Allowed and Expected Return

A report prepared for National Grid

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Executive Summary

- Ofgem stated in its December 2018 RIIO-2 sector-specific consultation document that it is minded to provide in future price controls for an allowed return on equity that sits 50 basis points below its best estimate of the cost of capital. The proposed adjustment anticipates that Britain's regulated energy networks are likely to out-perform the assumptions that will feed into Ofgem's upcoming RIIO-2 price control calculations, and will thus act as a regulatory safeguard against companies' making unjustified excess returns.

- Ofgem's thinking has been influenced in part by the networks' strong out-performance of RIIO-1 price controls and in part by recommendations made in a February 2018 report for the UK Regulators Network (UKRN). In a chapter of this paper, three of the report's authors, Professor Stephen Wright, Professor Robin Mason and Derry Pickford, argue that asymmetry of information makes it more likely than not that regulators will mistakenly set price caps too high and leave the expected return to shareholders sitting (well) above regulators' headline allowed rates of return.

- In this paper we dispute this defeatist characterisation of the regulatory process. We agree that information asymmetry presents challenges for regulators, but we do not agree that regulators are not capable of setting price controls which give the average regulated company a 'fair bet', such that, across sectors and across time, firms have a roughly equal chance of out- and under-performing. The evidence that we present in section 5 of the paper tends to support our position, in that it shows that there has not been an undue bias towards out-performance over under-performance in price controls set by UK regulators in the last 15 years.

- We suggest that Ofgem's proposed deduction from the cost of capital might more naturally be packaged as a 'stretch efficiency target' insofar as Ofgem is, in effect, signalling that it intends to go beyond the evidence assembled in its RIIO-2 cost assessment work and will challenge companies to deliver additional cost reductions and/or additional outputs. The scale of the additional challenge is substantial. Table A shows that companies might need to out-perform annual RIIO-2 totex allowances by 4% to 14% in order to get back to a level of return that is commensurate with the estimated cost of capital.

  Table A

Sector	50 basis points of return on equity expressed in terms of required annual totex out-performance
GDNs	5% to 6%
TOs	5% to 14%
DNOs	4% to 5%

- It is not clear that a regulator is entitled to factor savings of this magnitude upfront into price controls without first identifying and presenting robust evidence that the required cost reductions are practically achievable. Absent such evidence, it may be better for Ofgem to redirect its efforts away from ex ante anticipation of out-performance and towards the calibration of economic incentives and ex post sharing rules that enable out-turn step-change efficiency improvements, once revealed, to be shared between shareholders and customers in an equitable way.

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1. Introduction

The proposition that Ofgem will consciously set the allowed return on companies' regulatory asset values (RAVs) below the mid-point of its range for the estimated cost of capital is one of the most eye-catching parts of Ofgem's December 2018 RIIO-2 sector-specific consultation. This paper offers a critique of this policy. It is intended to help all parties understand the underlying logic in Ofgem's position and lays down several points of challenge for Ofgem to consider before it confirms its RIIO-GD2 and RIIO-T2 methodologies.

The paper is structured into five main parts as follows:

- section 2 contains a reminder of the statements that Ofgem and other parties have made about this topic since the start of 2018;
- section 3 offers an instant reaction to the proposal that Ofgem is making in its consultation document;
- section 4 suggests an alternative way of characterising Ofgem's decision to aim down when setting allowed returns;
- section 5 asks whether there is sufficient evidence to support the scale and direction of Ofgem's proposed adjustment; and
- section 6 concludes.

2. Background

We begin by summarising the thinking that underpins Ofgem's recent consultation proposals.

2.1 The Wright et al UKRN report

The origins of Ofgem's interest in allowed and expected return can be traced back to the February 2018 UKRN report *Estimation of the cost of capital for implementation of price controls by UK regulators* written by Professor Stephen Wright, Phil Burns, Professor Robin Mason and Derry Pickford.[1] The four authors point out in their paper that UK regulators have tended to use the terms "cost of capital", "allowed return" and "expected return" interchangeably, and suggest that in future much greater rigour should be shown in relation to use of terminology. They observe that:

- "cost of capital" or the "weighted average cost of capital (WACC)" is the annual return that lenders and equity investors require in exchange for making finance available to a regulated firm;
- the "allowed return" is the rate of return that a regulator applies to a company's RAV in order to calculate the £m profit entitlement that it factors into the company's revenue cap; and
- "expected return" is the return that investors expect to earn on their investment after receiving a regulator's price control determination and assessing likely scenarios for expenditure and performance.

(NB: for ease of presentation, we adopt the above definitions throughout the discussion that follows.)

After establishing terminology, three of the authors – Wright, Mason and Pickford – write about the approach that a regulator should take to the calibration of the allowed return. They begin by identifying two main reasons why the cost of capital, allowed return and expected return might logically have different values:

- the first reason stems from the inevitable imprecision that there will be in a regulator's estimate of a regulated firm's (unobservable) cost of capital. In the presence of uncertainty, regulatory practice across a range of jurisdictions has entailed 'aiming up' in the selection of WACC parameters and/or the selection of a point estimate from within an estimated WACC range on the grounds that the adverse consequences of setting an allowed return that is too low (e.g. possible under-investment or, in extremis, financial distress) are more severe than the adverse consequences of setting an allowed return that is too high (e.g. customers pay higher prices or there is over-investment); and

- the second reason relates to the quality of information that a regulator has vis-à-vis the regulated firm's management when they are negotiating price caps. Here, Wright, Mason and Pickford argue that the "informational advantage firms possess over regulators will almost certainly always result in a positive 'informational wedge'". That is to say that regulators will tend inadvertently to set price caps too high and set the average regulated firm up in such a way that it can expect to out-perform and earn a supernormal return for its shareholders.

It follows, using the above framework, that the relationship between the cost of capital, allowed return and expected return at the end of a typical UK price review will be:

$$AR = WACC + W_R$$

[1] Available at: https://www.ukrn.org.uk/wp-content/uploads/2018/11/2018-CoE-Study.pdf

and

$$ER = AR + W_I$$
$$= WACC + W_R + W_I$$

where:

WACC is the regulator's best estimate of the cost of capital[2]
AR is the allowed return
ER is the expected return
W_R is the percentage amount by which the regulator chooses to aim up from its best estimate of the WACC (the "regulatory wedge")
W_I is expected price control out-performance, expressed as a percentage rate of return (the "informational wedge")

Wright, Mason and Pickford next argue that the values of W_R and W_I, and hence the values of AR and ER, have hitherto emerged in a very haphazard way:

- in the case of W_R, the UKRN report surveys where in cost of capital ranges regulators have positioned their final point estimates of the WACC and identifies that there has been considerable variation across sectors and over time, owing to the lack of clear rules or convention, or even an accepted methodological framework, for regulators to refer to when they make price control decisions; and

- in the case of W_I, the authors' view is that regulators have unwittingly over-rewarded companies for making cost savings. Wright, Mason and Pickford say that they can accept that incentive regulation and out-performance necessarily go hand-in-hand, but find it implausible that the rewards for efficient behaviours should be anywhere near as high as has been the case recently in some regulated sectors.

This analysis then underpins two key recommendations:

> Recommendation MPW1: Regulators should set explicit numerical target values for both W_R and W_I, such that the sum of the two wedges should be equal to the desired value of the "aiming up" wedge [i.e. $W_I + W_R$]. These values would be periodically revisited at low frequency (probably in light of information emerging over the course of a full price control period), but they would be constant at higher frequency.
>
> Regulators would clearly need to take a view on the values of the two individual wedges. This is clearly novel, but we would argue that it is not an insuperable problem. Clearly also, if, as we would prefer regulators take an explicitly top-down approach by first setting their target value of the sum of the two, the "aiming-up" wedge, then they only need to set an explicit target for either WR or WI, but not both.

and

> Recommendation MPW2: Regulators should assemble a systematic and comprehensive database of historic outperformance, to enable them to make their best-informed forecast of the "informational wedge", W_I

The authors do not offer a quantification of either W_I on its own or W_R and W_I in combination (i.e. the "aiming up" wedge). However, the report states that the authors' initial instincts were

[2] Wright, Mason and Pickford suggest several possible ways of defining the WACC. The points they make are not obviously relevant to the discussion in this paper, therefore references to WACC from hereon should be read as references to companies forecast interest costs plus the cost of shareholder equity, in ine with Ofgem's RIIO-2 methodology and regulatory practice more widely.

that W_I ought logically to be zero, and, even after having been persuaded that this would not be realistic or desirable, they consider that the two elements should individually and collectively be fairly small. Importantly for the discussion that follows, the report goes on to conclude that W_R might need to be negative – i.e. that a regulator might aim down from the estimated WACC when it sets the allowed return – in circumstances where W_I looks unavoidably to be particularly high.

2.2 Ofgem's RIIO-2 sector-specific consultation document

In its most recent RIIO-2 consultation document, published just before Christmas, Ofgem handed Britain's energy network companies an early assessment of the RIIO-2 cost of capital and set out its response to these recommendations.

After reviewing current market evidence on the risk-free rate, the expected market and beta, Ofgem calculates that the CPIH-stripped cost of equity for electricity and gas networks currently sits in the range 4% to 5%. (Note that these are noticeably lower figures than Ofgem identified in its RIIO-1 reviews, which provided for an allowed return on equity in the range 7% to 8% (also in CPIH-stripped terms)).[3]

Ofgem's proposal to consultees is that it should, on the basis of information currently available to it, provide for a 4% allowed rate of return when it sets its new RIIO-2 controls. Its reasons for choosing this figure are as follows:

> The UKRN Report argues that the AR should be set by taking into account the degree of financial incentive (positive or negative) that investors might expect, in order to be consistent with the principle that the cost of equity, is, by definition, an expectation. The UKRN Report also recommended that the regulator collect data on outperformance and explicitly forecast a value for the wedge.
>
> We have assessed the issues raised in the UKRN Study against our experience of setting, and reviewing, price controls. We find that the distinction is important and we are persuaded to act upon the UKRN Study advice. We therefore propose that it would be beneficial to make a distinction between AR and ER as part of our cost of equity methodology.
>
> …
>
> [We] are confident that, on the balance of probabilities, investor expectations will be, at the very least, marginally positive, and that company capabilities are suitably adequate to fulfil such expectations ... In the absence of making a distinction between AR and ER, we could select a point estimate by taking the mid-point of the range … (say 4.5% on a CPIH basis). However, given that we believe investor expectations are positive, the logical consequence would be to select a point estimate in the lower half of this range, ie 4.0-4.5% on a CPIH basis. This would imply outperformance up to 50bps of additional equity return.
>
> As a working assumption at this point in the price control review, we assume an AR of 4% CPIH real, the bottom end of the cost of equity range. Thus, in making the distinction between AR and ER the impact on the AR would be a reduction of 50bps from the mid-point of the range. We note this is a relatively small reduction compared to historical outperformances of 200-300bps. This will be re-assessed at initial and final determinations in light of consultation responses, additional evidence and an assessment of the final overall RIIO-2 proposals.

Consultees have until 14 March to respond to Ofgem's proposals. Ofgem's first RIIO-2 determinations are due at the end of 2020.

[3] Ofgem's RIIO-1 cost of equity and rate of return calculations were expressed in RPI-stripped terms. We have converted the low-end (6.0%) and the high-end (7.0%) of Ofgem's figures by adding 1% for the difference between RPI and CPIH inflation.

3. Evaluation

If Ofgem were to proceed in the way that its RIIO-2 consultation document signposts, it would be the first occasion that we can recall when a regulator has consciously set its allowed return below its best estimate of the cost of capital. It is, therefore, well worth exploring Ofgem's logic in greater detail.

The overall policy objective

We can start by agreeing that the price review process should not produce outcomes in which the expected return straight away sits a sizeable distance above the allowed return. Instead, the ideal position at the end of a price review is one in which a well-managed regulated firm looks at the totex allowances and output targets that it has been handed by its regulator and sees a roughly equal chance of out- or under-performing its allowances.

In our experience, this is the result that all regulators strive to achieve when they make price control determinations. We cannot recall a price review that we have worked on in the last ten years in which a regulator has deliberately held back when setting total expenditure (totex) allowances or aimed off when setting output targets. In all cases, the mindset has been that regulators should arrive at the end of their reviews at central estimates of each of the other price control building blocks and thereby set up a 'fair bet', in which there is a broadly symmetrical distribution of possible out-turn returns centred around the chosen value for AR.

Asymmetry of information

The point at which we take issue with Wright, Mason and Pickford is the idea that "the informational advantage regulated firms possess will almost certainly result in a positive value of the 'informational wedge', W_I". While it is undoubtedly correct to say that regulators go into price reviews with the handicap of not knowing as much about the regulated firm as the firm's management, we do not think that it is inevitable that asymmetry of information will, despite best intentions, cause a regulator to under-estimate the outcomes that an efficient firm is capable of achieving. Nor do we think that asymmetry of information unavoidably creates a situation in which it is more likely that a regulated company will out-perform rather than under-perform.

That is not to say that regulators always get everything right. Our experience, across many price reviews over many years, has been that the regulator's distance from the day-to-day management and operation of the regulated firm's activities creates challenges and sometimes forces the regulator to make broad-brush, simplistic and sometimes even quite arbitrary assumptions about the firm's future expenditure and performance. Our observation, though, is that the impact this has can be beneficial or detrimental to the firm, and there is no sense in which the cards will always land in shareholders' favour.

We can remember, for example, working on price reviews in which regulators have responded to asymmetry of information by placing very high weight on econometric models, sometimes to the almost complete exclusion of real-world discussion about future drivers of expenditure. These models have inevitably contained errors (e.g. missing explanatory variables, incorrect functional forms) but such errors have, in our experience, disadvantaged as many companies as they have advantaged. Similarly, when regulators have used expert consultancy studies rather than econometrics to establish where an industry's efficiency frontier lies, we can recall as many instances in which the consultants have arrived at an over-demanding, hyper-efficient characterisation of the efficient firm as we can of price reviews in which consultants and regulators have missed obvious sources of future cost savings.

We do not therefore find Wright, Mason and Pickford's emphasis on information asymmetry or the concept of an "informational wedge" particularly insightful or helpful (and we suspect that other experienced regulatory practitioners might feel the same way). It would therefore perhaps have been better for the UKRN report to talk instead of a potential gap between the allowed and expected return that relates simply to expected out- or under-performance, without over-playing the importance of asymmetry of information per se, i.e.:

$$\begin{aligned} ER &= AR + E(OP) \\ &= WACC + W_R + E(OP) \end{aligned}$$

where E(OP) is expected out-performance (which may be a positive or a negative number).

Possible reasons for expected out-performance

What then determines the value of the E(OP) term in the above expression?

The first possibility is that in any given review a regulator just gets its calculations wrong. This need not always be a consequence of impossible-to-overcome information asymmetry. Rather, there are sometimes reviews in which the quality of the regulator's work is poor and the regulator ends up being too generous to the companies it is regulating. Conversely, there have also been reviews in which regulators have mistakenly set allowed revenues too low for similar reasons.

A second factor is the way in which risks crystallise within a control period. The UK's RPI – X form of regulation passes risks around demand, input prices, the delivery of investments and the achievement of service standards to companies for periods of between three years and eight years (depending on the sector). Even when companies face a 'fair bet' at the start of a control period, it is highly unlikely that the E(OP) term will remain at a zero value once uncertainties around GDP, wages, materials costs, project budgets, etc. start to resolve themselves. Instead, E(OP) will start to take on a positive or a negative value due to factors that are outside of a company's control.

A third factor is the way in which the regulated firm responds to regulatory incentives. This is slightly different from the other two factors in that we are not talking about a zero-sum allocation of value between shareholders and customers, but rather potential value-increasing behaviours which benefit both parties. When a firm responds positively to the financial sticks and carrots that its regulator has put in front of it, shareholders keep some of the benefit of out-performance for up to five years, but a proportion of the benefit also passes to customers both in the short term (via in-period sharing mechanisms) and the long term (via the reset of price controls after a fixed regulatory lag).

Importantly, one can make the case that regulators should try to ensure that the first and the second of the factors that we identify have a mean zero value across sectors and across time. But regulators should want the third factor – the out-performance that arises from a regulated firm's response to regulatory incentives – to come to be a positive number (indeed, ideally, an increasingly positive number as a control period unfolds). This, after all, is the point of incentive regulation; the whole idea is that a regulator anticipates as best as anyone can where the efficiency frontier sits, but then positively wants the regulated firm to review and re-review every aspect of its costs and performance and so push that frontier into previously uncharted territory.

Looked at in this way, it feels wrong to automatically view a wedge between the allowed and expected return as a problem. A regulator should certainly try to avoid regulatory error and it should strive to make central rather than biased forecasts of exogenous cost drivers and future frontier shift, but subject to two conditions, i.e.:

(a) that expected out-performance is zero or close to zero at the point when a regulator sets a price control; and
(b) that regulatory incentives are tuned to an appropriate level,

the gradual emergence of out-turn returns in excess of the allowed return can in many circumstances be regarded as good news for customers.

A target value for W_I

We are surprised, therefore, that Wright, Mason and Pickford want regulators to set a target value for expected out-performance and, moreover, recommend that the target value should be small. We find this problematic for two reasons:

- first, as we note above, incentive regulation is all about efficiency revelation. A regulator that sets up regulatory incentives is saying that no one can be certain at the outset of a control period how far costs can be driven down or how far outputs can be driven up, but wants this information to be revealed rather than remain hidden. This makes the idea of a target level for future unanticipated/unanticipatable savings – i.e. a target level of something whose true value no one knows – nonsensical; and

- second, we cannot conceive of a reason why a regulator should want as a matter of policy to see expected out-performance grow from a starting value of zero at the outset of a price control period to only a small number thereafter. The unknowable future could contain big cost reductions or small cost reductions, but it is counter-intuitive to say that customers would prefer the latter rather than the former.

Ofgem's consultation proposals

Ofgem, for its part, does not identify a target value of W_I in its RIIO-2 consultation document. Instead, it first of all explains how it will build and improve on the cost assessment and target setting work from its RIIO-1 reviews. Then it proposes a number of measures that would serve to limit the scope for the expected return to move out of line from the allowed return – e.g. lower totex incentive rates, a shorter control period, indexation of input prices, return adjustment mechanisms (John Earwaker, one of First Economics' directors, reviews these proposals in a separate paper). Then, in the chapter of its document that deals with the cost of capital, it proposes making a 50 basis points downward adjustment to the allowed return on equity.

The stated intention behind all of these proposals is that Ofgem will be able to keep the expected RIIO-2 return roughly in line with the cost of capital. But even if we were to accept that this is an appropriate policy goal (and John Earwaker has some concerns on this point in his paper), it feels like Ofgem has fallen into the same trap that Wright et al fall into and is anticipating the unanticipatable with its 50 basis points adjustment

Ofgem saying now that it needs a specific intervention to capture RIIO-2 profits for customers is equivalent to Ofgem saying that it knows now that it is going to have a problem in two years time. Remember that Ofgem has not seen even draft business plans in the RIIO-GD2 and RIIO-T2 reviews yet, nor has it started its work to assess the reasonableness of those plans. Yet somehow Ofgem knows that in December 2020 its totex allowances and output targets will come up some way short of realistic, central case projections of expenditure and service standards and will need to apply a sticking plaster in the allowed return calculation to mop up its regulatory error.

This is an unprecedented position for a regulator to take. Any other regulator would at this stage of a price review be convinced that it has the expertise and the tools to set companies challenging price control allowances. Ofgem, by contrast, seems to be conceding defeat on cost assessment before its review has properly started.

4. An Alternative Characterisation of Ofgem's Approach to the Allowed Return

4.1 Implied totex reductions

To put the adjustment that Ofgem is proposing into proper context, table 1 gives a rough starting estimate of the percentage amount by which companies might need to out-perform their totex allowances in order to offset Ofgem's 50 basis point adjustment and earn a return that is in line with the estimated cost of capital.

Table 1: Comparison of return on equity to totex out-performance

Sector	50 basis points of return on equity expressed in terms of required annual totex out-performance
GDNs	5% to 6%
TOs	5% to 14%
DNOs	4% to 5%

Source: Ofgem's financial models and First Economics' calculations.
Notes: financial projections for the RIIO-2 period are not yet available, so the table uses companies' average controllable totex allowances for the RIIO-1 period and the projected values of the RAV for the final year in Ofgem's price control financial models (as published on 30 November 2018). The calculations assume that companies retain 32.5% of totex out-performance, consistent with the mid-point of Ofgem's indicative 15-50% RIIO-2 incentive rates.

The numbers in the table are important because they provide a depiction of what Ofgem is, in effect, assuming is going to happen in the upcoming RIIO-2 period when it says that it must provide upfront for a downward adjustment from the estimated WACC – i.e. in making a 50 basis points deduction from the allowed return on equity, Ofgem must be expecting companies to underspend against allowances by roughly the amount shown above, or otherwise out-perform by an offsetting amount on outputs.

Rather than apply an out-performance offset in its cost of capital calculations, Ofgem could instead just provide much more directly for a 'stretch efficiency target' when it fixes companies' RIIO-2 totex allowances. Such an intervention would, if appropriately calibrated, have exactly the same mathematical impact on RIIO-2 revenue caps as the proposed 50 basis points adjustment to the return on equity. And, in our view, it would be a more obvious lever for Ofgem to pull, for the following reasons:

- first, table 2 shows that an across-the-board 50 basis points adjustment to the return on equity constitutes a different level of challenge to different firms in the sector. It is not immediately obvious why Ofgem should think that transmission networks as a class of licensee can be expected to out-perform by more than distribution networks, or why some DNOs/GDNs/TOs will likely do better than other DNOs/GDNs/TOs.[4] A single % adjustment to every company's totex allowance would give a more even impact across the industry;

- second, locating the downward adjustment to revenues in the totex allowance rather than the allowed return would help to disentangle Ofgem's assumptions about expected out-performance from its separate policy of levying different totex sharing factors on different companies. As things stand, the uneven distribution of required out-performance shown in table 2 will be jumbled up still further if/when Ofgem hands some companies a 15% sharing factor and other companies a 50% sharing factor

[4] DNOs with larger RAVs relative to expenditure will have to achieve higher totex out-performance than DNOs that comparatively smaller RAVs relative to ongoing expenditure. The same is true for the GDNs and the TOs.

(since companies that have a low sharing factor will have to underspend by more than companies with a high sharing factor in order to generate out-performance worth 50 basis of return on equity);

- third, an adjustment to totex allowances, where necessary combined with a stretch to specific output targets, will aid all parties as they track how companies are doing in the RIIO-2 period. Under Ofgem's proposed approach, under-spending against allowances will not necessarily equate to aggregate out-performance or return for shareholders – i.e. it will only be when companies under-spend by *more* than the percentages shown in table 2 that shareholders will be making supernormal profits. We are not sure that this will be understood by outsiders, which creates a risk that key stakeholders might get a mistaken impression of how companies are actually faring when they read RIIO-2 performance reports; and

- finally, and most importantly, an adjustment to totex allowances would, in our view, be a much more natural expression of Ofgem's underlying thinking. If Ofgem believes that companies are going to out-perform to the degree shown in table 1, it must be expecting firms to spend less than its totex allowances, so why not just say this explicitly rather than couch the new policy in the language of WACC and return.

We therefore think that there is a strong case for Ofgem, as a minimum, to move its adjustment for expected out-performance off of the allowed return and over to the totex allowance.

4.2 Possible sense checks

Even if Ofgem were not to change the proposed presentation, we think that table 1 still offers an important characterisation of what the regulator is ultimately asking of companies. The question this raises is: is it legitimate for a regulator to impose a final stretch efficiency target of this magnitude after competing its assessment of companies' plans, or does an add-on of this kind constitute regulatory over-reach?

Productivity growth rates

It may help to put the figures in table 1 into perspective by first of all recalling the assumptions that Ofgem and other regulators have made about underlying, long-term rates of productivity growth in regulated network industries. Table 2 gives a summary of recent assessments.

Table 2: Assumed rates of frontier productivity growth / continuing efficiency improvement

	Opex	**Capex**
CMA, Bristol Water, 2015	1.0%	-
Utility Regulator, NI Water, 2014	0.9%	0.6%
Ofgem, RIIO-ED1, 2014	0.8% to 1.1%	
CC, Northern Ireland Electricity, 2014	1.0%	1.0%
Ofgem, RIIO-GD1, 2012	1.0%	0.7%

Source: regulators' documents.

The figures in table 2 all sit at or close 1% per annum. This means that regulators typically expect frontier companies to reduce expenditures by about 1% per annum, or the equivalent of about 2.5% in aggregate over the course of a five-year period. Table 1 shows that Ofgem

is assuming that companies will typically out-perform by at least double this amount. It is not an exactly like-for-like comparison, because some of the savings that Ofgem is assuming could conceivably come from out-performing budgeted expenditures rather than pure year-on-year productivity growth, but the differential between the figures in table 2 and table 1 nonetheless offers pause for thought.

Regulatory precedent

Another way to put the 50 basis points into perspective is to search back for previous instances where regulators have imposed stretch efficiency targets. It turns out that there are very few such case studies (because regulators typically do not layer on to the cost of savings that they find in their detailed cost assessment work), but one recent example that may be instructive is Ofgem's RIIO-ED1 provision for smart-grid benefits (SGBs).

In its December 2014 RIIO-ED1 final proposals document, Ofgem reported that it deducted approximately 2% from DNOs' 2015-23 totex allowances in anticipation that the deployment of smart-grid technologies would unlock new cost savings.[5] The 2% efficiency assumption attached to a very specific cost driver and it is noticeable that the stretch assumptions in table 1 are more than double this amount. However, the importance of this case study lies not in the numbers but in what happened subsequently at the Competition & Markets Authority (CMA) when one of the DNOs', Northern Powergrid (NPg) appealed Ofgem's decision on the grounds that Ofgem, among other things, had acted in an "unjustified and disproportionate" manner. The CMA's views were as follows:[6]

> In considering NPg's appeal ground 1 as a whole, we take account of the importance of smart grid solutions and the role they are likely to play in the RIIO-ED1 price control period ... It is, in our view, consistent with GEMA's objectives for it to prioritise smart grid solutions in the price control and provide constructive challenge to the DNOs to incorporate them sufficiently in their business plans.
>
> … the importance of smart grid solutions as a policy goal cannot, in our view, negate the need for decisions in relation to SGBs in the price control to be justified and supported adequately by reasoning and evidence ... The justification for applying an SGB adjustment therefore required careful consideration. We consider that the basis for an SGB adjustment of the kind introduced by GEMA must have involved a judgement that the slow-track DNOs' business plans were likely to have underestimated materially potential SGBs and that the risk of any such underestimation had not been addressed adequately through GEMA's general cost benchmarking exercise.
>
> …
>
> We accept that, in general, GEMA was able to draw on a wide range of evidence and its regulatory judgement in reaching the decisions that informed its RIIO-ED1 Final Determinations. However, in the context of this ground of NPg's appeal, we have considered carefully what was presented to us as that wider evidence base including the approach which GEMA adopted at Final Determinations to estimate embedded and potential SGBs. In our view, for the reasons set out above, neither the evidence nor the reasons put forward by GEMA, at the time or subsequently, support GEMA's decision to make a specific SGB adjustment. In the absence of evidential support for the judgement, GEMA's discretion cannot, in our view, be treated as sufficient to justify the adjustment to NPg's totex that it made ...
>
> While we recognise GEMA's intentions in its approach to SGBs, and the importance of smart grid solutions, there has to be, in our view, a limit to the discretion of regulators to

[5] Ofgem (2014), RIIO-ED1 final determinations for the slow-track electricity distribution companies: business plan expenditure assessment, table 2.5.
[6] CMA (2015), Northern Powergrid (Northeast) Limited and Northern Powergrid (Yorkshire) plc v the Gas and Electricity Markets Authority.

> make adjustments to the costs assumed in setting the price control where the consultation process has failed to demonstrate evidence in support of those adjustments. The exercise of regulatory discretion remains bounded and subject to legal principles

The circumstances of this case are not identical to the circumstances pertaining to Ofgem's proposed RIIO-2 adjustments. It is also important to remember that CMA panels are constituted on a one-off basis to hear cases according to the specific grounds of appeal that have been submitted to them. Even with these caveats, however, it might be said that the CMA's remarks about the importance of supporting evidence and the boundaries to regulatory discretion apply just as readily to RIIO-2 controls.

5. Empirical Evidence

The supporting evidence that Ofgem provided in December for its 50 basis points adjustment relates principally to evidence of out-performance against past price control decisions. Ofgem's consultation document contains an annex which reviews companies' out-and under-performance against:

- energy networks' RIIO-1 controls;
- the price controls immediately preceding RIIO-1 (i.e. DPCR5, GDPCR1 and TPCR4); and
- Ofwat's PR09 and PR14 price controls.

This is a fairly small sample size. In preparing this report, we have tried to expand the data set to incorporate a broader understanding of the out- and under-performance there has been in:

- earlier versions of Ofgem's energy network price controls;
- the Northern Ireland Utility Regulator's price controls for Northern Ireland Electricity's (NIE's) transmission and distribution business;
- the CAA's charge caps for Heathrow Airport and NATS;
- ORR's regulation of Network Rail's revenues; and
- the Water Industry Commission for Scotland's (WIC's) charge controls for Scottish Water.

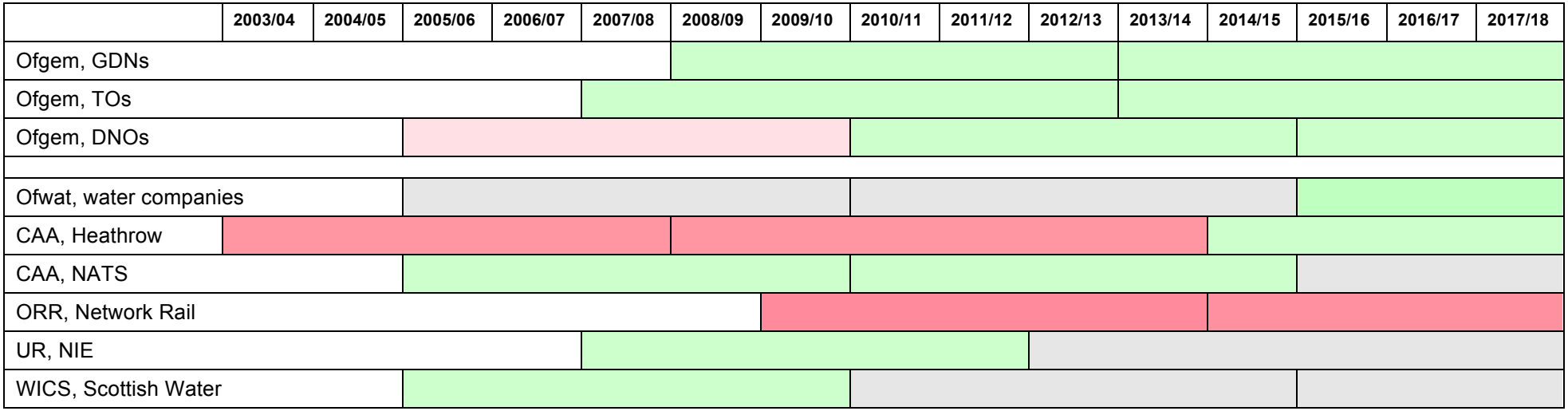
Brief summaries of the experiences in these sectors are set out below. (Note that in all cases we focus solely on out-performance against totex and output delivery incentives.)

The overall picture that they present is summarised in table 3 overleaf. The table contains 11 price control decisions that regulated firms decisively out-performed; 6-7 price controls where companies performed or are performing broadly in line with regulators' assumptions; and 5 instances in which there was under-performance.

Excluding price controls set by Ofgem, the numbers are: 5 price control decisions that regulated firms decisively out-performed; 6-7 price controls where companies performed or are performing broadly in line with regulators' assumptions; and 4 instances in which there was under-performance.

It is not at all obvious, therefore, that historical experience across all of the UK's regulated sectors supports either Wright, Mason and Pickford's arguments about the consequences of asymmetry of information or Ofgem's assertions about investor expectations. At the very least, we can say that a much deeper analysis of the data set is required before one can conclude that the past gives grounds for the kinds of out-performance assumptions that we identified in section 4.

Table 3: Out- and under-performance in price controls



Key:

Green = overall out-performance of the regulator's totex and output assumptions
Grey = performance broadly in line with the regulator's totex and output assumptions
Red = under-performance against the regulator's totex and output assumptions

Notes

Ofgem, energy networks

Ofgem documented in its consultation annex how energy networks generally out-performed the controls that Ofgem set just before its switch to RIIO and how most networks are also currently expecting to out-perform their RIIO-1 controls. In table 3 we add one more data point for Ofgem's 2005-10 DPCR4 electricity distribution price controls. Ofgem reported in 2011 that companies mostly under-performed against their expenditure allowances during this five-year period, with under-performance on opex typically outweighing out-performance on capex. Across the full five-year period, there were also more instances of companies falling short of output targets than of companies exceeding Ofgem's expectations.

Source: Ofgem (2011), Electricity distribution annual report for 2008-09 and 2009-10.[7]

Ofwat, water companies

Ofgem's consultation annex also referenced water companies' performance in the 2010-15 control period and the first two years of the 2015-20 control period. At the beginning of January, Ofwat gave an update on performance in 2017/18, which showed the industry as a whole performing broadly in line with Ofwat's PR14 allowances following a modest amount of sector-wide out-performance in 2015/16 and 2016/17.

In table 3 there is a separate entry for performance in the 2005-10 control period. This was a period when expenditure and service outcomes across the industry came in broadly in line with regulatory allowances and targets, with opex within 0.2% of Ofwat's PR04 projections and capex coming out slightly higher than Ofwat anticipated.

Sources: Ofwat's annual financial performance[8] and financial resilience reports.[9]

CAA, Heathrow Airport

Table 3 summarises Heathrow Airport's experience in its three most recent regulatory periods. In 2003-08 and 2008-14, Heathrow significantly under-performed against the CAA's price control assumptions. There were especially noticeable overspends against the CAA's opex allowances in most years, even though passengers volumes repeatedly came in below the CAA's forecasts. In the most recent control period, starting in 2014, Heathrow has continued to overspend against its opex allowances by about 4% per annum, but this under-performance has been accompanied by strong out-performance on volumes.

Source: Heathrow's regulatory accounts.[10]

CAA, NATS

After initially under-performing to such a degree that it had to be bailed out by government and customers within a year of its part-privatisation NATS has tended to out-perform the CAA's price caps on charges for air navigation services even in years when volumes have fallen short of the CAA's forecasts. It has been particularly adept at underspending against

[7] https://www.ofgem.gov.uk/ofgem-publications/46630/electricitydistributionannualreportfor2008-09and2009-10v21.pdf
[8] https://webarchive.nationalarchives.gov.uk/20110110112514/http://www.ofwat.gov.uk/regulating/reporting/rpt_fpe_2009-10
[9] https://www.ofwat.gov.uk/wp-content/uploads/2019/01/Monitoring20financial20resilience2020-20201820Report20-20Final-1.pdf
[10] https://www.heathrow.com/company/company-news-and-information/economic-regulation/specified-activities,-rents-and-regulatory-accounts

the CAA's opex allowances, although in the current 2015-20 control period the company has started to overspend for the first time.

Source: NATS' regulatory accounts.[11]

ORR, Network Rail

In recent years – i.e. starting from around 2012/13 – Network Rail has repeatedly overspent and under-delivered against ORR's periodic review determinations. It has had particularly big problems in the current 2014-19 control period, with the company falling as much as 11% short of ORR's targets for efficiency improvement.

Source: ORR's annual efficiency and finance assessments.[12]

Utility Regulator, NIE

NIE's transmission and distribution business performed broadly in line with the assumptions that the Competition Commission used when setting the company's 2012-18 price control, albeit with an underspend on capex offsetting an overspend on opex. During the previous 2007-12 control period, the company significantly underspent against the Utility Regulator's allowances.

Sources: Utility Regulator (2017), Transmission and distribution 6th price control (RP6) final determination[13] and Utility Regulator (2012), Transmission and distribution price controls 2012-17 final determination.[14]

WIC, Scottish Water

Scottish Water has for several years now exhibited a pattern of spending broadly in line with the WIC's expenditure allowances. By way of an example, its opex in 2016/17 and 2017/18 were within £1m of the WIC's SR15 allowance. It has also been able to meet or exceed the WIC's targets for service quality.

Source: the WIC's annual performance reports.[15]

[11] https://www.nats.aero/about-us/company-performance/annual-reports/
[12] http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/monitoring-performance/efficiency-and-finance-assessment
[13] https://www.uregni.gov.uk/sites/uregni/files/media-files/2017-07-04%20RP6%20FD%20Main%20Report%20%28002%29.pdf
[14] https://www.uregni.gov.uk/sites/uregni/files/media-files/RP5_Main_Paper_22-10-12_FINAL.pdf
[15] https://www.watercommission.co.uk/view_Performance%20reports.aspx

6. Conclusion

The analysis in this paper offers several important points of challenge to Ofgem's December 2018 proposals on allowed and expected return. The key questions that we hope Ofgem might wish to think about before it confirms its RIIO-GD2 and RIIO-T2 methodologies may be summarised as follows.

1. Is Ofgem's lack of confidence in its ability to set challenging totex allowances and associated output targets well-founded? Do other UK regulators share the Ofgem team's misgivings about their own abilities to set fair price controls, absent an upfront deduction from the allowed rate of return?

2. Is it necessary to characterise out-performance as something that is unwelcome and evidence of regulatory failure, rather than a desirable outcome from RIIO (Revenue + Incentives + Innovation + Outputs) regulation?

3. Are additional efficiency targets of 4% to 14% of totex justified given the networks' starting positions going into RIIO-2 controls?

4. Is it logical that Ofgem's policy on allowed and expected return should challenge some licensees to out-perform (much) more than other licensees if they are to deliver a return that is commensurate with investors' cost of capital?

5. Is it natural and obvious, given the answers to the two preceding questions, that Ofgem should be making a deduction from the allowed return rather than placing a stretch efficiency overlay directly over totex allowances and/or adding a stretch directly to output targets?

6. Will Ofgem be able to defend stretch targets, however they are expressed, during an appeal to the CMA?

We would be surprised if Ofgem can answer all of these questions in the affirmative. The feeling that we are left with, therefore, is that Ofgem might have acted prematurely by announcing and calibrating a policy on allowed and expected return so early in the price control process (i.e. before the publication of companies' draft and final business plans, and before Ofgem's cost assessment work has begun in earnest).

At the time of writing, none of the other regulators that the UKRN report was addressed to has indicated that they intend to go down the path that Ofgem set out in its RIIO-2 consultation. This may, of course, change when the CAA, Ofcom and Ofwat publish draft and/or final determinations in their sectors in the next six months, but, if it does not, we think that Ofgem ought to recognise that there is another, better way of protecting the interests of customers. This other way comprises:

- the setting of challenging price controls allowances, which capture for customers current, best practice levels of efficiency in the sectors and then present an evidence-based challenge to companies to keep on improving in the RIIO-2 period;
- an appropriate allocation of exogenous risks; and
- appropriate economic incentives to improve efficiency and service standards by more than anyone currently thinks is possible, with an equitable sharing of new frontier shift between customers and shareholders if/when it materialises.

Our advice to Ofgem is therefore not dissimilar to the advice that Phil Burns, another experienced regulatory practitioner, gave Ofgem in one of his chapters of the UKRN report:

> [R]egulators are [not] powerless. They already have at their disposal a range of instruments that effect company profitability, most notably the targets that they set the

companies and the incentive rates they apply around those targets ... The art of regulation is to promote incentives for efficiency for the long-term benefit of customers, whilst achieving a fair settlement in the shorter term with a minimum of disruption to the longer term goal. In our view, regulatory action on outperformance should apply to the cost and output targets not to the RAR – the RAR should be focussed on the WACC and minimising regulatory risk implies that this should be clear and transparent. An arbitrary adjustment factor applied to the RAR would only add to regulatory discretion and risk.

Annex: Selected Data from Ofgem's RIIO-1 Price Control Financial Models

Company	End of RIIO-1 RAV (£m)	20bps off the allowed return (£m)	Average RIIO-1 controllable totex (£m)
GDNs			
East	2,489	-5.0	263
London	1,837	-3.7	229
NW	1,754	-3.5	196
W Mids	1,337	-2.7	151
Northern	1,707	-3.4	202
Scotland	1,334	-2.7	159
Southern	3,005	-6.0	326
Wales & West	1,711	-3.4	202
TOs			
NGGT	4,478	-9.0	197
NGET	11,184	-22.4	1,135
SHETL	2,141	-4.3	297
SPTL	1,802	-3.6	210
DNOs			
ENW	1,634	-3.3	225
NPgN	1,212	-2.4	159
NPgY	1,630	-3.3	211
WMID	2,230	-4.5	263
EMID	2,223	-4.4	264
SWALES	1,055	-2.1	134
SWEST	1,617	-3.2	214
LPN	1,515	-3.0	213
SPN	1,559	-3.1	206
EPN	2,369	-4.7	309
SPD	1,589	-3.2	189
SPMW	1,756	-3.5	209
SSEH	1,017	-2.0	149
SSES	2,142	-4.3	288
Total	58,327	-116.7	6,599

Notes: all figures are in 2009/10 prices. A 20 basis points deduction from the allowed return is equivalent to a 50 basis points deduction from the allowed return on equity for a firm with a 60:40 debt:equity capital structure.