come due at once. This creates a more acute burden for the consumer than could have been the case, had investments been more evenly spread over time. With performance incentives, cost cutting should not come at the expense of quality of service, or at least, the trade-off between the benefits of reduced costs and the damage to service quality must be recognised and balanced.

From a consumer perspective, the move towards greater use of customer-service-based rewards for regulated companies ought to be good news. Companies and regulators should both have to become more attentive to the needs of their customers, and to tailor their strategies to meet those needs. However, this only works if incentives are well designed. If not, they could become a further drain on customer's pockets without changing firms' behaviour. Ensuring that incentives are well structured, then, is a crucial part of regulators' jobs in developing price controls.

Evolving incentive structures

Across the regulated sectors, the trend is to use more performance incentives within price controls. Ofgem's RIIO determinations all incorporate incentive systems that are greater in number and in the value of potential rewards than those in preceding price controls. Similarly, Ofwat's PR14 puts more weight on customer performance.

Going alongside the increasing importance of incentives is a change in the way they are devised and specified. Increasingly, rather than having a top-down process in which the regulator takes responsibility for finding out what customers want and finding a way to encourage companies to provide it, regulators ask the firms to discover what their customers want and to propose to the regulator what they might do to improve customer outcomes. This has mixed implications for consumers. There is certainly a risk that, if left to the regulators alone to determine consumer needs, especially if they vary from one place to another, the industry could become staid and inward-looking rather than genuinely engaging with consumers. On the other hand, opening up the process creates opportunities for perverse findings (what happens if a company 'discovers' that its customers want exactly what its board wants?), and regulators will need to be alert and diligent in processing the mass of applications to ensure that the arguments that they will serve consumers well are justified.

Company-proposed incentives imply a big workload for regulators during the already-frantic price control review periods, wherein they must assess numerous proposals for tailored incentives (in the water industry alone, 522 different performance outcomes were put forward by companies to be the basis of their settlements)[47]. They also imply a much more rigorous role for reporting and scrutiny. With the potential for incentives tailor-made for specific companies, reporting procedures for relevant data will also have to be customised. Informational asymmetries between a regulated company on one side, and regulators and consumers on the other, risk being exacerbated without clearly presented and narrated performance data.

Regulators may have bitten off more than they can chew. RIIO-ED1 is coming into effect with the criteria for assessing some of the incentives yet to be finalised. For example, Ofgem has still not decided the criteria by which the £32 million 'Losses Discretionary Reward' under RIIO-ED1 will be administered, despite issuing the Final Determination in November 2014.[48] This 'rule lag' is also a feature of the Stakeholder Engagement Incentive under RIIO-GD1 and RIIO-T1, with its

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[47] Ofwat. (2015) *Consumer Briefing, 5 February 2015*

[48] Ofgem. (2014) *Schedule 2A: Draft RIIO-ED1 Slow-Track CRC Licence Changes*. https://www.ofgem.gov.uk/ofgem-publications/92171/schedule2aproposedspecialconditionstotheelectricitydistributionlicences.pdf. Page 128.

assessment methodology finalised more than a year after the price controls came into effect in 2013.[49] This has been particularly evident in relation to incentives in areas that are not easily quantified and do not lend themselves to simple mechanistic penalty or reward mechanisms.

Because these subsidiary rules calibrate the link between performance and reward under these incentives, the delay is akin to waiting until after a game of football has kicked off to set the rules. With this information unavailable during the negotiation of the terms of the price settlement, stakeholders cannot judge whether the incentive will be awarded for genuinely exceptional performance and, therefore, whether it represents value for money. This contributes to a situation where the networks can, in a sense legitimately, push back on any attempt by the regulator to set ambitious performance targets ex post on the grounds that this was not the expectation at the time the price settlement was struck. In this way the regulator undermines its own bargaining position with the networks.

Developing the rules after the event is not a deliberate choice, but rather appears to be a function of the regulator not having the resources to develop the complete price control 'package' in one go. Price settlements featuring a myriad of incentive mechanisms are complex to design, and exacerbate resourcing constraints that regulators face. Furthermore, with this complexity comes a heavy monitoring and enforcement workload for the regulator once the price settlement commences. It is too early to judge whether Ofgem has overburdened itself under RIIO but it appears that, in incentive design, simplicity must surely be a virtue.

Performance against incentives

While the new incentives regimes under RIIO in energy, and for the 2014 price review in water, have had little time to demonstrate results, we do have results available from earlier incentives set-ups. As was shown in Chapter 2, in the last rounds of price controls, outperformance by networks against their regulated benchmarks was routine. Of course, there are two possible interpretations of this outcome: the first is that the targets were too easy, such that underperformance was never really a risk; the second is that the rewards were so great (or the penalties for underperformance so painful) that they uniformly ensured that they achieved their incentivised goals. The first would be a policy failure; the second would be a great policy success, provided consumers valued those outcomes enough to be willing to pay those rewards. Unfortunately, without access to the

[49] Ofgem. (2014) *Stakeholder Engagement Incentive: Level Of Reward Decision*. https://www.ofgem.gov.uk/publications-and-updates/stakeholder-engagement-incentive-level-reward-decision

inner workings of utility decision-making processes, it is difficult to know which is true.[50]

The pattern of overperformance highlights a delicate balance that has to be struck in the way incentives are set up. Deepening the relationship between the way companies perform in their customers' interests and their financial reward creates a stronger motivation for companies to consider the effect on consumers when making investment decisions. It is beneficial for consumers that companies are more attentive to their needs, and incentivising better performance is an appealing feature of the RIIO and RIIO-like price controls. However, it is not beneficial if consumers are rewarding companies for things that they would have done anyway, or are paying a lot for things that are cheap for the utilities to implement. For incentive programmes to be helpful overall, they should, at the very minimum, abide by these six principles:

1. They should encourage companies to take decisions that are in the long-term interests of their customers: they should be **beneficial**.
2. They should encourage firms to do things they would not have done otherwise: they should be **additional**.
3. They should reward firms with the amount of money required to get them to change their behaviour, but no more than that: they should offer **value for money**.
4. They should encourage improvements in performance – and not reward standing still. So improvements made by firms in one price control should not be further rewarded in the next. Those improvements should be treated as standard actions going forward: they should be **bankable**.
5. It must be possible for regulators and third parties to assess performance against clear and objective criteria: they must be **measurable**.
6. Companies should provide regular updates on their progress towards meeting their incentives measures, to enable appropriate scrutiny from the regulator and third parties, and release of this information should be a criterion on which performance is assessed: there should be **regular reporting**.

Incentives should also be consistent as a package. For example, there are cases where a company's stakeholder engagement performance might contribute to it avoiding penalties for complaints performance but also goes toward it receiving an additional payment under a separate 'stakeholder engagement' incentive. This kind of example raises questions about the additionality and value for money of

[50] See Consumer Focus. (2012) *Response To Ofgem Strategy Consultation for RIIO-ED1 Price Control* http://www.consumerfocus.org.uk/files/2009/06/Consumer-Focus-response-to-RIIO-ED1.pdf. Page 7.

incentives that overlap either other incentives or elements that are rewarded as core activities.

To assess every individual incentive item in each of the settlements in the regulated monopoly sectors is beyond the scope of this report. And in practice, it will be hard to know for sure until some results are in – the RIIO systems are so new that they have not had time to deliver much by way of evidence. However, Consumer Focus and Citizens Advice responses to individual price control consultations identify specific areas where individual incentive schemes may fail to meet these criteria.[51]

For simplicity's sake, the arguments highlighted below are all drawn from the most recent response to Ofgem's RIIO-ED1 consultation. Analogous situations can be found in other price control proposals by Ofgem and other regulators.

An example of where loosely drawn criteria for assessing company performance could lead to outputs that are not beneficial could be seen in network charging structures. Consumer Focus argued the following points in its response to Ofgem's consultation on the RIIO-ED1 electricity distribution price control:

> 'Proposed outputs may result in a sharp increase in network charges for today's consumers. We do not feel there is sufficient emphasis on how innovation could reduce the need for reinforcement. For example, it remains unclear how robust the analysis of alternatives to those options offered by DNOs in their business plans will be. Alternatives that do not appear in DNO business plans, but may offer better value for the consumer, may not therefore receive due consideration. This may lead to higher cost solutions than may otherwise have been the case.'[52]

By failing to consider a wider range of solutions (and implicitly, by rewarding expensive capital investment choices), an incentive proposed with good intentions (that is, to ensure the long-term functioning of the network) could be less beneficial than a broader structure that encouraged more innovation.

Risk of overpayment was highlighted in response to Ofgem's proposals relating to the 'Broad measure of customer satisfaction' (BMCS). The BMCS was clearly driving customer-friendly actions:

> 'Recent visits to DNOs suggest the BMCS is helping to deliver improved customer service, for example, through increased call centre staffing levels, upgrades to IT and telephony systems, and improved business processes … However, we are not clear if the

[51] Consumer Focus was merged into Citizens Advice in 2014.

[52] Consumer Focus. (2012), *Response To Ofgem Strategy Consultation for RIIO-ED1 Price Control*. http://www.consumerfocus.org.uk/files/2009/06/Consumer-Focus-response-to-RIIO-ED1.pdf. Page 7.

> BMCS represents good value for money for consumers, given the relatively modest cost of some of the changes it has encouraged. The BMCS is in the order of several million pounds per annum per DNO over the course of the price control.'

If relatively low-cost actions were being very highly rewarded, it raises questions about both the additionality and the value for money of the BMCS incentives.[53]

Rolling BMCS incentive targets based on performance across DNOs would ensure that gains accrued in each period are used to spur further improvement by all companies in the subsequent period. By constantly ratcheting up expected performance, and strengthening the standard of performance required to earn incentive payments, consumers are able to bank gains rather than being asked repeatedly to pay to maintain them.[54]

Reporting requirements have also been a concern often raised by Citizens Advice and its predecessor bodies. During the RIIO-ED1 consultation we argued that:

> 'RIIO-ED1 and future price controls herald a more proactive role for DNOs and may result in higher network charges for consumers. Existing reporting requirements on DNOs tend to produce technical and relatively inaccessible documents. DNOs and Ofgem should consider more accessible ways for reporting DNOs' performance. This will increase transparency and help build trust and confidence between DNOs and consumers.'

More detailed recommendations on how to improve reporting requirements will be proposed in an upcoming Citizens Advice report, due out in Spring 2015.

The UK approach to price regulation is intrinsically incentive based – that is, it incentivises outperformance again the control. In principle, the methodology used by Ofwat and Ofgem is supposed to create a symmetrical balance of rewards for good performance and penalties for poor performance. However, in practice, this symmetry seems largely absent. We have already seen in Chapter 2 that the calibration of rewards and penalties has tended to favour the former, particularly in energy. . Some incentives go further, making this explicit. For example, the losses incentive under RIIO-ED1 gives the networks access to a £32 million upside, should they perform well, but they are only exposed to a 'reputational' downside.[55] This introduces an asymmetry into the price settlement, where there is upside but no

[53] *Ibid*, page 8

[54] *Ibid*, page 3

[55] Not that this is made plain in the Ofgem Final Determination. The discretionary reward appears in the chart on page 46 of the Final Determination: https://www.ofgem.gov.uk/ofgem-publications/92249/riio-ed1finaldeterminationoverview-updatedfrontcover.pdf

downside for the business – further reducing the already-minimal risk they face as a monopoly. Indeed, it is far from clear what deterrent effect so-called reputational incentives pose for monopoly businesses, which are not at risk of losing market share. The principle of symmetrical rewards and penalties under incentive programmes is sound, but in practice that symmetry simply does not exist.

Further improvements

The incentives regime is a work in progress. It has been, sensibly, introduced iteratively, with regulators getting gradually more ambitious as companies get more used to the concepts and processes involved. That gives good grounds to be optimistic that further improvements will be forthcoming in future price controls, albeit that there will be a considerable wait until those discussions commence.

We have seen in this chapter how new price controls have taken greater account of customer service outputs in deciding how much to reward companies. We have seen some of the trade-offs that ensue between the need to encourage better performance and to avoid overpaying for it. And we have seen some examples of how these trade-offs manifest in practice, in the context of the RIIO-ED1 price control. However, there are some general recommendations that should be considered by regulators to better ensure the implementation of the six principles outlined earlier in the chapter.

In sectors with multiple companies in different regions (electricity and gas distribution, and water) there could be scope for structuring incentives around relative, rather than absolute, measures of performance. If a fair indicator could be found for a particular aspect of customer performance, the best companies (or a defined and challenging fraction such as the top quartile) could be given tiered rewards while other companies would not be. By adding a competitive, almost prize-driven element to performance incentives, regulators could drive greater emphasis by firms on customer performance. This is, for example, how Ofwat has structured its Service Incentive Mechanism (SIM) and has also been the logic behind the 'fast-track' process in recent Ofgem price controls.[56] Fast-track does appear to have engendered competition and criticism between networks that had not seen in earlier price controls. This is helpful – networks have the best information available to critique other networks' plans. Since they would not have to clear a pre-defined hurdle, but rather perform better than their peers, companies would be unable to be complacent about performance.

In its 2014 price review, Ofwat used upper quartile performance in 2013 as a benchmark for setting outcome incentives and penalties. However, we understand this benchmark to be static rather than dynamic. It will be possible for everybody to

[56] Ofwat. (2012) *The Service Incentive Mechanism*. http://www.ofwat.gov.uk/regulating/aboutconsumers/sim/prs_web201211sim.pdf

outperform it, and what look like challenging targets now may come to seem quite dated by 2019.

A next step for future price control settlements would be to consider whether such benchmarks should become dynamic, in order to ensure stronger incentives for continuous improvement throughout the price control period. This may also mitigate the perception, strongly reinforced by the data presented in this report, that even the worst-performing companies in regulated sectors have tended to be rewarded for outperforming benchmarks. In an era of unprecedented scrutiny of cost-of-living issues, this perception could create genuine question marks over the sustainability of the regulatory framework.

Recommendation 3: Ofwat and Ofgem should investigate whether a dynamic benchmarking system is suitable for ensuring that all companies are held to the standards set by best performers, and that gains made in previous price controls are banked in future ones.

This approach becomes difficult, though, if the incentive measures become too fragmented. With companies being encouraged to provide a greater share of the measures against which they are to be judged, there is a risk that comparability between networks will erode and may eventually disappear. Without common metrics of performance, the 'league table' approach to regulatory incentives becomes impossible.

Recommendation 4: Ofwat and Ofgem must ensure that the move to tailored incentives does not come at the cost of effective scrutiny of activities and does not limit options for introducing more elements of intra-sector competition in future price controls.

Regulators must also take care to ensure that, as incentive-based price controls become more common, they do not undermine the initial policy logic behind monopoly regulation. Part of the 'social contract' that makes regulation desirable is that, in exchange for guaranteed revenues and protections that other companies in conventional markets do not have, regulated monopolies act as they would if they faced genuine competition.

Better performance for customers is part of that replication of competitive behaviour. It should not come to be seen as an expensive luxury to be bought on top of the standard components of the price controls. It is part of them. While the trend for specifying and targeting rewards for particular improvements to customer service is helpful, we must avoid a situation where more and more of utilities' actions have to be deliberately sought and bought by the regulator.