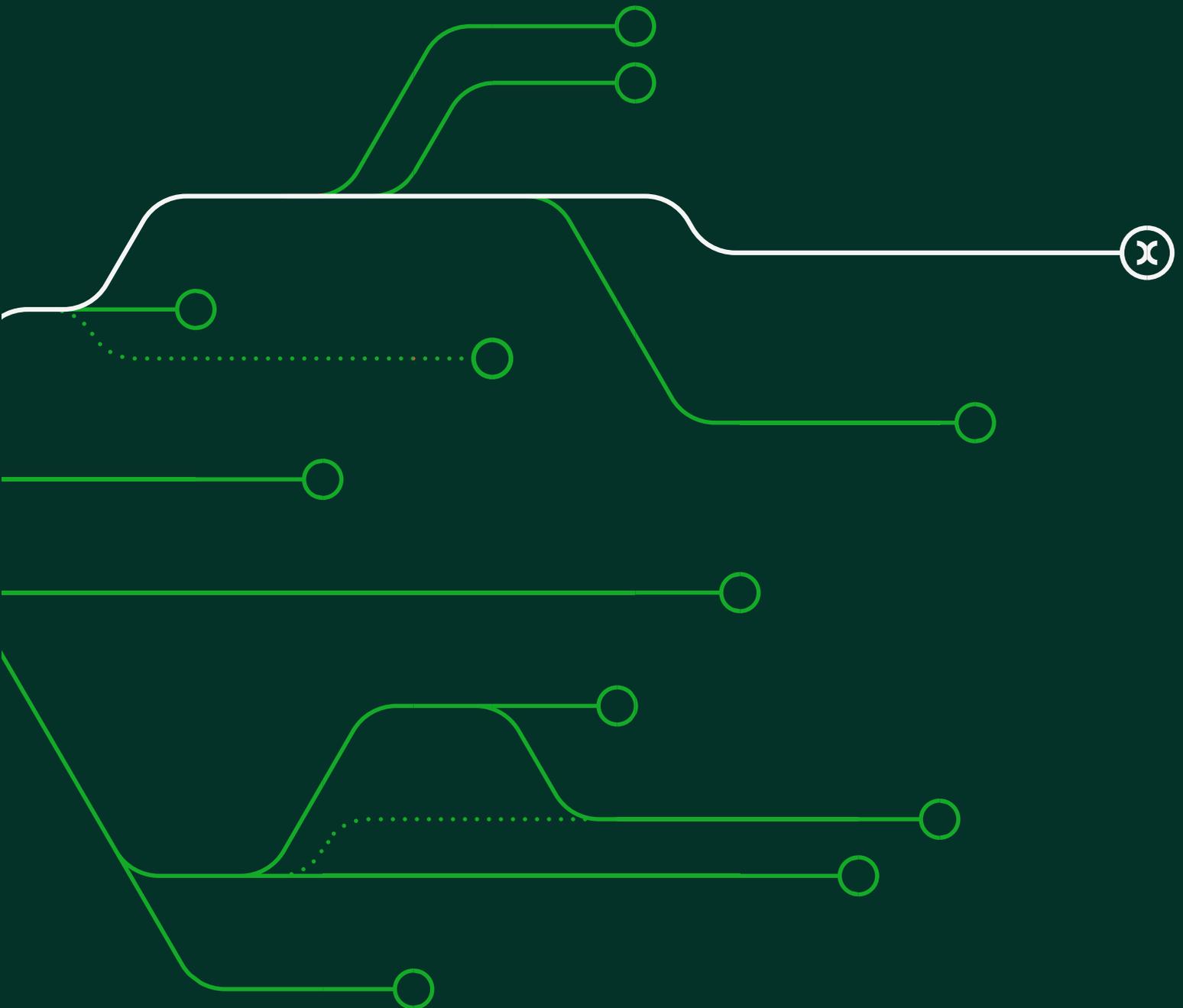


Prepared for the electricity transmission operators

9 December 2024



Contents

Executive summary	1
1 Introduction	8
2 Appropriately assessing investability: the limitations of Ofgem's framework and a fit-for-purpose investability assessment	11
3 The regulatory package should enable appropriate dividend payments	18
3.1 Theoretical evidence	20
3.2 Empirical analysis of European comparator dividend yields and the importance of dividend payments	27
3.3 Analysis of the importance of dividend policies	35
3.4 Conclusion	38
4 How the choice of a point estimate within the cost of equity range supports the investability of the sector	40
4.1 Considerations in selecting a point estimate within the cost of equity range to redress asymmetries within the regulatory settlement	43
4.2 Setting a return on equity allowance above the unbiased estimate would avoid welfare losses associated with underinvestment risk in a context of significant equity needs within an international competition for capital	55
4.3 Conclusion on the investable return on equity allowance	69
5 Ofgem should maintain the flat WACC approach to calculate the cost of equity at 55% notional gearing	71
5.1 The flat WACC approach and the RIIO-3 WACC calculation	71
5.2 Rationale for maintaining the flat WACC approach	75
5.3 Conclusion on the flat WACC approach	77
6 Conclusion	79
A1 Dividend yield per year for European electricity networks	81
A2 Buyback adjusted dividend yields for FTSE 100 relative to FTSE Utilities, UK (%)	82
A3 Share by industry of FTSE 350 companies included in the FTSE UK Dividend Plus Index	83

Oxera Consulting LLP is a limited liability partnership registered in England no. OC392464, registered office: Park Central, 40/41 Park End Street, Oxford OX1 1JD, UK with an additional office in London located at 200 Aldersgate, 14th Floor, London EC1A 4HD, UK; in Belgium, no. 0651 990 151, branch office: Spectrum, Boulevard Bischoffsheim 12-21, 1000 Brussels, Belgium; and in Italy, REA no. RM - 1530473, branch office: Rome located at Via delle Quattro Fontane 15, 00184 Rome, Italy with an additional office in Milan located at Piazzale Biccamano, 8 20121 Milan, Italy. Oxera Consulting (France) LLP, a French branch, registered in Nanterre RCS no. 844 900 407 00025, registered office: 60 Avenue Charles de Gaulle, CS 60016, 92573 Neuilly-sur-Seine, France with an additional office located at 25 Rue du 4 Septembre, 75002 Paris, France. Oxera Consulting (Netherlands) LLP, a Dutch branch, registered in Amsterdam, KvK no. 72446218, registered office: Strawinskylaan 3051, 1077 ZX Amsterdam, The Netherlands. Oxera Consulting GmbH is registered in Germany, no. HRB 148781 B (Local Court of Charlottenburg), registered office: Rahel-Hirsch-Straße 10, Berlin 10557, Germany, with an additional office in Hamburg located at Alter Wall 32, Hamburg 20457, Germany.

Although every effort has been made to ensure the accuracy of the material and the integrity of the analysis presented herein, Oxera accepts no liability for any actions taken on the basis of its contents.

No Oxera entity is either authorised or regulated by any Financial Authority or Regulation within any of the countries within which it operates or provides services. Anyone considering a specific investment should consult their own broker or other investment adviser. Oxera accepts no liability for any specific investment decision, which must be at the investor's own risk.

© Oxera 2024. All rights reserved. Except for the quotation of short passages for the purposes of criticism or review, no part may be used or reproduced without permission.

Figures and Tables

Figure 1	Illustration of the process for setting an investable return on equity allowance	4
Figure 3.1	Investment expenditure in GB electricity networks, historical data and forecast (£m)	19
Box 3.1	The clientele effect	24
Figure 3.2	Average dividend yield and total CAPEX investment by European comparators, relative to Ofgem's SSMD assumptions	29
Figure 3.3	Year-on-year variation in the average dividend yield and total CAPEX of European networks	30
Figure 3.4	Networks' average dividends per share and share price (real)	31
Figure 3.5	Historic and forecast dividends per share	32
Figure 3.6	Evolution of the dividend yields of Iberdrola, SSE, National Grid and the average of European comparators	34
Figure 3.7	Dividend yields for FTSE 100 relative to FTSE Utilities, UK (%)	35
Figure 3.8	Representation of industries in the FTSE UK Dividend Plus Index	37
Figure 3.9	Average annual share of companies exiting the FTSE UK Dividend+ Index, by industry	38
Figure 4.1	Illustration of the process for setting an investable return on equity allowance	42
Figure 4.2	Historic and forecast GB annual electricity demand (TWh), FES 23	46
Figure 4.3	Causal effects of WACC under-compensation on customers	57
Table 4.1	Summary of studies into the economic cost of power outages	58
Table 5.1	RIIO-2 cost of capital calculation (CPIH-real), at the 60% and 55% notional gearing assumptions and according to the flat WACC approach	72
Table 5.2	RIIO-3 SSMD cost of capital calculation (CPIH-real), at the 60% and 55% notional gearing assumptions and according to the flat WACC approach	74

Executive summary

In this report, written on behalf of the electricity transmission (ET) operators (TOs)—i.e. National Grid Electricity Transmission (NGET), Scottish Hydro Electricity Transmission (SHET) and Scottish Power Transmission (SPT)—we expand on issues related to the concept of investability, introduced by Ofgem in its RII0-3 Sector Specific Methodology Consultation (SSMC). The regulator's objective with this concept is to 'better understand whether the allowed return on equity is sufficient to retain and attract the equity capital that the sector requires'.¹ Ofgem notes that an investability assessment 'may also require new tools to be developed'² and has invited 'views and evidence [...] on how investability should be used and assessed with the above objective'.³

While the development of a holistic investability framework is outside the scope of this report, we outline that the wider context of the price control package, as well as the opportunity cost of capital, are important in assessing investability. A holistic assessment of investability needs to extend beyond the sufficiency of the baseline equity return and focus on cash flows beyond a single period. It needs to focus on marginal (in addition to the average) returns and understand the opportunity costs of capital in an international market, as well as the role of cross-checks on equity returns. The balance of risks and overall risk exposure matters in the calibration of an investable package. Moreover, while the focus of investability is on equity—including consideration of the impact of reducing dividends on the network investment proposition—credit metrics (and financeability) tests are complementary to ensuring network resilience and investability.

Within this wider context, this report focuses its contribution to the debate around investability by discussing some of the aspects that have not yet been fully developed in the RII0-3 Sector Specific Methodology Decision (SSMD), but that are required in a regulatory settlement to enable networks to attract and retain the equity needed to finance their investment programmes. Specifically, with reference to the position that has been developed in the SSMD, we discuss the importance of an

¹ Ofgem (2023), 'RIIO-3 Sector Specific Methodology Consultation – Overview', 13 December, para. 2.35.

² Ibid., para. 10.6.

³ Ibid.

adequate dividend yield to ensure an investable settlement for the networks. We outline a process for setting a return on equity allowance that meets shareholders' expectations and enables TOs to raise the equity needed to finance their investment programmes. We also show how Ofgem's intention to move away from the 'flat weighted average cost of capital (WACC)' approach is inconsistent with its investability objective.

The importance of dividend payments to ensure investability

We consider that Ofgem's assumptions regarding the dividend yield—the base case assumption of 3.0% with the potential to cut dividend yields to address financeability issues—do not facilitate an investable regulatory settlement.

Indeed, the main implication of the existence of a 'clientele effect', acknowledged by Ofgem in its SSMD, is that investors who are interested in the fact that networks are dividend-paying investments will be reluctant to invest in a company that is financeable only if it cuts its dividends, given their cash profile requirements.

Empirical evidence relating to the dividend yield of other European listed electricity networks shows that they have, over the past 15 years, systematically maintained a dividend yield largely above 3.0%, independently of the investment costs that they have incurred. Similarly, UK utilities have generally paid higher dividend yields than the UK market average, while showing more resilience in maintaining these dividend yields than other industries.

This evidence supports our hypothesis that regulated electricity networks cater to the expectations of a specific category of investors that favours high and stable dividend yields. Based on historical observations of such dividend yields, these investors will have formed expectations that they would continue to receive high dividend yields in the future. In that regard, other European listed electricity networks have signalled that they intend to broadly maintain their current dividend payments in the future, despite the investment programmes that they are planning on implementing (and we note that other European electricity networks provide an alternative investment opportunity relative to UK networks, in the international market for capital).

This leads us to conclude that a business plan scenario where the dividend yield for TOs would be halved from 3.0% to 1.5% would not be tenable in the context of investor expectations, and that investability for

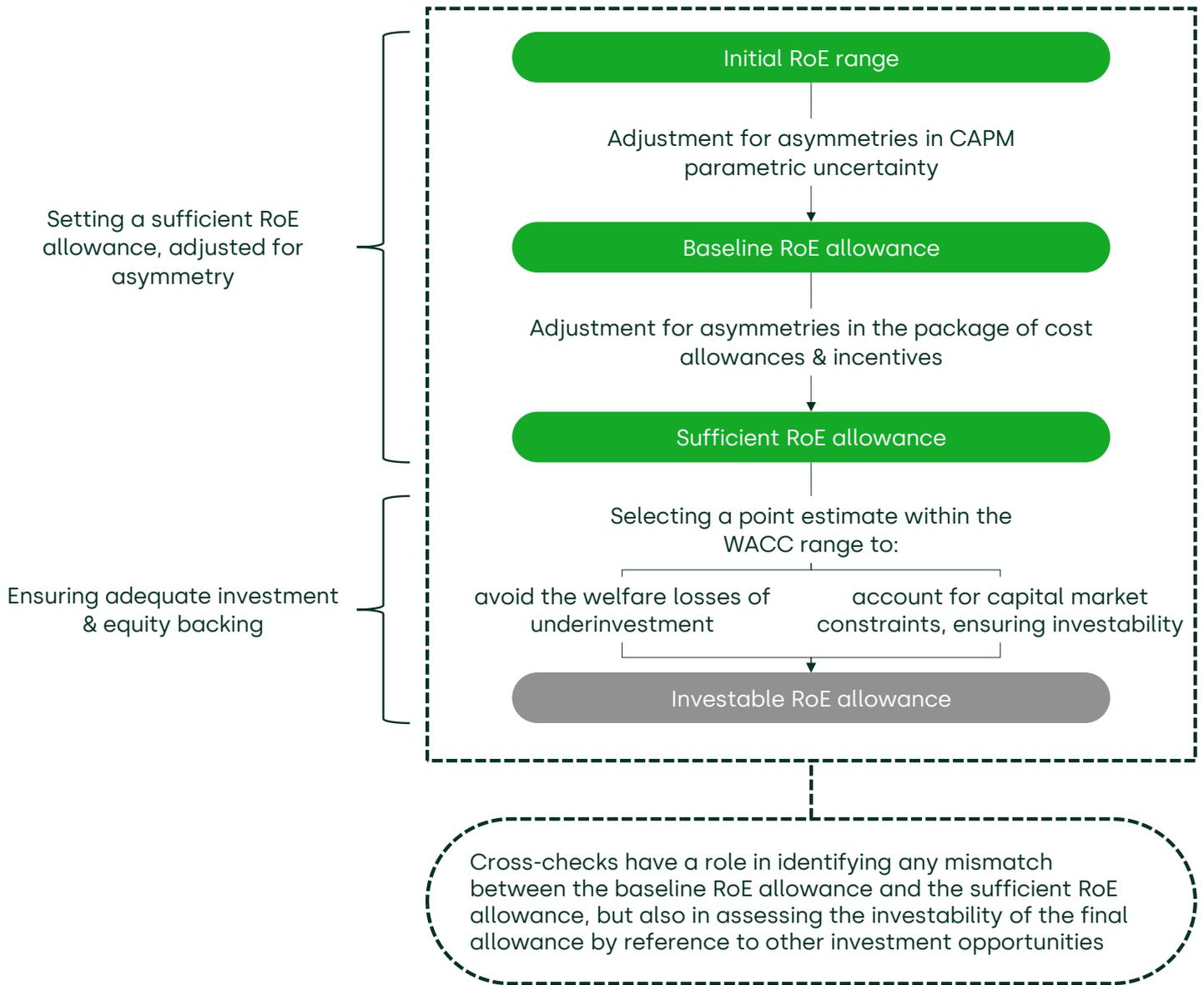
the TOs would be undermined in a critical period of high investment needs for the sector, if this scenario were to materialise. Overall, we conclude that it would be inappropriate for Ofgem to assume that the sector can attract new equity while signalling that the dividend policy can easily be adjusted downwards in order to address any financeability issues.

Setting an appropriate return on equity allowance to redress asymmetry in risk and avoid social welfare loss

The determination of an appropriate return on equity allowance is a key element of the regulatory process: in the context of the ambitious investment plans that need to be implemented by networks in RII0-3 and beyond, this issue becomes even more crucial. In order to ensure the investability of the sector, Ofgem should consider how it can adjust its allowances to improve the likelihood of returns being sufficient.

The process for setting the return on equity allowance that we recommend is illustrated in the figure below.

Figure 1 Illustration of the process for setting an investable return on equity allowance



Note: 'RoE' stands for return on equity.
Source: Oxera.

These points are covered in more detail below.

First, at this stage of the RIIO-3 process, a number of factors support setting an allowed return on equity in the upper half of Ofgem's proposed range. For example, forward-looking risks may not be accurately reflected in backward-looking beta estimates: as risks have increased compared with the previous price control, this would justify picking a high asset beta point estimate—and we note that Ofgem

signalled in its SSMD that it was considering picking a point estimate in the upper half of the asset beta range, and in excess of the beta used in RIIO-2, for this reason.⁴

Second, we consider that recent decisions by Ofgem (e.g. regarding the accelerated strategic transmission investment (ASTI) regime, or the RIIO-2 package of incentives) suggest that the RIIO-3 regulatory settlement might also have elements that are skewed towards the downside risk, and that the probability of companies underperforming on their targets is increasing due to asymmetric risk factors such as supply chain constraints becoming increasingly prevalent. If the existence of asymmetries is confirmed at draft determination (DD) stage, this would justify a further adjustment to the return on equity allowance.

Third, in order to ensure the attractiveness of the return on equity allowance, we consider that setting a higher than mid-point allowance in the estimated WACC range should be considered by Ofgem as a regulatory tool when seeking the investability of the regulatory settlement (in keeping with the CMA's statement in its PR19 redetermination: 'we consider that the need to promote investment should be a consideration in setting the point estimate'⁵). This recognises that the welfare impact of underinvestment is potentially bigger than the additional costs of setting an allowed return on equity higher than a mid-point estimate. Given Ofgem's new Growth and Net Zero duties,⁶ it is particularly timely to incentivise investment that avoids social welfare losses from inadequate investment in decarbonisation.

It is also important to note that, in a climate of net zero related uncertainty about optimal levels of investment—for example, as evidenced by the wide forecast variations in future electricity demand in the UK—equity capital needs incentives to enter and stay. In that regard, the choice of the WACC allowance to redress asymmetric risk and to incentivise investment differs from the other regulatory tools that could otherwise reduce underinvestment risk (such as licence obligations or incentives), and constitutes an important investability instrument. This is a relevant consideration at this point in time because of the significant

⁴ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 3.305.

⁵ Although we also note that the CMA said that, in the particular case of PR19, balancing factors meant that the risks of capital exit or underinvestment were low. Competition and Markets Authority (2021), 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations', 17 March, para. 9.1394.

⁶ Ofgem (2024), 'Ofgem's Multiyear Strategy', p. 7.

level of required investments, entailing equity injections, to ramp up electrification in RIIO-3 and beyond.

Abandoning the flat WACC approach would be inconsistent with an investability objective

In RIIO-2, Ofgem adopted, for the purpose of calculating the cost of capital at different levels of gearing, a 'flat WACC' approach, whereby the cost of capital was identical at the 60% and 55% notional gearing assumptions—upholding the principle that the cost of capital should be invariant to gearing.

In its SSMD, Ofgem has indicated that it does not intend to use this approach to calculate the cost of capital in RIIO-3, which is inconsistent with other statements by the regulator that its approach to calculating the cost of capital would be broadly in line with the current price control.

Importantly, the cost of capital and cost of equity calculated at the 55% notional gearing assumption are lower than those calculated following the flat WACC approach, when using the parameters considered by Ofgem in its SSMD. This amounts to a mechanistic reduction in the allowed return on equity, rather than a change that is well evidenced, compared with RIIO-2, which would be implemented precisely when TOs needed to raise equity to finance their investment programmes. This would be inconsistent with Ofgem's investability objective.

Besides, it would be against good regulatory practice not to adopt a consistent methodology for calculating the allowed cost of capital at different levels of gearing. In particular, it would undermine the stability of the methodologies used to calculate the allowed rate of return and, therefore, the predictability of the regime, and investability for RIIO-3 and subsequent price controls.

We therefore consider that it would be appropriate to maintain the flat WACC approach adopted in RIIO-2. This approach is consistent with Ofgem's own precedent, as well as with other regulatory precedent, including the CMA's determination in the NERL appeal. We also note that the CMA's reasoning for using a flat WACC approach in the NERL appeal was that the relationship between the cost of capital and gearing was positive (i.e. the cost of capital was increasing with gearing and the CMA considered that it should be invariant); this was also the case in RIIO-2, and would still be the case with the cost of capital parameters currently being considered by Ofgem. Adopting a flat WACC approach is also consistent with evidence from investor behaviour in setting

investment hurdle rates that are invariant to moderate changes to gearing.

In summary, while the focal themes in this report are not exhaustive in relation to the investability of the ET networks in RIIO-3, all of the topics that are discussed—in relation to dividend yields, additional considerations in ensuring a sufficient return, and the maintenance of the flat WACC approach—represent important aspects that have not been fully developed in the RIIO-3 SSMD. These are required in a regulatory settlement for RIIO-T3 that will enable networks to attract and retain the new and existing equity that is needed to finance their substantial investment programmes towards delivering the UK's net zero plans.

1 Introduction

- 1.1 In order to ensure the investability of the ET sector in the RIIO-3 price control, the GB ET operators (TOs) have asked OXERA to assess the role of dividends, and the methodology for setting the WACC allowance to redress asymmetry in risk and avoid underinvestment risk. They have also asked us to consider whether Ofgem's approach to the calculation of the allowed cost of capital for TOs, in potentially moving away from the 'flat WACC' approach used in RIIO-2, is in line with the regulator's investability objective.
- 1.2 This report is written in the context of the ongoing RIIO-T3 consultation process, as a follow-up to the publication of Ofgem's SSMD.⁷
- 1.3 In its multi-year strategy, Ofgem noted that the ET sector expects significant growth due to electrification.⁸ Ofgem reflects this expectation in the SSMD, where it explicitly refers to: **"investability"** concerns in RIIO-3 and the need to secure adequate equity capital to fund the **significant investment programme** envisioned for the ET sector in the coming price control periods'.⁹
- 1.4 Ofgem introduced the concept of investability in the SSMC, explaining that the objective of the investability assessment was to 'better understand whether the allowed return on equity is sufficient to retain and attract the equity capital that the sector requires'.¹⁰
- 1.5 However, Ofgem's framework for assessing investability has not been fully developed at SSMD stage. It remains focused on approaching investability solely through the return on equity allowance, when it should also consider other factors to ensure

⁷ Ofgem (2024), '[RIIO-3 Sector Specific Methodology for the Gas Distribution, Gas Transmission and Electricity Transmission Sectors](#)' (last accessed 9 December 2024).

⁸ Ofgem (2024), 'Ofgem's Multiyear Strategy', p. 16.

⁹ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 3.333. Emphasis added.

¹⁰ Ofgem (2023), 'Consultation – RIIO-3 Sector Specific Methodology Consultation – Finance Annex', para. 1.6.

that the regulatory settlement enables networks to attract and retain equity.

- 1.6 In practice, this means that Ofgem may draw inaccurate conclusions with regard to the investability of the RIIO-3 regulatory settlement, as it would fail to appropriately account for investors' expectations.
- 1.7 Inaccurate conclusions regarding the investability of the regulatory settlement might make networks unable to raise the equity needed to finance their significant investment programmes over RIIO-3 and beyond. The underinvestment that may result from not being able to retain and access sufficient levels of existing and new equity would, in turn, have detrimental welfare effects on consumers. This would also not be consistent with the promotion of Ofgem's Growth and Net Zero duties. In addition, inadequate equity backing at a time of increased investment needs might heighten financeability concerns, which would run counter to Ofgem's financeability duty.
- 1.8 With these considerations in mind, this report discusses how an appropriate dividend yield, the choice of a return on equity allowance that adequately remunerates investors and ensures that adequate investment is carried out, and the 'flat cost of capital' approach all contribute to the investability of the regulatory package. Indeed, all of these issues speak to ensuring that shareholders' expectations are met so as to attract the equity needed to finance future investments by the TOs.
- 1.9 The rest of the report is structured as follows.
 - Section 2 discusses **the limitations of the investability assessment framework** as currently envisaged by Ofgem, and outlines how the issues examined in this report are consistent with **a fit-for-purpose investability assessment**.
 - Section 3 explores the **critical role of sufficiently high and stable dividend yields** for TOs and the possible repercussions of a reduction in those yields.
 - Section 4 analyses the effects of **modifying the allowed return on capital** for TOs to address asymmetric risks, emphasising the societal consequences of **inaccurately estimating the WACC**.
 - Section 5 discusses the flat WACC approach implemented in RIIO-2 to set the allowed return on capital of TOs, and **recommends the continuation of the flat WACC approach for RIIO-3**.

- Section 6 concludes.

2 Appropriately assessing investability: the limitations of Ofgem's framework and a fit-for-purpose investability assessment

2.1 In its SSMD, Ofgem indicated that it was minded to follow the same three-step process that it used in RIIO-2 to estimate the allowed return on equity.

- Step 1 consists of estimating the market cost of equity using the capital asset pricing model (CAPM).¹¹
- Step 2 aims to ensure that the Step 1 cost of equity estimate is adequate considering a range of factors.¹²
- Step 3 would see Ofgem adjust the allowed return on equity in the presence of asymmetries within the regulatory framework in order to restore the balance between the expected return and the allowed return.¹³

2.2 Ofgem discusses the role of investability in RIIO-3 as part of Step 2 of the process described above.¹⁴

2.3 In particular, Ofgem intends to consider the investability of the regulatory settlement by:¹⁵

- using cross-checks (including, potentially, new cross-checks in addition to those considered in RIIO-2) to ensure the adequateness of the Step 1, CAPM-based cost of equity estimate;
- taking into account changes in risk relative to RIIO-2 (including potentially through the inclusion of European energy networks in the beta comparator sample);
- picking an adequate point estimate within its cost of equity range, in respect of either individual metrics or the overall allowance;
- using a specific allowance to compensate networks for equity issuance costs.

¹¹ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para 3.18.

¹² Ibid., para. 3.19.

¹³ Ibid., para. 3.21.

¹⁴ Ibid., paras 3.228–3.338.

¹⁵ Ibid., para. 3.245.

- 2.4 We briefly comment on each of these points in the following paragraphs.
- 2.5 First, it is not clear from the SSMD how cross-checks used to assess investability will be distinct from (or in addition to) the use of cross-checks as part of Step 2 of the cost of equity estimation process. Ofgem has not robustly set out why it considers that the present suite of cost of equity cross-checks are sufficient for robust analysis of investability. It is notable that Ofgem expressed a negative view on many of the tests proposed by networks that would specifically aim to assess new metrics as part of the financeability assessment, which included 'an attractive dividend yield, attractive accounting earnings growth, valuation and debt metrics and a strong balance sheet. [...] sell side analyst commentary, investor feedback and share price movements'.¹⁶
- 2.6 Indeed, Ofgem responded to these suggestions by stating that '[it] do[es] not, in general, agree with the appropriateness of the additional metrics suggested by the network companies'. Ofgem's underpinning rationale for dismissing the need for additional investability metrics appears to be an observation that utilities have distinct and attractive characteristics such as secure cash flows and inflation protection, and it is not the role of the regulator to facilitate particular earnings profiles or valuation metrics at any point in time.¹⁷
- 2.7 Another example is Ofgem's approach to dividend metrics: Ofgem has signalled that it is open to considering investors' preferences for dividend payments in the utilities sector,¹⁸ but it did not clearly articulate how it intends to use dividend-related metrics for the purpose of assessing investability. Instead, Ofgem indicated that dividends should be considered together with future growth potential (in the ET sector), and linked the dividend yield assumption to its financeability assessment.¹⁹ Indeed, Ofgem suggests that dividend yields could be reduced as a financeability lever,²⁰ which appears to be internally inconsistent insofar as satisfying credit metrics in financeability

¹⁶ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 3.278.

¹⁷ Ibid., para. 3.280.

¹⁸ Ibid., para. 3.282.

¹⁹ Ibid.

²⁰ Ibid., para. 5.11.

testing should not be achieved at the expense of incentivising entry and retention of equity capital.

- 2.8 Second, Ofgem considers that the inclusion of European energy networks in the beta comparator sample would better reflect the industry risks faced by UK energy networks (including the TOs) in the asset beta estimate (to the extent that they are systematic).
- 2.9 Third, and related to the point above, Ofgem signalled its readiness to choose a point estimate in the upper half of its SSMD range (and, presumably, above the midpoint) for the asset beta parameter—i.e. to aim up within the asset beta range.²¹
- 2.10 These two considerations by Ofgem reflect the regulator's intention to improve the accuracy of its asset beta (and, therefore, cost of equity) estimate. This is reflected in statements such as '[including European GD, GT and ET companies into our comparator set] should mean that net-zero driven risks that energy networks face, to the extent they are systematic, should be better captured in our cost of equity assessment process',²² and 'we retain the ability to weight individual or groups of beta comparators if this will lead to a more accurate estimate of beta for energy networks'.²³ While this position is reflective of the asset beta evidence in improving the accuracy of the CAPM estimate, we also note that Ofgem explicitly rules out, at this stage, aiming up to help facilitate investments.²⁴
- 2.11 Finally, Ofgem has indicated that it will take into account equity issuance costs, and has proposed that either the RIIO-2 mechanism is maintained with a working assumption of a 5% equity issuance costs allowance,²⁵ or the equity issuance costs actually incurred by companies are assessed (and remunerated).²⁶ However, Ofgem does not at present discuss how the assessment of equity issuance costs forms part of a

²¹ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, paras 3.305 and 3.320.

²² Ibid., para. 3.305.

²³ Ibid., para. 3.320.

²⁴ Ibid., para. 3.322.

²⁵ Ibid., para. 3.333.

²⁶ Ibid., para. 3.334.

wider narrative around investability and ensuring that networks are able to attract equity.

- 2.12 Overall, a review of Ofgem's proposed assessment of investability reveals that Ofgem does not seem to consider investability as a standalone concept, outside of an assessment of the appropriateness of the cost of equity estimate (and an assessment of the costs of issuing equity). Ultimately, Ofgem's investability framework fails to take into account wider factors that affect the attraction and retention of equity (as per Ofgem's definition of investability in the SSMC), but that do not affect the baseline cost of equity estimate.

Scene-setting for Ofgem's investability framework—extending beyond the themes assessed in this report

- 2.13 In this section, we discuss some of the wider context that would usefully inform and underpin a holistic assessment of investability for RIIO-3—and which it is not within the scope of this report to develop exhaustively. Nevertheless, we consider that there are a number of other factors, including Ofgem's acknowledgement in the SSMD that it needs to ensure sufficiency of the allowance for costs of new equity issuance, that affect the investability of the regulatory settlement.²⁷

- 2.14 This report presents analysis and evidence on selected relevant considerations and drivers that are likely to influence the investability of the UK electricity transmission sector in RIIO-3—i.e. dividend policy, asymmetry in returns distribution, and the flat WACC approach for TOs.

- 2.15 **First—assessment is required beyond the appropriateness of the baseline equity return.** The purpose of an investability assessment should be to determine whether the regulatory settlement is suitably calibrated to enable networks to meet the expectations of investors, existing and new, in a way that allows investments in the industry to be delivered. At a high level, investors' expectations revolve around:

- the return on equity that their investment will generate over its lifetime;

²⁷ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, paras 1.16, 3.245 and 3.324.

- the remuneration profile of this investment (i.e. the profile of cash flows that results from it).
- 2.16 At a more granular level, assessing whether the regulatory settlement enables networks to meet these expectations requires the regulator to assess a broad variety of factors influencing an investor's decision to maintain their investment in, or inject new equity into, ET networks. This requires that investability goes beyond ensuring the appropriateness of the return on equity allowance using Ofgem's existing CAPM and cross-check methodologies.
- 2.17 **Second—investability extends to focus on cash flows beyond a single period.** Given the nature of equity investment, it is necessary to ensure that networks have the ability to maintain an attractive investment proposition not just in the current period, but over multiple price controls, in order to ensure that sufficiently high levels of investment can be retained and attracted for a sustained period of time. Accordingly, the focal lens for an investability analysis would reasonably be over multiple price controls, in contrast to the five-year focal lens in previous financeability tests undertaken by Ofgem. This would signal the regulator's intention, to investors, of maintaining the investment proposition for multiple price controls.
- 2.18 **Third—focus on marginal (as well as average) returns and understand opportunity costs of capital in an international market, including the role of cross-checks on equity returns.** As part of the overarching context for assessing investability, an important consideration is that reinvesting earnings is unlikely to be sufficient to finance the networks' substantial investment programmes that are required in the context of the energy transition. Therefore, the TOs consider that it will be necessary to issue new equity over the course of RIIO-3 and/or subsequent price controls. In light of these requirements, it is of critical importance for the regulator to ensure that GB network investments are attractive to the marginal investor, and even more so in a context of global competition for capital, where the regulatory settlement needs to offer a competitive risk-adjusted return in order to be investable.
- 2.19 Notwithstanding the fact that regulatory consistency and transparency facilitates long-lived investments, cross-checks on the competitiveness of the TOs' returns in RIIO-3 can be used to determine whether adjustments need to be made to prior

methodologies, in order to ensure that there is an adequate incentive for participation of marginal investors. This means that cross-checks on the baseline cost of equity estimate are required as part of a holistic investability framework. In addition, cross-checks may, for the purpose of assessing investability, differ from, and extend beyond, Ofgem's cross-checks on the CAPM cost of equity.

- 2.20 **Fourth—consider the balance of risks and overall risk exposure.** It would be appropriate for the regulator to reflect on the extent to which the baseline return on equity allowance is consistent with the risks faced by the networks. In particular, given the expected evolution of risks in RIIO-3 compared with RIIO-2, this would include ensuring that the baseline return on equity allowance reflects forward-looking risks, but also ensuring that any residual asymmetries in the regulatory settlement are appropriately redressed by an adjustment of the baseline allowed return. Finally, an assessment of the overall risk exposure is also appropriate—in order to verify whether it is still consistent with the degree of risk exposure that investors in regulated utilities are willing to accept. If the allowed return on equity is not consistent with the balance of risks, or if overall risk exposure exceeds what investors are willing to accept, the regulator risks the regulatory settlement not being investable.
- 2.21 **Fifth—while the focus of investability is on equity, credit metrics (and financeability) tests are complementary to investability.** It should also be clear that investability must be supported by a regulatory settlement that enables strong debt financeability—which would be reflected by a strong credit rating. Indeed, a regulatory settlement that reduces financial risk will improve the risk–return trade-off of the investment, thereby enhancing the attractiveness of the investment proposition. In turn, equity investments resulting from an investable regulatory settlement will strengthen the financial resilience of networks.
- 2.22 **Sixth—investability analysis should consider the impact of reducing dividends on the network investment proposition.** The assumption that networks can easily flex dividends downwards for a long period of time in order to finance investments, in addition to raising new equity, represents a fundamental shift in the investment proposition offered by networks. This might lead to networks being unable to raise enough equity to deliver their investment programmes.

Scope of investability themes assessed in this report

2.23 As set out above, while the range of topics and issues that should be considered as part of an investability assessment is broad, this report focuses on several aspects that are relevant to an investability assessment in light of what Ofgem proposes in its SSMD.

2.24 Specifically, the topics discussed below are of importance to investors, and have not been fully developed as part of the SSMD. We explain how several factors can contribute to the investability of the regulatory settlement within the RIIO-T3 context, by focusing on:

- the importance of maintaining dividend yields in line with investor expectations and benchmarks, as supported by empirical analysis (section 3);
- the importance of selecting the point estimate of the WACC to redress any asymmetry risk in its estimation and in the price control package, as well as to avoid welfare losses associated with underinvestment risk—especially in the context of significant (new) equity injection needs to deliver UK decarbonisation, within an international competition for capital (section 4);
- the importance of maintaining stability in the WACC methodology where appropriate to preserve investment incentives, including as regards the link between capital structure and allowed returns (section 5).

3 The regulatory package should enable appropriate dividend payments

3.1 In its SSMD, Ofgem indicates that:

we are open-minded to the requirements of investors, and we do see the potential benefit in considering issues such as the dividend preferences of investors in the utilities sectors (who often have underlying income requirements).²⁸

3.2 At the same time, Ofgem states that the growth in the ET sector over RIIO-3 and subsequent price controls is going to generate earnings growth in the future. As a result, in determining the parameters of the regulatory package, Ofgem considers that it 'must be careful to capture the potential value of both growth and income when considering the attractiveness of the investment proposition'.²⁹

3.3 Such a statement echoes previous statements by the regulator, including in RIIO-2, that investors are indifferent between earnings growth and dividends. For example, in its RIIO-2 FD, Ofgem stated that 'under the Modigliani and Miller theorems, investors are motivated by total returns and indifferent to the level of dividends, so we continue to believe that RAV growth and dividend assumptions should be considered together'.³⁰

3.4 However, the specific context in which Ofgem makes the statements above now needs to be considered. As already mentioned and acknowledged by Ofgem, TOs will have to implement significant investment programmes over RIIO-3 and beyond—much larger than in previous price controls.³¹ Figure 3.1 below shows planned investments in transmission networks (including ASTI) in future years, revealing a steep increase from the investment amounts observed historically.

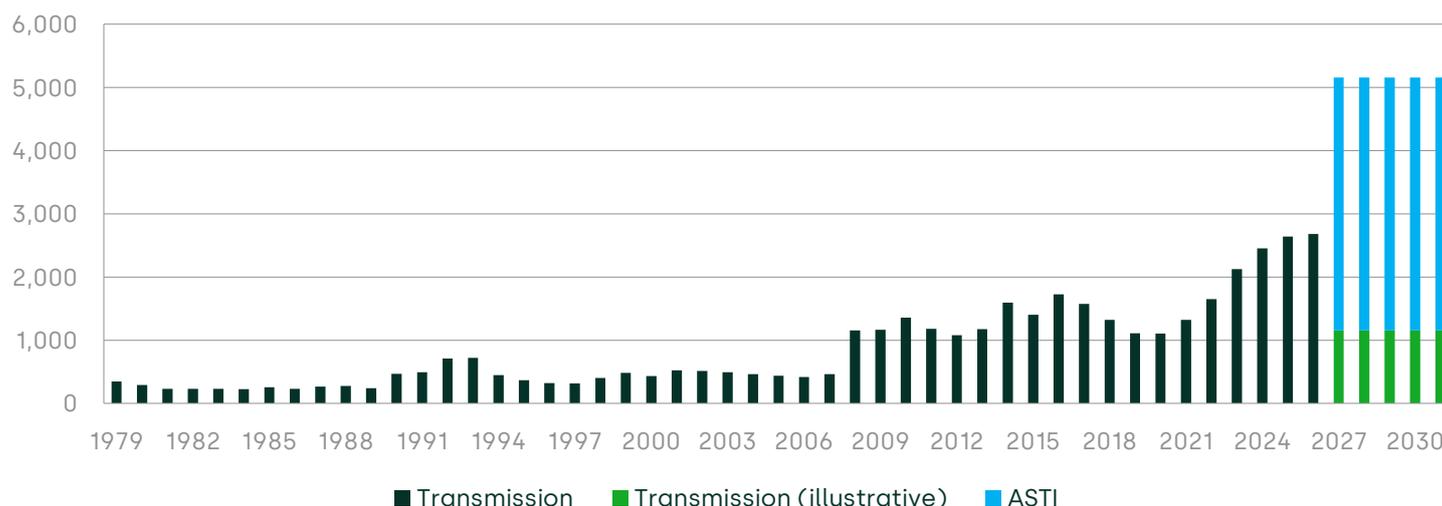
²⁸ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 3.282.

²⁹ Ibid.

³⁰ Ofgem (2021), 'RIIO-2 Final Determinations – Finance Annex (REVISED)', 3 February, para. 11.95.

³¹ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – ET Annex', 18 July, para. 2.1.

Figure 3.1 Investment expenditure in GB electricity networks, historical data and forecast (£m)



Source: Oxera analysis based on Ofgem publications.

- 3.5 This will put a major constraint on the networks' cash flows in the short term: cash allocation will become more difficult, and significant investment needs will necessitate raising new financing, including equity.
- 3.6 Mindful of this challenge, Ofgem has put forward a proposition to assess the investability of the regulatory package, as discussed above. However, as noted earlier in the report, based on some of the regulator's statements in the SSMD, there is a concern that the regulator might make trade-offs between financeability and investability. In particular, Ofgem has indicated that, in order to address potential financeability issues, it is considering a distribution reduction, i.e. a reduction of the dividend yield from 3.0% to 1.5%.³²
- 3.7 This is an important conceptual concern about the investability framework that Ofgem is developing—investability goes beyond financeability because it encompasses a focus on attracting and retaining equity investment. This goes beyond the narrower focus on credit metrics within financeability tests. Accordingly,

³² Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 5.11, Table 15.

an adequacy of credit ratio thresholds cannot be achieved by trading off the requirements of equity investors.

- 3.8 Also, Ofgem appears to disregard the fact that reducing or limiting dividends is not costless for TOs. As detailed in this section, research suggests that investors are likely to invest in utilities with an expectation of consistent, steady and relatively high dividend yields.
- 3.9 Diverging from such dividend yield policies would thus be unusual and is likely to have an impact on the TOs' investors. Even if a new investor were to enter, there is no expectation that a new pool of investors, if any, would have different behaviours in terms of their dividend expectations. This is because investors allocate their investments into different assets depending on the profile of cash flows that they expect to generate from said assets.
- 3.10 In other words, investors who invest in utilities are likely to do so with the expectation of consistent and relatively high dividend yields from regulated utilities.
- 3.11 Accordingly, in this section, we present both theoretical and empirical evidence to explain why Ofgem should ensure that its regulatory settlement allows for the payment of a sufficient dividend yield.

3.1 Theoretical evidence

3.12 We start by explaining how the Modigliani–Miller (MM) dividend irrelevance theory does not strictly hold in practice, which implies that investors are not indifferent about dividend distribution policy or the timing of cash flows from dividend payments. We then discuss the clientele effect of dividend policy, which suggests that changes to the assumed profile of investor returns can hamper a firm's ability to raise equity finance.

3.1.2 Modigliani–Miller dividend irrelevance theorem

3.13 The MM dividend irrelevance theorem posits that investors are indifferent between receiving dividend payouts and realising capital gains by selling their shares.³³ If a company chooses to

³³ Miller, M.H. and Modigliani, F. (1961), 'Dividend policy, growth, and the valuation of shares', *The Journal of Business*, October, **34**:4, p. 412.

reinvest profits in financing growth instead of distributing dividends, the price of shares will increase proportionally.

3.14 Shareholders can then have the option of selling their shares at a higher value than their initial purchase, giving them an 'artificial dividend' which will be the same as a traditional dividend payout. Therefore, a company's value is determined primarily by the present value of its cash flows, driven by strategic investment decisions, rather than the specific manner in which it allocates its earnings.

3.15 The MM theorem is built on the premise of a 'perfect capital market' that satisfies the following assumptions:

- the firm's investment policy is fixed and known by investors;
- individuals can costlessly buy and sell securities;
- there are no personal or corporate income taxes;
- there are no asymmetries of information—there is perfect sharing of knowledge of current operations and financial performance and future plans between the managers of the firm and its investors;
- there are no agency costs between managers and outside investors—there are no internal costs that arise as a result of competing interests of external shareholders (principals) and internal management (agents).

3.16 However, as shown by multiple studies, the 'perfect capital market' is a controlled scenario that cannot be replicated in practical settings and is not seen anywhere in the world.³⁴

3.17 Specifically, in the context of the TOs, some examples of how the MM assumptions for dividend irrelevance do not hold in the context of RIIO-T3³⁵ are discussed below.

- Ofgem notes that 'there is a step-change in infrastructure investment requirements across GB to build out a zero carbon, more flexible and more secure energy system at pace'.³⁶ In the face of this, there is considerable uncertainty about the

³⁴ See, for example, Ahmeti, F. and Prenaj, B. (2015), 'A critical review of Modigliani and Miller's theorem of capital structure', *International Journal of Economics, Commerce and Management (IJEEM)*, 3:6, p. 9.

³⁵ In addition, wider than the RIIO-T3 context, we note that assumptions such as 'no taxes' and 'perfect capital markets' do not hold in the UK economy in general.

³⁶ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 1.6.

investment plans of TOs, and how severely they will affect its cash flows. This means that the assumption of investors having full knowledge about a firm's investment policy will not hold—given the uncertainties about the level and pace of required investment, which may result in significant asymmetries of information between management and investors.

- All the TOs are publicly listed as part of larger group entities, which include non-regulated assets. However, even for publicly listed companies, there are limits to being able to costlessly create 'artificial dividend' income streams, not least because there are transaction costs in buying and selling securities. It is reasonable to expect that there would be further challenges in (costlessly) creating artificial dividend income streams for networks that are privately held, since there would be no traded shares with an observed unit price. In attempting to replicate a dividend income stream—were dividends substantially reduced or not paid at all—a unit (i.e. how much of a stake is divested) and its price would have to be determined in a bilateral transaction, and (significant) transaction costs would be incurred in selling a stake.
- The MM authors themselves accepted the potential existence of 'clientele' effects, which may undermine their findings, as discussed in Box 3.1 below.

3.18 In practice, there is significant divergence between the 'perfect capital market conditions' that underpin the MM theorem and the actual conditions that are seen in capital markets. Therefore, in practice, investors may not be indifferent between receiving a dividend and reinvesting in the company—i.e. they may be affected by the timing of cash flows in relation to firms' dividend distribution policies.

3.19 Furthermore, the notion that investors are indifferent to a cut in current dividends (because they can create an artificial dividend by selling the appreciated shares) relies on the assumption that the TOs would be able to yield higher cash flows in the long term from reinvesting the omitted dividends. In practice, this assumption may be subject to some degree of uncertainty due to regulatory risks, as discussed in section 4.

3.1.3 Why investor preferences matter—the 'clientele effect'

3.20 Further, it is necessary to look at the investor base in more detail. In reality, investors are heterogeneous, and may have different views on the relationship between perceived risk and expected return, as well as potentially taking other investment

factors into account, particularly expected dividends and other cash distributions.

- 3.21 Accordingly, it is important for regulators to not treat investors in the abstract, but rather to understand the types of investor who are likely and best placed to invest in the electricity sector. In particular, this requires an acknowledgement of **the 'clientele effect'**, whereby investors prefer specific sectors based on the sectors' returns, risk and economic characteristics, and on the objectives of specific cohorts of investors. The box below explains why dividend irrelevance theory is unlikely to hold in practice because of market imperfections due specifically to the presence of the 'clientele effect'.³⁷

³⁷ Miller, M. and Modigliani, F. (1961), 'Dividend policy, Growth, and the Valuation of Shares', *The Journal of Business*, **34**:4, pp. 411–433, section 5.



Box 3.1 The clientele effect

The clientele effect refers to the tendency of different groups of investors to prefer different dividend policies based on their tax situations and income preferences—for example, some investors prefer high dividends while others prefer capital gains.

The term was first discussed by Modigliani and Miller (1961), where the authors explain that, in a frictionless world, investors would be indifferent between dividend payments and reinvestments and hence there would be no clientele effect. However, as the authors acknowledge, this hypothesis does not hold in the real world because of market imperfections such as the heterogeneity of investors (e.g. differences in income requirements and risk tolerances) and other market frictions.

Subsequent research into the topic has shown that the clientele effect is not only present, but it also plays a significant role in a firm's decision to issue dividends. Some examples are given below.

- Black (1976) explores why firms pay dividends notwithstanding the Dividend Irrelevance Theorem, and finds that investors who need or prefer dividends will gravitate towards dividend-paying stocks, creating stable demand for such stocks. The author explains why firms might cater to these preferences by maintaining a consistent dividend policy.
- Brennan and Schwartz (1984) build on the notion of the clientele effect by examining how different dividend policies can attract different types of investor based on their tax situations. They argue that this makes the clientele effect significant, as firms with policies that align with the tax preferences of their investors see changes in stock prices as investor demand shifts.

Source: Oxera based on Miller, M. and Modigliani, F. (1961), 'Dividend policy, Growth, and the Valuation of Shares', *The Journal of Business*, **34**:4, pp. 411–433. Black, F. (1976), 'The Dividend Puzzle', *Journal of Portfolio Management*, **2**, pp. 5–8. Brennan, M.J. and Schwartz, E.S. (1984), 'Optimal Dividend Policy and the Value of the Firm', *Journal of Finance*, **39**, pp. 1037–1051.

- 3.22 The investor base for utility companies is likely to be different to that for the wider stock market, as utility investors are relatively likely to be income-seeking (i.e. seeking stable dividends). Armitage (2012) finds evidence supporting this theory, by showing that the persistently high dividends in the UK water sector cannot be adequately (or fully) explained by leading explanations for high dividends, such as taxes, agency costs, signalling, or life-cycle considerations.³⁸
- 3.23 Rather, Armitage finds that there is an investor demand for dividends due to institutional, clientele and behavioural explanations, with utility companies satisfying such requirements given the nature of the cash flows that they generate for their investors.³⁹ For example, some institutional investors, such as endowments, may require steady cash flows, while others, such as pension funds, may require assets where the cash-flow duration matches that of their liabilities (which in turn are formed by regular payments in the short term, therefore matching the dividends in duration).
- 3.24 Where clientele effects are present, changes to the assumed profile of investor returns can affect the firm's ability to raise equity finance. This is important in a RIIO-T3 context, since it raises questions about Ofgem's implicit assumption that investors may be indifferent to a 50% cut in dividends as per one of the business plan scenarios.
- 3.1.4 **Internal inconsistency in the regulator opining on the appropriate financing strategy**
- 3.25 Finally, the fact that the regulator assumes that financeability problems can be remedied by a reduction in the dividend yield is of concern. Indeed, for Ofgem to conclude that the regulatory package is financeable on the back of an assumption that dividend yields can be easily adjusted downwards implicitly puts

³⁸ For example, agency costs consist of the incremental costs and inherent conflicts of having managers make decisions for investors, as a decision to retain earnings instead of paying dividends would result in managers gaining control over these earnings. Agency theory assumes that large-scale retention of earnings encourages behaviour by managers that may not maximise shareholder value. Dividends can then be a valuable financial tool for these firms because they help to avoid capital structures that give managers wide discretion to make value-reducing investments. See, for example, DeAngelo, H., DeAngelo, L. and Stulz, R.M. (2004), 'Dividend policy, agency costs and earned equity', National Bureau of Economic Research Working Paper 10599.

³⁹ Armitage, S. (2012), 'Demand for dividends: the case of UK water companies', *Journal of Business Finance & Accounting*, **39**:3–4, pp. 464–499.

a constraint on the financing strategy that networks should pursue.⁴⁰

- 3.26 If financeability issues are identified, there are a number of regulatory tools and approaches that can be used by Ofgem to increase or reprofile cash flows in the RIIO-3 period. It would not be reasonable to expect a reduction in dividend yields (which are required by equity investors) to alleviate strains in credit metrics, because this would trade off the interests of debt and equity capital holders at a time when both debt and equity capital are required to finance the networks' investment needs. In other words, financeability should not be achieved at the expense of investability.
- 3.27 Relatedly, Ofgem's decision to prioritise reductions in dividend payments may also undermine its objective to ensure the investability of the sector. Indeed, Ofgem's current thinking in the SSMD signals to investors that the regulator views dividends as a flexible parameter that can be adjusted to address financeability concerns. Based on a theoretical review of the evidence (in the sections above), as well as on a review of empirical data (in the section below), we find that this view is not consistent with investor preferences.
- 3.28 It is also important to note that investability is not pursued at the expense of resilience. It is appropriate for Ofgem to be concerned about ensuring the financial resilience of the network companies that it regulates. In this context, we note that safeguards exist against unreasonable distributions of cash by networks though financial resilience requirements, which Ofgem is proposing to strengthen as part of RIIO-3. In particular, Ofgem is minded to:
- amend the licence condition such that licensees would be 'required' to maintain 'more than one' investment grade rating. This would strengthen the wording relative to the current condition, which instructs licensees to 'use reasonable

⁴⁰ Implicitly, constraining the networks' financing strategy would not be consistent with Ofgem's acknowledgment that investors and management should have discretion to best manage their treasury functions. For example, Ofgem notes: 'We continue to view network company investors and management as best placed to manage the risks and rewards associated with deviations from the notional capital structure.' Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 5.43.

endeavours' or to take 'all appropriate steps' to maintain just one investment grade rating';⁴¹

- amend the dividend lock-up trigger to the earlier of reaching BBB- with a negative watch or outlook, or 75% regulatory gearing;⁴²
- amend the board certification requirement to require that licensees state that they have sufficient financial resources to cover the entirety of the price control or a minimum of three years ahead.⁴³

3.29 These measures seek to ensure financial resilience, such that there should not be a trade-off between ensuring financial resilience and financeability (or investability more widely). Accordingly, no artificial constraints should be put on the networks' ability to distribute dividends to their shareholders beyond financial resilience requirements being met, particularly as this is an important aspect of companies' ability to raise new capital to support financial resilience.

3.2 Empirical analysis of European comparator dividend yields and the importance of dividend payments

3.30 In this section, we first examine empirical evidence from European electricity networks. Given that our empirical analysis focuses on dividend yields, the availability of a market value of equity for the comparator sample is required—we therefore focus on listed European electricity networks. Thus, the comparator sample includes four listed electricity networks: Terna, Red Eléctrica de España, Redes Energéticas Nacionais and Elia.

3.31 We focus on European TO networks throughout this analysis because they provide a peer group for UK electricity transmission networks. Indeed, Ofgem is considering the addition of European listed energy companies in assessing the beta for the UK networks as part of the SSMD (including Terna and Red Eléctrica de España, included in the analysis below).⁴⁴

3.32 We then cross-check the dividend yields from these networks with those of National Grid (NG), SSE (which owns SHET) and Iberdrola (which owns SPEN), but whose operational portfolios

⁴¹ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 6.40.

⁴² Ibid., para. 6.61.

⁴³ Ibid., para. 6.76.

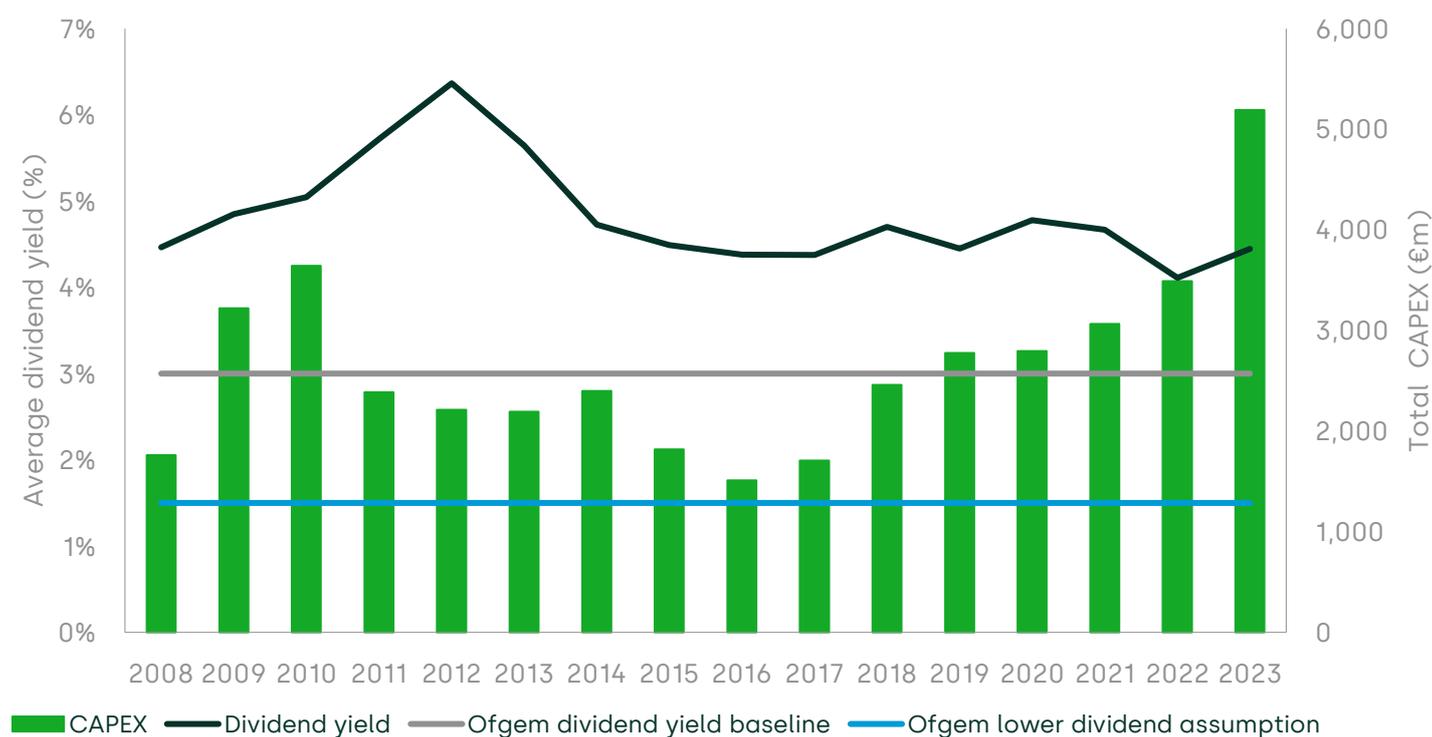
⁴⁴ Ibid., para. 3.199.

also comprise a high proportion of business activities beyond electricity network business lines.

- 3.33 We consider that the European TOs provide evidence of a comparator or benchmark dividend yield, to inform the calibration of the regulator's assumed dividend yield in RIIO-3. Indeed, in the real world, European TOs form a point of comparison that is likely to inform investors' expectations—and indeed to provide an alternative investment opportunity in the international market for capital. Indeed, investors in utilities may reasonably expect that if the UK TO network dividend yield is not sufficiently high to meet their requirements, European TOs could provide alternative investment opportunities within the same sector.
- 3.34 Accordingly, we consider it relevant to analyse the level of recent dividend yields in Europe to assess the adequacy of Ofgem's proposed 3.0% dividend yield for energy networks in RIIO-3, as well as its lower TO-specific 1.5% dividend yield business plan scenario.
- 3.35 As shown in Figure 3.2 below, the dividend yield of European transmission networks has persistently been significantly above 3.0% on average.⁴⁵ This would tend to mean that if the UK regulatory assumption for the dividend yield is lower at 3.0% (or considerably lower in the TO-specific business plan scenario of 1.5%) then, holding all else equal, UK TO equity would be less attractive (or investable) for utility investors who require relatively high and stable dividend yields.
- 3.36 This persistence in comparator dividend yields above Ofgem's SSMD benchmark of 3.0% is particularly notable when compared with the evolution of cumulative capital expenditure (CAPEX). Dividend yields have persisted even during periods of substantial investments. In fact, between 2008 and 2011, dividend yields increased despite significant expenditures in the sector. Even in light of a substantial spike in investments in 2023, the networks did not cut their dividends.

⁴⁵ See Appendix A1 for detailed values of the dividend yield by company by year.

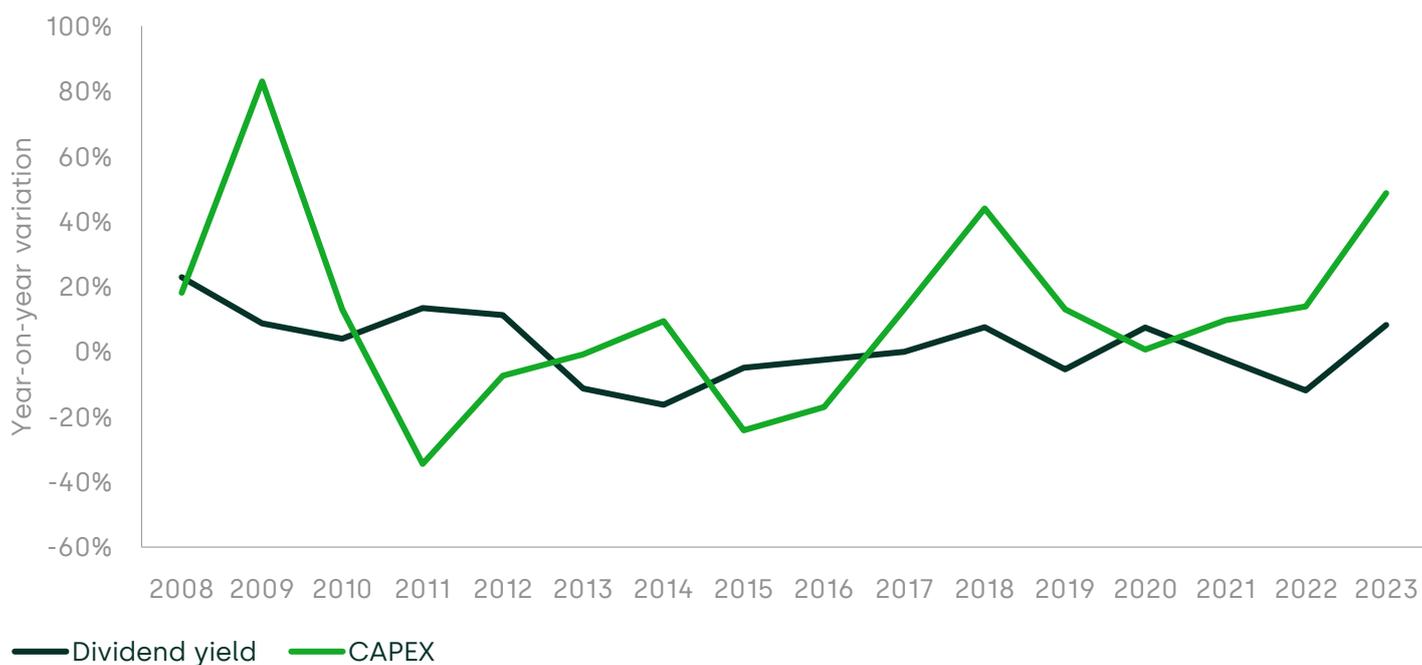
Figure 3.2 Average dividend yield and total CAPEX investment by European comparators, relative to Ofgem's SSMD assumptions



Note: The average dividend yield is calculated from the annual averages of the sample companies: Terna, Red Eléctrica de España, Redes Energéticas Nacionais, and Elia. Total CAPEX is the sum of all yearly CAPEX for these companies. The data is represented as total CAPEX to examine industry growth for this sample of TOs over time, the trend would be the same in comparing the average CAPEX across the different networks. The two grey lines represent dividend yields of 3.0% and 1.5%. The 3.0% yield is the current working assumption set by Ofgem for the RIIO-2 price control period, while 1.5% reflects a business plan scenario that Ofgem has asked TOs to include in their business plans. Source: Oxera analysis based on Refinitiv data; and Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, paras 3.282 and 5.11.

3.37 Figure 3.2 and Figure 3.3 below also show that the average dividend yield of European electricity networks is much more stable than their CAPEX, which exhibits more year-on-year variation than the dividend remuneration of shareholders. For example, we observe that the average dividend yield of European networks has been relatively stable between 2015 and 2023 despite a marked increase in total investments in that period.

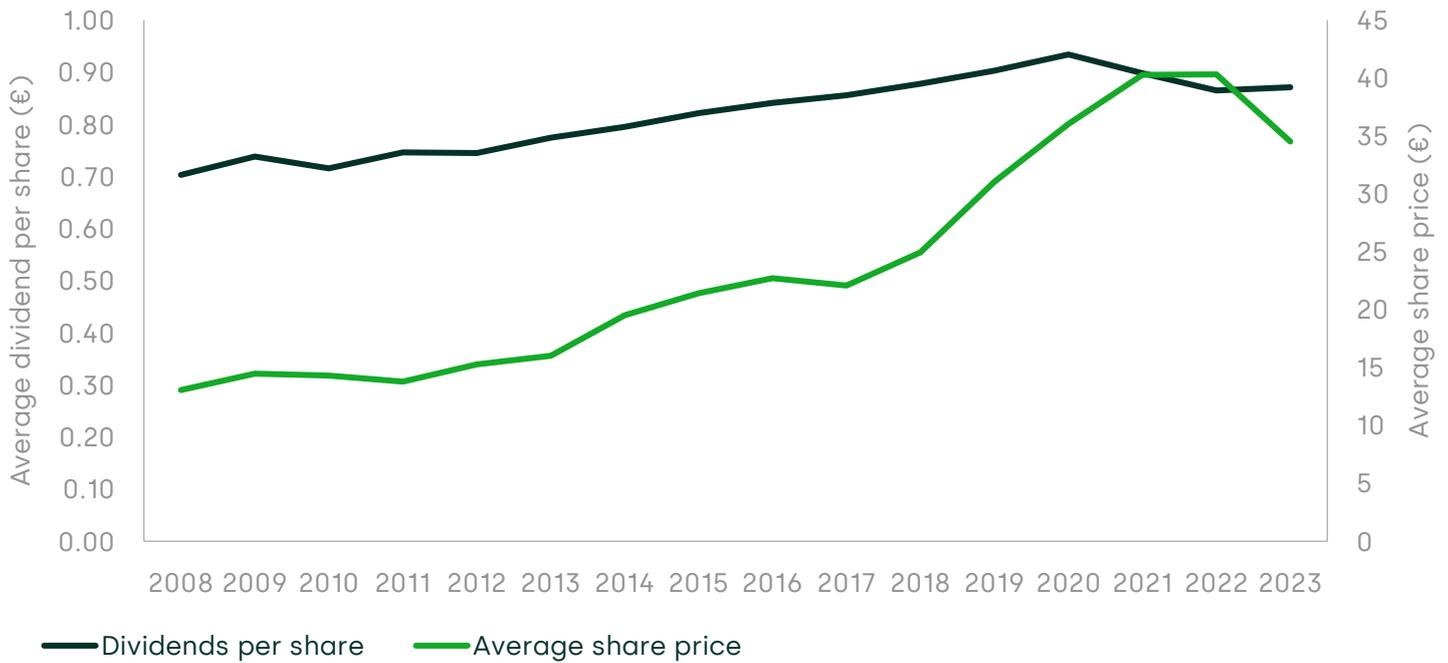
Figure 3.3 Year-on-year variation in the average dividend yield and total CAPEX of European networks



Source: Oxera analysis based on Refinitiv data.

3.38 The persistence of dividend yields above Ofgem's RIIO-T3 proposals of 3.0% and 1.5% is explained by an increase in both the share price and the dividend per share from European networks. As shown in Figure 3.4 below, between 2008 and 2023 the real share price rose steadily, reflecting positive future profitability prospects. These profitability expectations have not hindered the persistence in dividends per share. They have remained steady and even slightly increased in real terms over the observed period.

Figure 3.4 Networks' average dividends per share and share price (real)



Note: The average dividend per share is calculated using the annual values of the sample companies: Terna, Red Eléctrica de España, Redes Energéticas Nacionais, and Elia. The average share price is based on the last traded share price at year-end for these companies. All annual values, adjusted for national inflation using CPI variations, are presented in real terms with 2023 as the reference year. For all countries, annual CPI variations were computed by comparing the December CPI with the December CPI of the previous year. We used data from Indice dei Prezzi al Consumo per l'Intera Collettività for Italy (Terna), Índice de Precios de Consumo for Spain (Redes), Índice de Preços no Consumidor for Portugal (Rene) and Indice des Prix à la Consommation for Belgium (Elia).

Source: Oxera analysis based on Refinitiv data.

3.39 Arguably, if investors were truly indifferent to cuts in dividend yields, these companies would have been expected to reduce their dividends to fund investment programmes over recent years. Evidently, they did not reduce their dividends despite their investment needs. Therefore, this empirical evidence is further proof of the clientele effect. Hence, UK TOs reducing their dividends would not align with their investors' expectations and might undermine their investability.

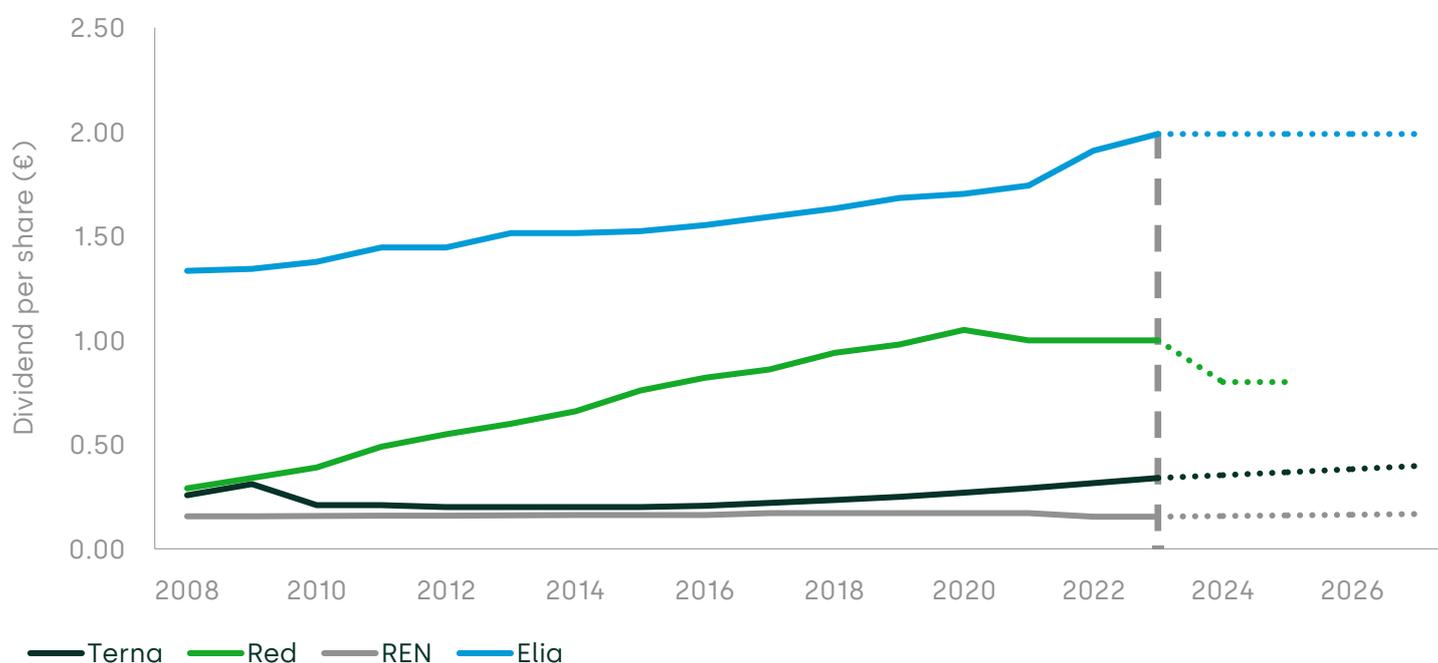
3.40 Moreover, recent disclosures from the selected listed electricity networks indicate that, with the exception of Red Eléctrica,⁴⁶

⁴⁶ Although we note that Red Eléctrica has signalled that its future dividend per share forecast of €0.80 is a floor rather than the current dividend per share forecast.

they plan to maintain overall stable dividend payments in the coming years, as shown in Figure 3.5 below, despite undertaking large investment programmes. These stable dividends coexist with significant projections for capital expenditure increases. For example:

- Terna anticipates a 60% rise in CAPEX for the 2024–28 period compared with 2021–25;⁴⁷
- Redes Energéticas Nacionais forecasts a 70% increase in the 2024–27 plan relative to 2021–24;⁴⁸
- Elia expects an average annual growth of 19% in CAPEX between 2024 and 2028.⁴⁹

Figure 3.5 Historic and forecast dividends per share



Note: We calculated forecast dividends per share based on companies' strategic plans predictions. In the case of Red, the dividend per share indicated for Redis the floor to the future dividend per share reported in the company's latest business plan; no forecast is available beyond 2025. We assume constant dividends for Elia: this is conservative, as the company committed to increase its dividends per share in line with inflation.

Source: Oxera analysis based on Refinitiv data; Terna (2024), '[Terna: 2024-2028 Industrial Plan approved - Terna spa](#)' (last accessed 9 December 2024); Red Eléctrica Corporación

⁴⁷ Terna (2024), '[Terna: 2024-2028 Industrial Plan approved - Terna spa](#)' (last accessed 9 December 2024).

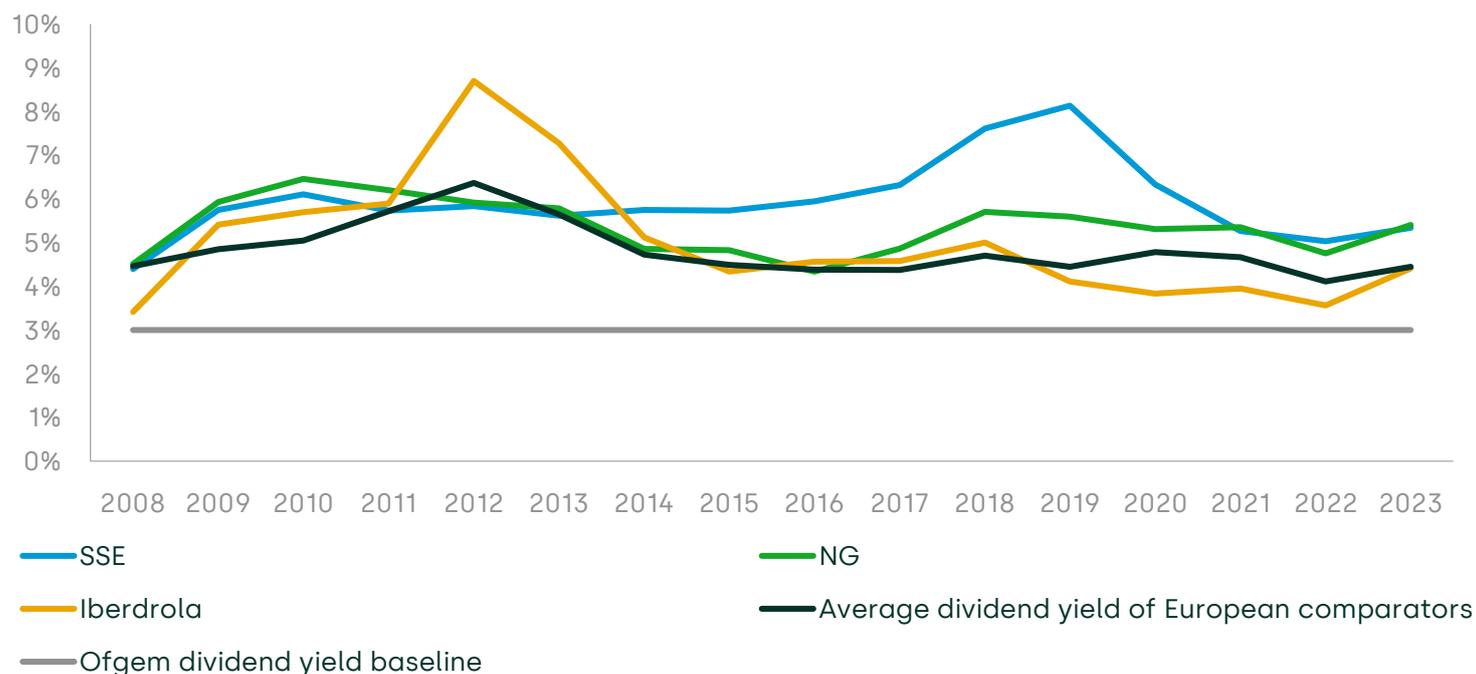
⁴⁸ REN (2024), '[REN focused on enabling the Energy Transition, increasing investment and reinforcing its sustainability commitments](#)' (last accessed 9 December 2024).

⁴⁹ Elia Group (2023), '[Elia Group présente ses objectifs financiers à court et moyen terme à l'occasion de son Capital Markets Day](#)' (last accessed 9 December 2024).

(2024), ['2020 Results and Strategic Plan 2021-2025'](#) (last accessed 9 December 2024); REN (2024), ['REN focused on enabling the Energy Transition, increasing investment and reinforcing its sustainability commitments'](#) (last accessed 9 December 2024); Elia Group (2023), ['Elia Group présente ses objectifs financiers à court et moyen terme à l'occasion de son Capital Markets Day'](#) (last accessed 9 December 2024).

- 3.41 In conclusion, this analysis underscores the persistence of dividend yields of comparator European electricity networks, which have consistently remained above 3.0% on average despite substantial investments. This suggests that any reduction in dividends would diverge from industry expectations.
- 3.42 We focus on European TO networks throughout this analysis because they provide a peer group for UK transmission networks. The analysis has shown that the dividend yield of European transmission networks has persistently been above 3.0% on average. This would tend to mean that if the UK regulatory assumption for the dividend yield is lower at 3.0% (or considerably lower in the TO-specific business plan scenario of 1.5%) then, holding all else equal, UK TO equity would be less attractive (or investable) for utility investors who require relatively high and stable dividend yields.
- 3.43 To ensure completeness, we have also looked at the dividend yields of SSE, National Grid and Iberdrola (i.e. the parent companies of the TOs). The three companies, including SSE and Iberdrola, which operate assets beyond regulated electricity transmission networks, have maintained dividend yields above 3.0% since 2008, as illustrated in Figure 3.6 below. Their dividend yields also generally co-move with that of European comparators, as shown below.

Figure 3.6 Evolution of the dividend yields of Iberdrola, SSE, National Grid and the average of European comparators



Note: The 3.0% yield is the current working assumption set by Ofgem for the RIIO-2 price control period. The average dividend yield is calculated from the annual averages of the sample companies: Terna, Red Eléctrica de España, Redes Energéticas Nacionais, and Elia.

Source: Oxera analysis based on Refinitiv data; and Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 3.282.

3.44 This expectation of dividend stability even during investment-heavy periods is not limited to listed companies. Unlisted project-specific companies, such as Thames Tideway Tunnel, provide further support for this observation. Tideway is a c. £5bn London wastewater investment that is financed and managed separately from Thames Water.⁵⁰ Ofwat approved arrangements for Tideway's £1.3bn of equity capital, 60% of which was provided in the form of shareholder loans with an 8% interest rate.⁵¹ In other words, total equity received a potential annual cash distribution of 4.8%.⁵² Despite the project's unlisted status and its ongoing construction phase, investors still expect—and

⁵⁰ See Thames Tideway Tunnel website, '[The Tunnel](#)' (last accessed 9 December 2024).

⁵¹ Tideway (2023), 'Annual report 2022/23', pp. 22 and 65.

⁵² Albeit with potential distribution restrictions agreed with debt providers to apply under certain circumstances.

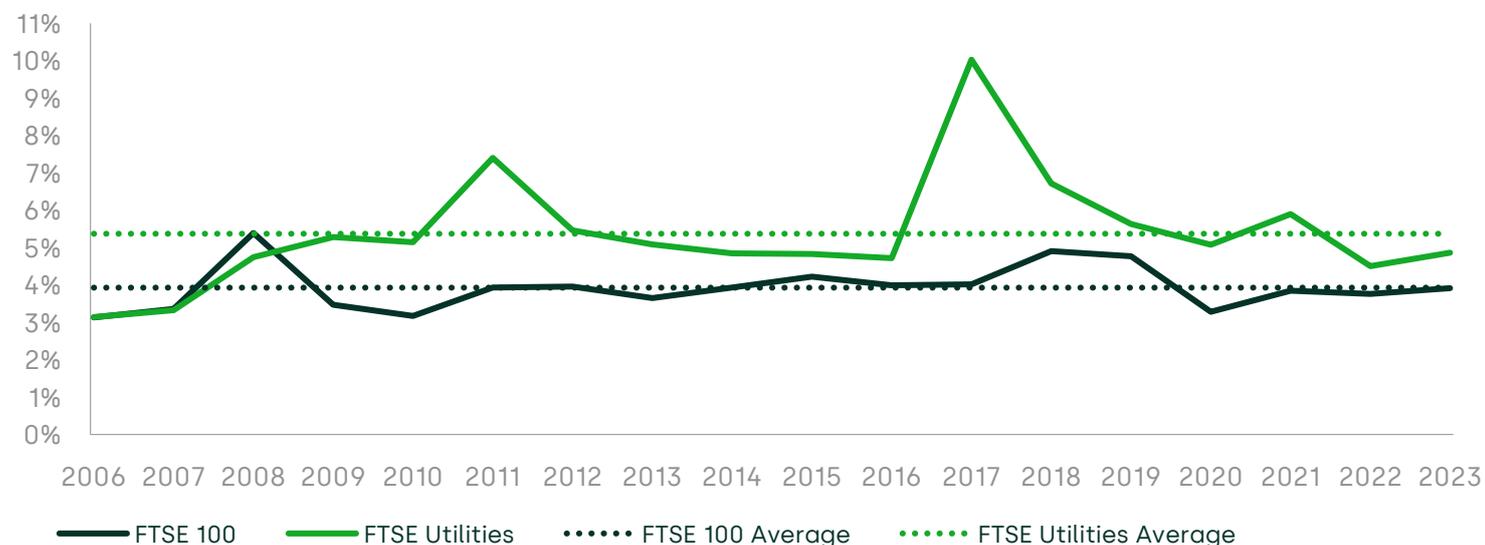
receive—cash returns on equity, which corroborates the broader trend observed among listed utilities.

3.3 Analysis of the importance of dividend policies

3.45 In this section, we examine the importance of the dividend policy to investors by assessing how investors might react to a reduction in dividend yields by comparing the dividend yields of utilities with other sectors. We do this with reference to examination of the composition of the FTSE UK Dividend Plus Index over time.⁵³ In analysing this index, we are able to identify the sectors that are most consistent in delivering relatively high dividend yields.

3.46 At the outset of this analysis, we observe that, empirically, dividend yields for UK utilities (e.g. FTSE Utilities UK) have been higher than the market average (e.g. FTSE 100) over time. As illustrated in the figure below, this supports the hypothesis that investors would reasonably anticipate (and tend to require) higher dividend yields from utilities—such as the UK TOs—than the market as a whole.

Figure 3.7 Dividend yields for FTSE 100 relative to FTSE Utilities, UK (%)



Note: Gross annual dividend yield is computed as the total gross dividend per share over the previous 12 months divided by the in-year share price. The gross dividend amount includes taxes, any related dividend fees or tax-related credits. Average dividend yields

⁵³ The FTSE UK Dividend+ Index is designed to represent the performance of the 50 highest-yielding companies in the FTSE 350 Index.

were calculated as the mean of the annual dividend yields of the indexes from 2006 to 2023. Buyback-adjusted dividend yields are presented in Appendix A2.

FTSE Utilities comprises the following utility companies: National Grid Plc, SSE Plc, Centrica Plc, United Utilities Group Plc, Severn Trent Plc, Drax Group Plc, Pennon Group Plc and Renewi Plc.

The spike in the FTSE Utilities index dividend yield observed in 2017 is most likely caused by National Grid Plc paying a special dividend in that year. In 2017, National Grid plc constituted over 45% of the index.

Source: Oxera analysis using Bloomberg data; and National Grid (2017), 'Notice of General Meeting', April,

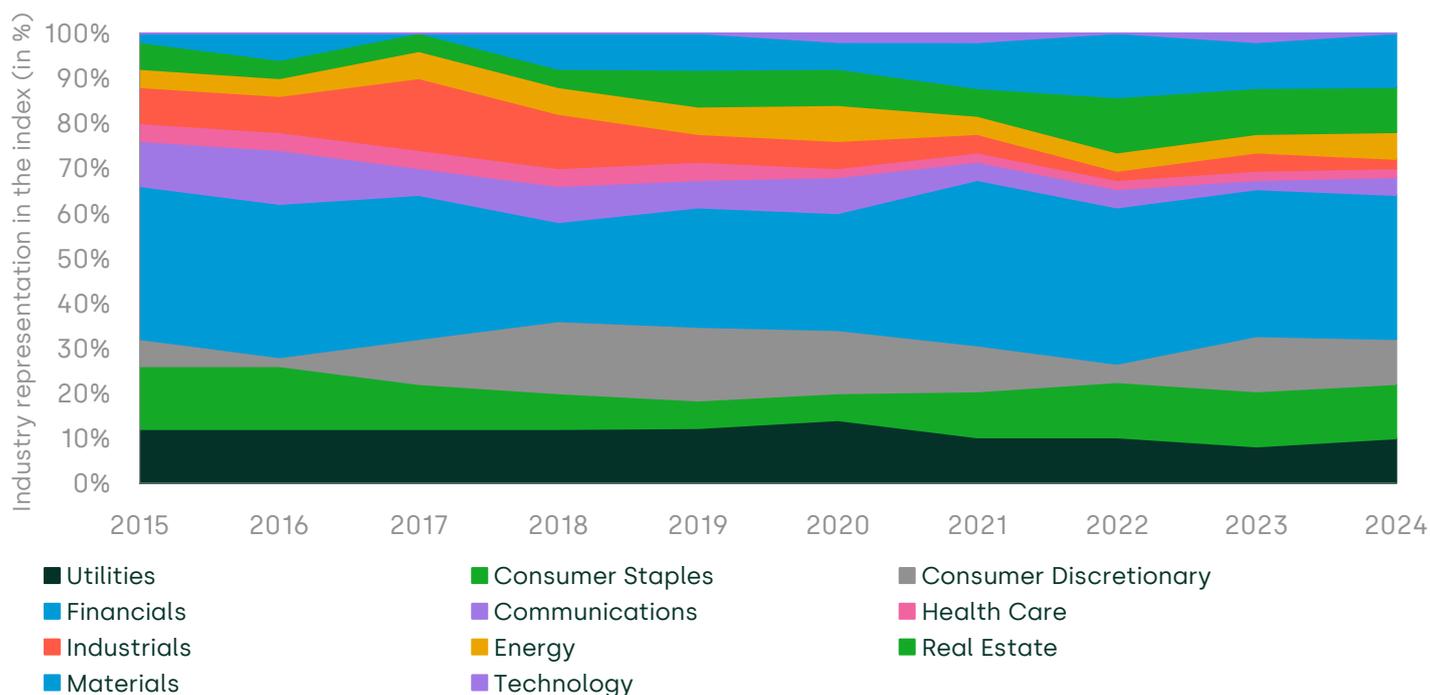
[https://www.nationalgrid.com/document/137996/download#:~:text=We%20announced%20today%2C%2019%20April,members%20at%206pm%20\(BST\)%20on](https://www.nationalgrid.com/document/137996/download#:~:text=We%20announced%20today%2C%2019%20April,members%20at%206pm%20(BST)%20on) (last accessed 14 October 2024).

- 3.47 Next, in this section, we turn to analysis of how investors perceive the stability of dividend yields of utilities compared to other sectors. We do this with reference to examination of the composition of the FTSE UK Dividend Plus Index over time.
- 3.48 The FTSE UK Dividend+ (or Dividend Plus) Index is designed to represent the performance of the 50 highest yielding companies in the FTSE 350 Index. Among the industries represented in the FTSE 350, utilities exhibit the highest conversion rate⁵⁴ of moving to the FTSE UK Dividend Plus Index, with 60% of utilities in the FTSE 350 included in the index in 2024. Other industries have significantly lower rates of 'conversion' from inclusion in FTSE 350 to being included in the FTSE UK Dividend Plus Index, i.e. Financials (22%), Industrials (14%), and Consumer Discretionary (12%).⁵⁵ This significant gap in conversion rates demonstrates that utilities are characterised by their high dividend distribution.
- 3.49 Our analysis, as shown in Figure 3.8, highlights that utilities consistently represent a stable proportion of the index, ranging between 8.2% and 12% of the index from 2015 to 2023.

⁵⁴ That is, the rate of 'conversion' from being in the FTSE 350 index, to being included in the FTSE UK Dividend Plus Index, which represents the performance of the 50 highest yielding companies in the FTSE 350.

⁵⁵ See Appendix A3 for detailed shares by industry of FTSE 350 companies included in the FTSE UK Dividend Plus Index.

Figure 3.8 Representation of industries in the FTSE UK Dividend Plus Index

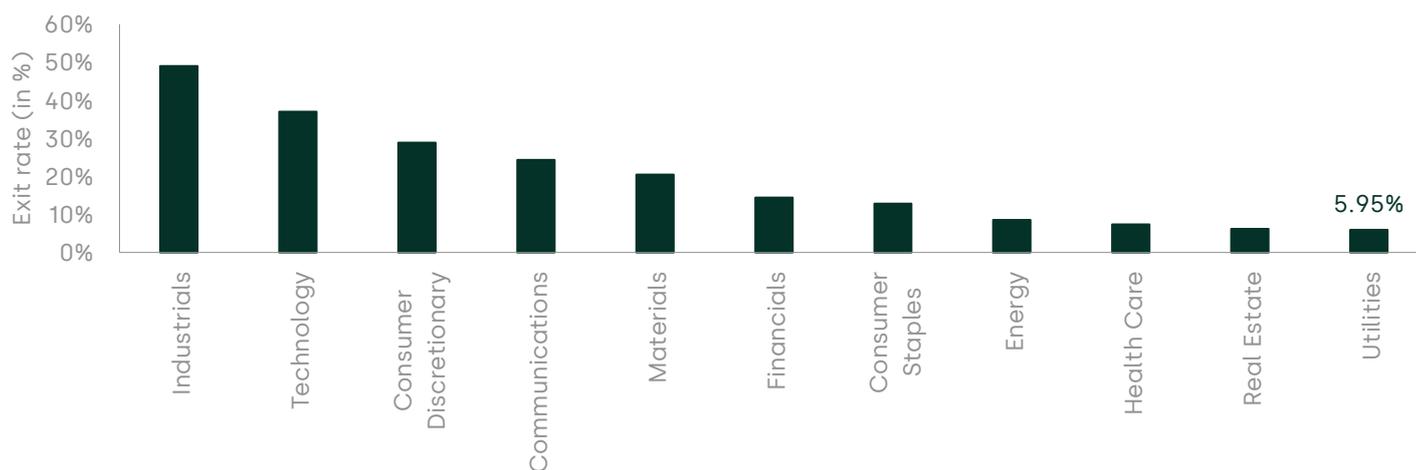


Note: The FTSE UK Dividend+ Index is designed to represent the performance of the 50 highest-yielding companies in the FTSE 350 Index.
 Source: Oxera analysis based on Bloomberg data.

3.50 The utilities sector not only serves as a significant provider of high dividend yields but also maintains a consistent dividend yield over time. As evidenced by the data in Figure 3.9, utilities have the lowest share of companies exiting the index per year, with an average of 5.95% dropping out per year over the past ten years (the lowest exit rate among industries).⁵⁶ This disparity underscores that utilities within the index exhibit greater stability in their dividend payouts, highlighting their resilience in delivering reliable dividend returns to investors over the long term.

⁵⁶ By construction, an exit from the FTSE UK Dividend Plus Index, from one year to the next, means that the company is no longer in the top 50 highest (dividend) yielding companies within the FTSE 350 Index.

Figure 3.9 Average annual share of companies exiting the FTSE UK Dividend+ Index, by industry



Note: Companies that left the FTSE UK Dividend+ Index due to delisting have been removed from this analysis. We computed the share by dividing the average number of exiting companies by industry with the average number of companies by industry in the FTSE UK Dividend+ Index for the past ten years.

Source: Oxera analysis based on Bloomberg data.

3.51 In summary, dividend yields for UK utilities (e.g. FTSE Utilities UK) have been higher than the market average (e.g. FTSE 100), over time. Also, the consistently high relative representation of utilities in the UK FTSE Dividend Plus index highlights their resilience in maintaining mostly stable and high dividend yields relative to other companies in the FTSE 350. This evidence supports the hypothesis that investors would reasonably anticipate (and tend to require) higher dividend yields from utilities—such as the UK electricity transmission networks—than the market as a whole.

3.4 Conclusion

3.52 In this section we have presented evidence that the regulatory package should enable appropriate dividend payments. In doing so, we assessed theoretical arguments, conducted an empirical analysis of European comparator dividend yields and showcased the importance of dividend yields by comparing utilities with other sectors.

3.53 The theoretical evidence shows that the MM dividend irrelevance theorem does not hold in practice. Rather, there is a 'clientele effect', i.e. investors prefer specific sectors based on their characteristics. Therefore, changes to the assumed profile of investor returns can hamper its ability to raise equity finance.

We also note that there are already measures in place to ensure the financial resilience of networks, such that there should not be a trade-off between ensuring financial resilience and investability.

- 3.54 The empirical analysis of European comparator dividend yields underscores the persistence of dividend yields of European electricity networks. The yields have consistently remained above 3.0% on average despite substantial investments. Compared to the volatility in investment levels, electricity networks maintain mostly stable and high dividend payments, suggesting that any reduction in dividends would diverge from industry expectations.
- 3.55 Finally, we assessed the importance of dividend payments by utilities compared to other sectors in the UK. This evidence supports the hypothesis that investors would reasonably anticipate (and tend to require) higher dividend yields from utilities—such as the UK electricity transmission networks—than the market as a whole.

4 How the choice of a point estimate within the cost of equity range supports the investability of the sector

4.1 As discussed previously, TOs are planning to implement significant investment programmes over RII0-3 and beyond. In order to finance these programmes, TOs will need to raise new finance. In order to maintain sustainable financing structures, TOs will likely seek new equity from investors. Being mindful of this, Ofgem has indicated that:

(...) investability considers whether the allowed return on equity is sufficient to retain and attract the equity capital that the sector requires. We noted that this issue is likely to be increasingly important in the coming years as the need to invest in infrastructures rises significantly (for energy networks across the UK and globally) and companies are required to seek 'fresh' equity from their investors over and above what they would be able to fund via retained earnings.⁵⁷

4.2 In other words, and as discussed previously, the investability assessment as currently envisaged by Ofgem relies primarily on the sufficiency of the return on equity allowance.

4.3 In that regard, it is useful to assess the considerations that should be taken into account when setting the return on equity allowance. The purpose of this section is to review the considerations that should drive the choice of a point estimate within the cost of equity range.

4.4 In the context of RII0-3 specifically, it would be justified for Ofgem to select a point estimate in the upper half of its cost of equity range, in order to redress the asymmetries that may arise in the regulatory package—due to either parametric uncertainty or an asymmetric calibration of incentives and allowances. This would adjust the return on equity allowance towards being sufficient to attract and retain equity. At this stage, since the RII0-T3 regulatory decisions have not been made, it is not known what parametric uncertainty and asymmetry in risk exposure the networks may face. Based on Ofgem's minded-to position, there

⁵⁷ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 3.230.

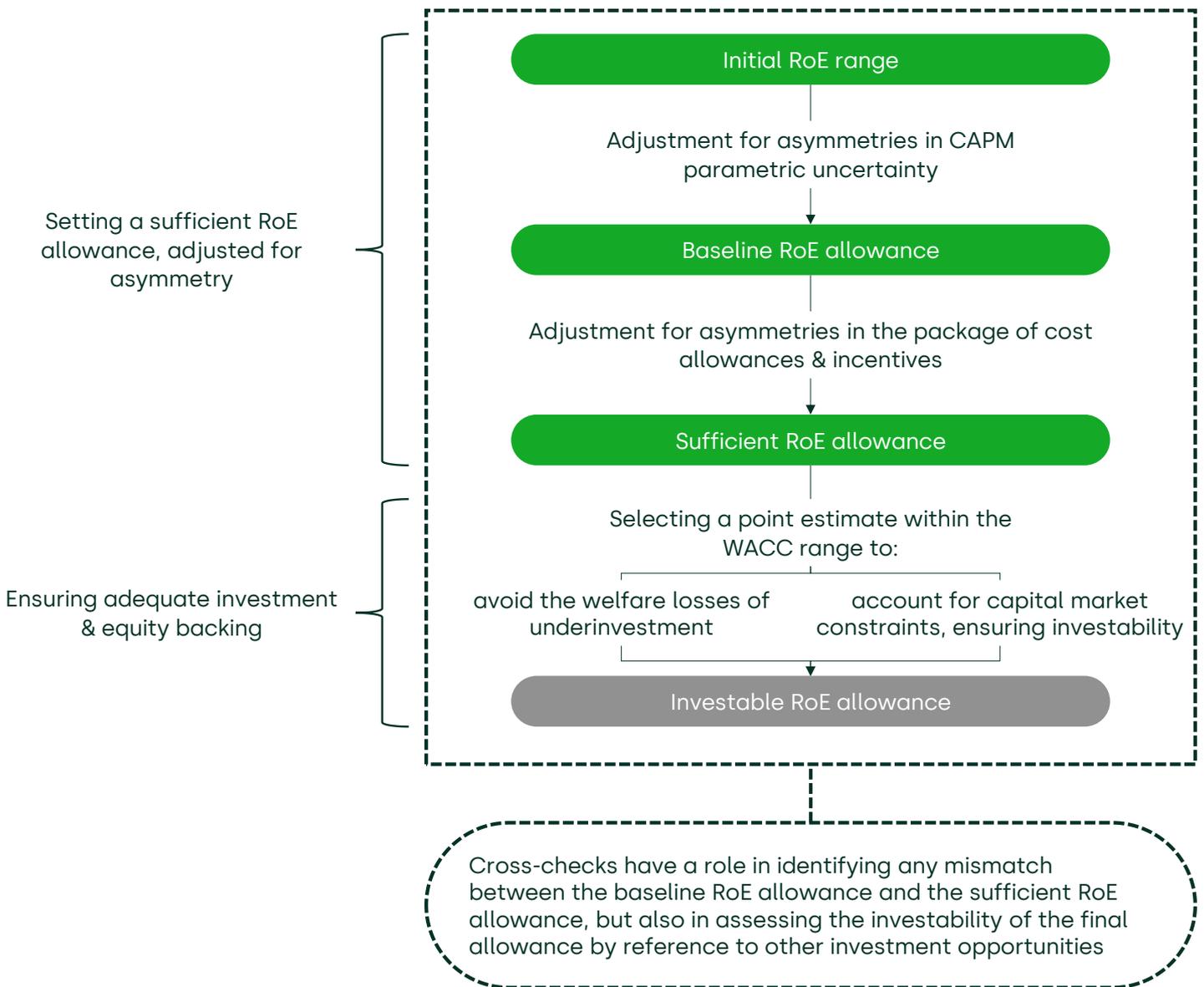
may be asymmetries in the estimation of certain cost of equity parameters (e.g. on the asset beta, with respect to the extent to which the range under consideration reflects forward-looking risks⁵⁸) or in the risk distribution of the regulatory package (e.g. risks related to the ASTI regime). This is discussed in section 4.1.

- 4.5 Furthermore, beyond the considerations around asymmetry in WACC parameters and the price control package, it is important to consider that underinvestment risk is appropriately addressed in the context of the significant investment needs in RIIO-T3 and beyond. This is to avoid the asymmetry in social welfare from under-incentivising network investment by setting the WACC too low. This is a timely consideration in the context of Ofgem's new Growth and Net Zero duties.⁵⁹ It is also mindful of the context of RIIO-T3—including considerations of the significant new equity needs of TOs within an international competition for capital, and the higher levels of uncertainty around optimal levels of future investment, which will tend to reduce the ability of Ofgem to rely (solely) on tools such as licence obligations and ODIs to ensure optimal levels of investment. We discuss these considerations in selecting an appropriate point estimate of the cost of equity in section 4.2.
- 4.6 Figure 4.1 summarises why a point estimate above the mid-point of the estimated cost of equity may be required in the context of RIIO-T3.

⁵⁸ We note that parametric uncertainty affects all CAPM parameters. Our work for the Energy Networks Association provides evidence that the range of reasonable values for CAPM parameter may lie above Ofgem's own SSMD estimates. See Oxera (2024), 'RIIO-3 cost of equity—CAPM parameters', November, p. 7.

⁵⁹ Ofgem (2024), 'Ofgem's Multiyear Strategy', p. 7.

Figure 4.1 Illustration of the process for setting an investable return on equity allowance



Note: 'RoE' stands for return on equity.
Source: Oxera.

The structure of this section is as follows.

- Section 4.1 outlines how there are potential asymmetries in the parametric setting of the allowed return (section 4.1.1) and in the asymmetry of risks within the price control package (section 4.1.2) that need to be taken into account when calibrating an unbiased risk-adjusted return.
- Section 4.2 explains how setting a return on equity allowance above the unbiased estimate, given that there would still tend to

be uncertainty about the 'true' cost of equity even if its estimation is unbiased, would avoid welfare losses associated with underinvestment risk in a context of significant equity needs within an international competition for capital.⁶⁰

- Section 4.3 concludes.

4.1 Considerations in selecting a point estimate within the cost of equity range to redress asymmetries within the regulatory settlement

4.7 Within the regulatory settlement, asymmetries can arise from parameters being set in a way that makes underperformance more likely than overperformance (or vice versa).

4.8 For the purpose of this report, we identify two main types of asymmetries:

- asymmetries resulting from parametric uncertainty when setting the allowed return—and where underperformance would result from the allowed return being below the 'true' cost of equity;
- asymmetries resulting from the calibration of the package of incentives and cost allowances—and where underperformance that would result from these incentives is skewed to the downside.

4.9 This section discusses how the presence of asymmetries within the regulatory settlement may lead regulators to select an appropriate point estimate in the cost of equity range to redress these asymmetries. We present the conceptual underpinnings that justify doing so, and highlight some relevant regulatory precedents by UK regulators (including Ofgem).

4.1.1 Asymmetry in setting the allowed return

4.10 The asymmetry in setting the allowed return can be framed as the risk that the allowed return is set above or below the 'true' cost of equity required by the investors. Overall, deviations between the allowed and actual costs of equity generally result from the fact that estimating the various cost of equity parameters involves methodological choices and judgments that may bias the estimate downwards or upwards. As a result,

⁶⁰ Note also that there is a role for cross-checks in assessing whether overall network returns are in line with required returns, or the opportunity cost of capital, including with reference to alternative international investment opportunities. It is beyond the scope of this report to examine the relevant cross-checks that can be used in such an assessment, but we note that these may differ from, and extend beyond, Ofgem's cross-checks on the CAPM cost of equity.

estimating the various cost of equity parameters is an uncertain exercise.⁶¹

- 4.11 Some of the methodologies typically favoured by regulators might yield results that are not strictly 'wrong', but that may introduce a bias in the estimate, depending on the circumstances. For example, methodologies used to estimate cost of equity parameters can result in ranges that are a priori reasonable, but that do not overlap with the whole range of evidence available following the application of the regulator's judgment.
- 4.12 In that regard, we note that the CMA acknowledged issues of parametric uncertainty in its PR19 redetermination, when it noted that:

The ranges for each metric involve the overlay of judgment, and are defined in order to help the CMA to 'build-up' a sensible overall cost of equity estimate through the CAPM. [...]. For example, while we consider 6.2% to 7.5% to be a sensible and balanced estimate range for the TMR, there is no probability 'cliff' outside of this range.⁶²

- 4.13 UKRN guidance states that regulators should aim to derive broadly symmetric ranges for cost of equity parameters and that, if a symmetric range is not feasible, the asymmetry should be explained by the regulator—and a rationale for deviating from the midpoint of the range should be given.⁶³ In practice, it may be the case that the available data and methodologies at the disposal of regulators do not allow for the definition of an accurate parametric range, which can be known to be symmetric.

⁶¹ Notwithstanding methodological biases, some of the cost of equity parameters remain fixed for the duration of the price control (e.g. the beta or the TMR), which creates a forecast error risk (i.e. a risk that during the price control, the value of the parameter diverges from the value that is in the calculation of the allowed return on equity). We note that while the introduction of indexation for certain cost of capital parameters (specifically the risk-free rate and the cost of debt) can mitigate forecast error risk, it does not mitigate methodological biases (as acknowledged by the CMA in the RIIO-2 appeal; CMA (2021), 'Cadent Gas Limited, National Grid Electricity Transmission plc, National Grid Gas plc, Northern Gas Networks Limited, Scottish Hydro Electric Transmission plc, Southern Gas Networks plc and Scotland Gas Networks plc, SP Transmission plc, Wales & West Utilities Limited vs the Gas and Electricity Markets Authority. Final determination. Volume 2A: Joined Grounds: Cost of equity', 28 October, para. 5.814).

⁶² Competition and Markets Authority (2021), 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations', 17 March, para. 9.1304.

⁶³ UK Regulators Network (2023), 'UKRN guidance for regulators on the methodology for setting the cost of capital', 23 March, p. 29.

- 4.14 For example, the probability of over- or underestimating a forward-looking beta, when the parameter is often determined by reference to backward-looking evidence, increases significantly when a sector is going through changes in the risk environment either due to macroeconomic conditions, changes in investor preferences or industry trends.
- 4.15 The energy sector is currently undergoing such changes, and faced with significant uncertainty as regards the estimation of the asset beta of energy networks for RIIO-3, Ofgem indicated that the midpoint of its SSMD asset beta range might not be the most forward-looking accurate estimate of the energy networks' asset beta.⁶⁴
- 4.16 Based on this premise, Ofgem suggested that the different comparators within the comparator sample currently under consideration might be weighted differently based on Ofgem's judgement about the weightings that would result in the most accurate estimate of the networks' asset beta.⁶⁵ Ofgem has suggested that this might result in an asset beta in the upper half of the range currently being considered.⁶⁶
- 4.17 Further to Ofgem's minded-to position in the SSMD, even if a greater weight is allocated to European comparators—with a point estimate of the asset beta being calibrated in the upper half of the range, it would still be reasonable to expect that historic capital markets data cannot fully represent forward-looking risks, in the case of beta estimation.
- 4.18 This represents a potential source for parametric uncertainty. And to the extent that net zero related uncertainty puts upward pressure on the (future) risk environment faced by energy networks in the RIIO-T3 period and beyond, the lack of complete and accurate data to represent forward-looking risks represents a source of asymmetry in the parametric WACC setting exercise. In other words, it is more likely that energy networks will be exposed to higher (rather than lower) risks that are not fully priced into historic beta data, due to uncertainty about the pace

⁶⁴ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 3.305.

⁶⁵ Ibid.

⁶⁶ Ibid., paras 3.224 and 3.305.

and scale of electrification demand, location and costs that the regulatory regime does not fully mitigate.

4.19 Specifically, while it is clear that a step change in investment is forecast for RIIO-3, the scale of risk and uncertainty as regards the pace and scale of investment in electrification is high (as evidenced in Figure 4.2 below). Overall, this suggests that the forward-looking risks faced by TOs are not appropriately reflected in asset beta estimates based on historic data, making aiming up within these ranges reasonable.

Figure 4.2 Historic and forecast GB annual electricity demand (TWh), FES 23



Source: Department for Energy Security and Net Zero (2023), 'Historical electricity data: 1920 to 2022', 27 July 2023 and National Grid ESO (2023), 'Future Energy Scenarios 2023 Data Workbook', July.

4.20 Related to this observation, we note that the TOs and the Energy Networks Association (ENA) are submitting detailed further evidence in response to Ofgem's SSMD, to evidence the industry's concerns with the non-beta cost of equity parameters

(i.e. total market return, TMR and risk free rate, RFR). These are set out in detail in related reports;⁶⁷ in brief:

- there are concerns in relation to Ofgem's minded-to position to set the TMR at 6.5–7.0%. This is because there is a base of evidence to suggest that setting the TMR at the mid-point of this range would be an under-estimate;
- there is also evidence of a methodological downward estimation bias in Ofgem's RFR setting methodology, not least due to its lack of inclusion of a convenience premium within the allowed RFR.

Conclusion on adjusting the allowed WACC for parametric uncertainty

4.21 In summary, there is evidence of parametric asymmetry (i.e. downside risk) in Ofgem's minded-to methodologies for asset beta, TMR and RFR setting within the SSMD. In particular, as regards beta estimation—it is more likely that energy networks will be exposed to higher (rather than lower) future risks that are not fully priced into historic beta data, due to uncertainty about the pace and scale of electrification demand, location and costs, unless these risks are fully mitigated by the regulatory regime. Also, as regards TMR estimation, the balance of evidence suggests that setting the TMR at the mid-point of Ofgem's SSMD range would be an under-estimate with respect to the RIIO-T3 context, as has been evidenced in the ENA's cost of equity and cross-checks responses to the SSMD. We also note that there is a downward bias in Ofgem's estimation of the RFR allowance, not least because it has not adjusted for the special properties of index-linked gilts by making adequate adjustment for the convenience premium within the RFR estimate. These are parametric uncertainty drivers that could result in setting the WACC too low in RIIO-T3, unless remedied by Ofgem.

4.1.2 Asymmetry of risks

4.22 An important feature of an effective regulatory regime that ensures sufficient investability is the principle of 'fair bet'. The 'fair bet' principle, applied by regulators and other stakeholders, such as the CMA, recognises that the regulatory regime should be calibrated in a way that ensures an equal likelihood of an efficient firm outperforming or underperforming the allowed

⁶⁷ See, for example, Oxera (2024), 'RIIO-3 cost of equity—CAPM parameters', November, sections 2 and 3.

return. In other words, under the 'fair bet' principle, the expected return should, on average, be equal to the allowed return.

4.23 There are two elements that are necessary for maintaining the 'fair bet' principle in a regulatory regime:

- setting regulatory allowances that are achievable by an efficient company—for example, the parameter ranges and point estimates used to set the cost of equity should reflect the latest market data and investor risk perception;
- ensuring symmetrical risk allocation—regulatory mechanisms should seek to address risks faced by the companies at source, to ensure that companies do not face significant downside risks without the potential corresponding upside gains.

4.24 Any residual asymmetry in the regulatory framework needs to be redressed by adjusting the return on equity allowance in order to ensure that the expected return is again in line with the allowed return. This is the purpose of Ofgem's Step-3 of its cost of equity estimation process:

[...] we retain the ability to adapt the cost of capital if there is sufficient skew in the overall package that the expected returns and cost of capital are no longer aligned.⁶⁸

4.25 In practice, this means that a test of asymmetries within the regulatory package must be carried out. In that regard, UKRN guidance states:

We recommend that analysis of asymmetry in the regulatory package should consider:

- a) asymmetry of incentives in the overall package; and
- b) the distribution of expected performance against which incentives are applied⁶⁹

4.26 The test for adjusting the return on equity allowance to redress asymmetries within the regulatory package is therefore twofold: (i) one must establish that asymmetries exist within the regulatory package, based on the distribution of expected

⁶⁸ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 1.17.

⁶⁹ UKRN (2023), 'UKRN guidance for regulators on the methodology for setting the cost of capital', 22 March, p. 29.

performance; and (ii) asymmetries cannot be fully redressed (or have not been fully redressed) at source. We discuss these two components of the test below.

Establishing the existence of asymmetries within the regulatory package

- 4.27 In relation to the evaluation of the distribution of expected performance against incentives (i.e. the second aspect of the analysis of asymmetries under UKRN guidance), we consider that a robust analysis of this distribution should be informed by an assessment of whether the targets set for the efficient company are achievable or not.
- 4.28 In particular, regulators tend to set targets based on the past performance of regulated companies. In certain scenarios where marginal performance gains are decreasing, performance targets may become intrinsically negatively skewed if past performance gains cannot be replicated from one price control to the other.
- 4.29 In that regard, in the context of its PR19 redetermination, the CMA recognised that some of the performance targets set for the water companies were 'stretching'.⁷⁰ The CMA also noted that a fair and realistic assessment of the likely performance of regulated companies against the objectives set by the regulator was necessary to assess the overall asymmetry in expected returns, stating that:

[it was] not persuaded it is consistent for Ofwat to both set new and increasingly stretching targets for [performance commitments] in PR19 and also to assume that companies will outperform against those targets.⁷¹

- 4.30 On balance, the CMA considered that the performance targets were 'achievable',⁷² even though it 'would expect negative ODI-related returns on average'.⁷³ This led the CMA to conclude that

⁷⁰ Competition and Markets Authority (2021), 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations', 17 March, paras 9.1334 and 9.1335.

⁷¹ Ibid., para. 9.1334.

⁷² Ibid., para. 9.1335.

⁷³ Ibid., para. 9.1340.

'for the expected return to be consistent with the cost of capital, we would expect a small premium to be required'.⁷⁴

4.31 The distribution of expected returns cannot be fully known until the RIIO-3 regulatory decision has been set. At the current stage of RIIO-3, Ofgem has indicated that it '[has] not identified any SSDM (sic) decisions which would imply an asymmetric return.'⁷⁵ However, this statement needs to be supported by a thorough explanation of how targets are set, and by a robust assessment of how regulated companies are reasonably expected to perform against these targets. Failing that, the regulator may draw inaccurate conclusions regarding the appropriateness of the return on equity allowance.

4.32 Although operational and financial incentives for RIIO-3 are not yet known, evidence from Ofgem's most recently completed network price control, RIIO-ED2, suggests, a priori, that a number of downside risk drivers may be present in RIIO-3. Indeed, in response to Ofgem's RIIO-ED2 DD, we had identified several downside risks. These included the following.⁷⁶

- Downward bias in returns distribution due to the calibration of **TOTEX allowances**. Specifically, for RIIO-ED2 relative to RIIO-ED1 there was evidence of a more challenging catch-up efficiency benchmark; deterioration in statistical quality of the models; disaggregated analysis implying an efficiency benchmark beyond the frontier; and, a compounding of the effect of the challenging ongoing efficiency improvements targets over two extra years.
- Downward bias in the **balance of penalties and rewards**. (We note that the FD subsequently set the ODI package with asymmetry, with a maximum allowed penalty of -4.00% to the return on regulated equity, when the maximum allowed reward was set at +2.65%.)⁷⁷
- Negative skew in distribution of returns due to **use of reopeners**. In particular, in the event that any expenditure is incurred prior

⁷⁴ Competition and Markets Authority (2021), 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations', 17 March, para. 9.1340.

⁷⁵ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 3.350.

⁷⁶ Oxera (2022), 'RIIO-ED2 balance of risks', 22 August.

⁷⁷ Ofgem (2022), 'RIIO-ED2 Final Determinations Finance Annex', 30 November, Table 20. We note that the skewness of the incentive package was reduced at FD, as the maximum allowed reward of the common ODI package at DD was 1.95% (for the same maximum allowed penalty). See Oxera (2022), 'RIIO-ED2 balance of risks', 22 August, para. 2.15.

to applying for a re-opener, there is a risk of under-recovery against such expenditure, and this risk would be likely to be asymmetric. This is because, in the event of any ex post assessment of cost recovery, especially where the expenditure is in relatively untested and uncertain areas such as net zero and digitalisation, it will tend to be easier to identify areas of inefficiency ex post (and disallow costs) than to identify areas where efficiency has been achieved (and allow more than actually incurred costs to be recovered in revenues).

- Downward bias due to the use of **volume drivers**, where volume drivers have been calibrated with a cap and no symmetric floor, and where there is a potential clawback mechanism that applies.

4.33 We understand that in the context of RIIO-3, such downside risks would generate significant asymmetries within the regulatory package. For example, significant challenges to TOTEX allowances would create an important risk of underperformance when the proportion of TOTEX to RAV over RIIO-3 is expected to significantly increase, e.g. to rise to more than 30%, up from around 20% in RIIO-2, according to estimates by SSE.⁷⁸

4.34 It would also be appropriate to consider how the extension of (aspects of) the ASTI regime to the RIIO-3 period may expose TOs to asymmetric risks. Indeed, we note that across many parameters of this regime, TOs are exposed to significant downside risk, as well as to powerful penalties for late delivery (including breach of licence obligations).⁷⁹ For example, on timely delivery, the potential for underperforming the target is much more significant than the potential for outperforming it, which would tend to make the distribution of outcomes inherently skewed towards underperformance. Besides, some incentive mechanisms are themselves inherently asymmetric: the breach of licence obligations in the case of late delivery, for example, may lead to significant penalties that are not matched on the upside.

4.35 We note that the TOs have submitted additional evidence in relation to how the regulatory settlement could exhibit

⁷⁸ Scottish and Southern Electricity Networks Transmission (2024), 'SSMC Response. Finance Annex', 6 March, p. 21.

⁷⁹ Scottish and Southern Electricity Networks Transmission (2024), 'SSMC Response. Finance Annex', 6 March, p. 12, National Grid Electricity Transmission, 'RIIO-3 Sector Specific Methodology Consultation (the 'SSMC'). Part C: Finance Annex Questions', 6 March, pp. 24 and 27.

significant downward skew in RIIO-3. As an example, SSE has provided analysis to Ofgem that alongside limited potential for outperformance, the potential for underperformance could be as high as 4% of the return on regulated equity.⁸⁰

- 4.36 Finally, further to these aspects of price control design and mechanisms, we note that, over RIIO-3 and beyond, TOs are likely to face risks of an asymmetric nature, i.e. risks that are likely to make achieving performance targets more challenging in the context of the current industry environment. These risks include higher network utilisation (constraining the possibility to carry out significant work on the network) and supply chain and labour market constraints (leading to higher costs and lead time).⁸¹

Adjusting the return on equity allowance when asymmetries cannot be fully redressed at source

- 4.37 UKRN guidance states that an adjustment of the return on equity allowance should not be the primary means to redress any potential asymmetries:

In any case, we consider that regulators could aim in the first instance to address any returns asymmetry 'at source' through recalibrating incentives and/or performance commitments in a given policy area, rather than aiming off the allowed return on equity.⁸²

- 4.38 It may not always be appropriate or feasible to fully redress risk asymmetries at source. Indeed, it may be appropriate for the regulator to set asymmetric incentives and/or to set ambitious performance targets with a higher probability of underperformance than outperformance (or vice versa).
- 4.39 In its PR19 redetermination, the CMA considered a number of reasons that could justify using asymmetric incentives: (i) setting compliance standards at the minimum; (ii) reflect customer preferences; (iii) focus management attention; and

⁸⁰ Scottish and Southern Electricity Networks Transmission (2024), 'SSMC Response. Finance Annex', 6 March, p. 24.

⁸¹ Scottish Power Energy Networks (2024), 'SSMC Finance Annex – SPT Response DRAFT', 6 March, p. 38.

⁸² UKRN (2023), 'UKRN guidance for regulators on the methodology for setting the cost of capital', 22 March, p. 26.

(iv) taking into account asymmetries of information between the regulator and regulated companies.⁸³

- 4.40 The CMA also set out three criteria to assess the appropriateness of using asymmetric incentives: (i) is it the case that customers are not willing to pay for overperformance? (ii) are performance commitments hard to measure (the implication being that overperformance can be attributed to the calibration of the incentive rather the company's performance)? and (iii) is there a link between the commitment not being achieved and a failure by management?⁸⁴ The CMA considered that if these criteria are met, then asymmetric incentives are justified.⁸⁵
- 4.41 The CMA ultimately decided to redress the asymmetry by setting a cost of equity above the midpoint of its cost of equity range.⁸⁶ The CMA also considered changing the balance of risk, but deemed the solution impractical (in part because it would require changing the structure of ODIs).⁸⁷
- 4.42 Overall, the CMA PR19 redetermination suggests that it can be appropriate regulatory practice to deliberately set an asymmetric regulatory package. However, it also makes it clear that if the regulatory package is asymmetric, then an adjustment to the cost of capital is required to restore the balance between the expected return and the allowed return.
- 4.43 Another example is the CMA's final determination in SONI's appeal of the Northern Ireland Authority for Utility Regulation's 2015–2020 price control decision. In its determination, the CMA introduced several mechanisms to compensate SONI for risks that were not adequately remunerated in the regulator's determination (the remuneration of a parent company guarantee and of revenue collection risk).⁸⁸ Regarding two specific mechanisms under which costs could be allowed, it also found that despite imposing some remedies on the functioning

⁸³ Competition and Markets Authority (2021), 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations', 17 March, paras 7.128 to 7.135.

⁸⁴ *Ibid.*, para. 7.136. The tests outlined by the CMA are formulated in the context of incentives skewed to the downside, but similar tests can be carried out to design incentives skewed to the upside.

⁸⁵ *Ibid.*, para. 7.137.

⁸⁶ *Ibid.*, paras 9.1402–9.1404.

⁸⁷ *Ibid.*, para. 9.1343.

⁸⁸ Competition and Markets Authority (2017), 'SONI Limited v Northern Ireland Authority for Utility Regulation – Final determination, 10 November, para. 12.1.

of these mechanisms, some asymmetry remained,⁸⁹ warranting the introduction of a specific allowance to compensate SONI for bearing the asymmetric risk,⁹⁰ and to 'rebalance the risk and reward profile for SONI's investors'.⁹¹

4.44 In the SSMD, and in keeping with UKRN guidance, Ofgem has committed to seek to address any risk asymmetries 'at source' across the regulatory framework (i.e. restore the balance in expected outcomes by adjusting the regulatory settlement).⁹² However, as discussed above, it can be an appropriate regulatory decision and be in the interest of the consumer to set an asymmetric regulatory package, as long as an appropriate adjustment to the allowed return on equity is made. Ofgem has explicitly recognised this possibility in its RIIO-3 SSMD:

[...] if we consider it to be in the consumer interest to have 'skew' in the overall regulatory package (eg, via the calibration of incentive mechanisms in aggregate), we retain the discretion to use a Step-3 process to ensure that expected returns to investors again match our best estimate of the cost of capital.⁹³

Conclusion on redressing asymmetric risks by adjusting the return on equity allowance

4.45 In summary, it appears that there are potential sources of asymmetries in the distribution of returns for RIIO-3 that may not be remediated at source. In particular, while their exact calibration for RIIO-3 is still uncertain, operational and financial incentives may exhibit a downward skew, as suggested by evidence from RIIO-ED2 (challenging TOTEX allowances, asymmetric ODI package etc.) and the ASTI regime (potential for late delivery penalties greater than upside gains). In addition to incentives, constraints on the industry (e.g. supply chain constraints, higher network utilisation) will likely put further pressure on TOs over RIIO-3, increasing the likelihood of underperformance against their targets. These drivers of asymmetry may have a potentially significant impact on the

⁸⁹ Competition and Markets Authority (2017), 'SONI Limited v Northern Ireland Authority for Utility Regulation – Final determination, 10 November, paras 12.75–12.77.

⁹⁰ Ibid., para. 12.103.

⁹¹ Ibid., para. 12.109.

⁹² Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 3.349.

⁹³ Ibid.

TOs' return on regulated equity, that SSE estimated at up to 4% in its response to Ofgem's SSMC.⁹⁴

4.46 The assessment of asymmetries within the price control cannot be finalised until the regulatory package is fully calibrated, with all aspects known. It is important this assessment is carried out, and, if the package is found to be asymmetric, an adjustment of the allowed return should be considered. While regulatory guidance provides that asymmetries should be addressed at source, we find that regulatory precedents suggest it is not always feasible or preferable to do so, in which case such an adjustment is the adequate solution for regulators to implement.

4.2 **Setting a return on equity allowance above the unbiased estimate would avoid welfare losses associated with underinvestment risk in a context of significant equity needs within an international competition for capital**

4.47 In this section, we discuss how the selection of a return on equity allowance above the unbiased estimate would help to address underinvestment risk. Given the significant investment needs in RIIO-T3 and beyond to decarbonise the energy system, it is important to avoid welfare losses that might result from under-incentivising network investment by setting the regulatory allowed WACC (and the regulatory allowed cost of equity) too low. Also, doing so would appropriately account for the significant new equity needs of TOs in a context of international competition for capital (to deliver significant electrification and net zero commitments across Europe and internationally). Finally, it would also better incentivise networks to ensure optimal levels of investment in a context of uncertainty around what that level is, in a way that relying (solely) on tools such as licence obligations and ODIs would not.

4.2.1 **How the choice of an allowed return on equity can help avoid underinvestment and deliver welfare-enhancing investments**

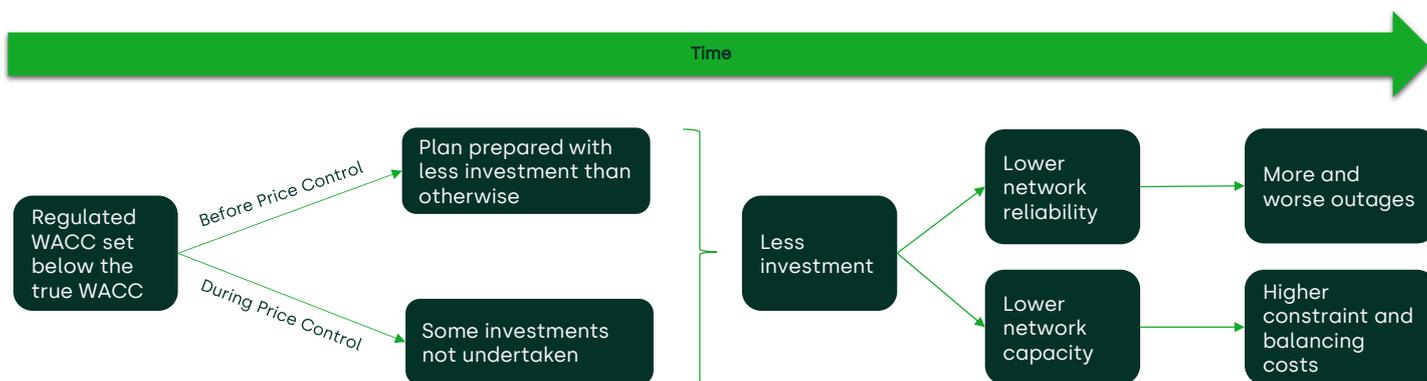
4.48 In section 4.1.1, we explained that estimating the cost of equity is an uncertain exercise and that because of parametric uncertainty, asymmetries in the cost of equity range may exist,

⁹⁴ Scottish and Southern Electricity Networks Transmission (2024), 'SSMC Response. Finance Annex', 6 March, p. 24.

requiring the regulator to adjust its initial return on equity allowance to account for these uncertainties.

- 4.49 Still, doing so only aims to propose an unbiased estimate of the cost of equity: ultimately, the return on equity allowance may over- or underestimate the 'true' cost of equity (in equal probabilities if the point estimate picked by the regulator is unbiased).
- 4.50 In that regard, choosing a return on equity allowance above the unbiased estimate can be considered a mechanism that is consistent with meeting investability requirements, in that it reduces the risk of a negative impact on investability from underestimating the true cost of capital during the regulatory period. This is especially true for the cost of equity, which is unobservable, and the estimation of which includes components that are not indexed to market data in Ofgem's SSMD methodology (i.e. the beta and the TMR), and for which forecast errors cannot be corrected.
- 4.51 If the allowed cost of capital (or equity) is below the true cost of capital (or equity), companies are likely to prepare less ambitious business plans with reduced investment levels (if the cost of capital is underestimated before the price control starts), or will undertake the minimum permissible amount of investment that does not breach their licence conditions or result in significant penalties (if the cost of capital falls below the true cost of capital during the price control). These causal effects are illustrated in the figure below (note that while this refers to the cost of capital, the same logic applies for the cost of equity, within the cost of capital).

Figure 4.3 Causal effects of WACC under-compensation on customers



Source: Oxera.

Impact of a decrease in reliability on customers and the economy

4.52 If underinvestment persists over time, network reliability is likely to decline, leading to increased risk of outages, with potentially significant welfare impacts. To evaluate the overall impact on consumers from decreased reliability, two factors should be considered:

- the magnitude of the effect that the under-compensation of WACC has on additional resilience investment. This has to be considered together with other aspects of the regulatory regimes, such as the incentive mechanisms and licence obligations both over the short term and the long term (we discuss the impact of these aspects in section 4.2.2 below);
- the magnitude of the effect that the decline in network reliability has on the customers and the wider economy.

4.53 Combining both effects allows us to estimate a probability-adjusted social cost of network reliability decreases driven by under-compensation of the cost of capital. Expected social costs would arise from the change in probability in outages and the scale of the outages multiplied by the economic cost of these outages.

4.54 To undertake an illustrative assessment of the potential economic impact of network outages, we have updated relevant

research that Oxera has undertaken in 2014 and 2022.⁹⁵ This is based on a review of literature studying the impact of a sample of international outage events. Specifically, the research presented below looks at international case studies into the economic cost of power outage events that have occurred in different jurisdictions, including a number of event studies from the USA. Table 4.1 below shows that based on differing observed impacts of outage events in other jurisdictions, an annual negative impact of outages could imply an economic cost that is equivalent to 0.26–6.08% of UK GDP.

4.55 This wide range reflects that the cost of outage events varies, based on the nature of the event such as the duration and magnitude of the outage(s) by jurisdiction. While these studies did not undertake any analysis that would take into account the specific circumstances of the UK power market, they provide an illustrative example of the annual economic cost that network failures of equivalent scale in the UK could imply, ranging between £6.99bn and £163.68bn. Excluding the significant outlier of the Cyprus outage in 2011, as well as studies covering specific events, e.g. weather related, we can reduce the implied impact range to £6.99bn–£29.26bn.

Table 4.1 Summary of studies into the economic cost of power outages

Study	Country	Event period (year)	Cost of outage (US\$bn)	GDP in year of study (US\$bn)	Cost (percentage of GDP)	UK GDP in 2023 (£bn)	Implied cost of outages in the UK (£bn)
Annual studies							
ASCE (2011)	USA	2012–20	55	18,869	0.29%	2,690	7.84
ASCE (2011)	USA	2020–40	97	25,648	0.38%	2,690	10.17
LaCommare et al. (2004)	USA	2004	79	12,300	0.64%	2,690	17.28

⁹⁵ Oxera (2022), 'Review of the percentile of the WACC distribution that should be targeted by the NZCC', 14 October, p. 26; Oxera (2014), 'Review of expert submissions of the input methodologies', Table 4.2.

Study	Country	Event period (year)	Cost of outage of study year (US\$bn)	GDP in year (US\$bn)	Cost (percentage of GDP)	UK GDP in 2023 (£bn)	Implied cost of outages in the UK (£bn)
Nexant (2003)	Nepal	2001	0.025	6	0.40%	2,690	10.67
EPRI (2001)	USA	2001	119–188	10,600	1.1–1.8%	2,690	3.9–6.4
Swaminathan and Sen (1997)	USA	1998	39	9,100	0.43%	2,690	11.53
Targosz and Manson (2007)	EU-25	2003–04	180	16,546	1.09%	2,690	29.26
Zachariadis and Poullikas (2012)	Cyprus	2011	1.52	25	6.08%	2,690	163.68
EBP (2020)	USA	2020–29	63.7	24,525	0.26%	2,690	6.99
Annual, weather-related only							
Campbell (2012)	USA	2012	25–55	16,200	0.15–0.4%	2,690	0.5–1.4
Council of Economic Advisors et al. (2013)	USA	2003–12	18–33	14,116	0.13–0.23%	2,690	0.46–0.82
Specific event							
Reichl et al. (2013)	Austria	2013	2.3	418	0.55%	2,690	14.82

Note: GDP is reported in current prices. For studies spanning over several years, the average value of the GDP has been taken. Some studies present simulations of outages in the future, forward GDP figures have been estimated assuming a constant growth of 2% per year. Implied costs of outages in the UK is based on the same proportion of GDP as in country of occurrence.

Source: Oxera analysis, based on various academic studies: ASCE (2011), 'Failure to act: The economic impact of current investment trends in electricity infrastructure', available [here](#); LaCommare, K. and Eto, J. (2004), 'Understanding the cost of power interruptions to U.S. electricity consumers', available [here](#); Nexant (2003), 'Economic impact of poor power quality on Industry, Nepal', available [here](#); EPRI (2001), 'The Cost of Power Disturbances to Industrial & digital economy companies', available [here](#); Swaminathan, S. and Sen, R.K. (1997), 'Review of power quality applications of energy storage systems', available [here](#); Targosz, R. and Manson, J. (2007), 'Pan-European lpaq power quality survey', available [here](#); Zachariadis, T. and Poullikas, A. (2012), 'The cost of power outages: A case study from Cyprus', available [here](#); EBP (2020), 'Failure to act: Electric infrastructure investment gaps in a rapidly changing environment', available [here](#); Campbell, R.J. (2012), 'Weather-related power outages and electric system resiliency',

available [here](#); Executive Office of the President (2013), 'Economic Benefits of Increasing Electric Grid Resilience to Weather Outages', Council of Economic Advisors et al, available [here](#); Reichl, J., Schmidthaler, M. and Friedrich, S. (2013), 'Power Outage Cost Evaluation: Reasoning, Methods and an Application', available [here](#). Data from World Bank (2023), 'United Kingdom | Data', available [here](#).

4.56 While not providing a precise point-estimate of the economic cost of network outages in the UK, these international event studies illustrate the significant detriment that outages can cause for the economy. This provides a framework that could be used to quantitatively assess the historical, as well as potential forecast impact outages may have on the UK economy.

Delivering welfare-enhancing investments

4.57 Beyond investments required to maintain network reliability, setting the cost of capital, and the cost of equity component of it, too low would risk hindering the delivery of welfare-enhancing investments in the context of the energy transition.

4.58 In the context of the energy transition, the likelihood of under-investment is likely to be significantly higher than over-investment. Figure 3.1 showed that the investment programmes to be implemented in RII0-3 and beyond represent a significant step change for TOs compared to previous periods. NESO has recently recommended an additional £58bn direct investment into the electricity grid by 2035, further to the current investment plans, including Ofgem's Accelerated Onshore Electricity Transmission (ASTI) framework, as well as 'business-as-usual' CAPEX.⁹⁶ The significant increase in the size of the investment programmes compared to historical trends, and the uncertainties around the optimal level of investment, will pose a significant delivery challenge for TOs and their supply chains.

4.59 In particular, extensive investments are needed both to connect new renewable generation to the grid and to ensure reduction of constraints on the network:

- building transmission infrastructure is essential for efficiently connecting new renewable generation infrastructure to the grid,

⁹⁶ NESO (2024), 'Beyond 2035', p. 10. Initial estimates allowed around £20bn investment through the ASTI framework. Ofgem (2022), 'Decision on accelerating onshore electricity transmission investment', 15 December, p. 5.

to help the transition towards a decarbonised electricity production system, thereby reducing the welfare costs of carbon;

- capacity constraints result in an increase in cost of grid management and is ultimately paid by consumers through Balancing Services Use of System charges (BSUoS). NESO estimates the annual balancing costs to be around £650m—this figure is highly dependent on the prevailing energy wholesale prices.⁹⁷

4.60 Selecting a point estimate above the unbiased estimate of the cost of equity (recognising that an unbiased estimate may nonetheless be lower than the true cost of equity required by investors) to set the return on equity allowance would mitigate the risks of these investments not being undertaken, in keeping with Ofgem's new duty of consider how its decisions may help to achieve the government's net zero targets.⁹⁸ This would be complementary to the focus on the growth duty, which the government has recently extended to include Ofgem.⁹⁹ According to the latter:

Sustainable growth encompasses the desirability of economic growth within the economy of the United Kingdom in the medium to long term. Regulators in scope of the Growth Duty should therefore **interpret economic growth broadly and not just within the sectors they directly regulate**.¹⁰⁰

4.61 We note that, in its PR19 redeterminations, the CMA indicated that underinvestment risk is compounded when a step change in the size of investment programmes is expected in the context of the transition to net zero:

In respect of the incentives on firms to identify new capital and grow the RCV where it benefits customers, there remains a risk that a WACC that is too low will not provide these incentives. We continue to be of the view that, at the margin, owners and their management will have some discretion in how appropriate capital projects are identified and designed, and that **there needs to be sufficient financial incentives to**

⁹⁷ NESO (2023), 'BSUoS Fixed Tariff Webinar', 7 July, p. 9.

⁹⁸ Department for Energy Security & Net Zero (2023), '[Energy Security Bill Factsheet: Ofgem net zero duty \(added 6 June 2023\)](#)', 1 September (last accessed 9 December 2024).

⁹⁹ Department for Business & Trade (2024), '[Statutory guidance Growth duty](#)' <https://www.gov.uk/government/publications/growth-duty> (last accessed 9 December 2024).

¹⁰⁰ Department for Business & Trade (2024), 'Growth Duty: Statutory Guidance - Refresh', 21 May, p. 4. Emphasis added.

sure that this is done at a desirable level. **This would be particularly the case if Ofwat required a step change in investment to meet changing resilience requirements in the face of climate change challenges or other stresses on existing infrastructure.**¹⁰¹

- 4.62 Moreover, not just in avoiding social losses, but in promoting social gain, it may be reasonable for Ofgem to select a point estimate above the midpoint of its unbiased range—recognising that an unbiased range may still be an underestimate of the true cost of equity. Recent research from Oxera shows that investment in decarbonisation can have significant multiplier effects.¹⁰² Regulation in particular can be a powerful tool to achieve not only net zero but also economic growth. Moreover, every scenario assessed in this research requires a huge increase in electrification to get to net zero before 2050.¹⁰³
- 4.63 The Climate Change Committee (CCC) also supports the view, that net zero can lead to social gains. Professor Piers Forster, interim Chair of CCC stated:

The transition to Net Zero can deliver investment, lower bills, and energy security. It will help the UK keep its place on the world stage. It is a way for this Government to serve both the people of today and the people of tomorrow.¹⁰⁴

- 4.64 In its 2024 Progress Report to Parliament, the CCC specifically criticised steps by the previous UK Government, which undermined the transition to net zero.¹⁰⁵ For instance, it warned that the removal of regulations on energy efficiency for rented homes is a missed opportunity to reduce energy bills.

When is aiming up an appropriate regulatory tool to enable appropriate levels of investment?

¹⁰¹ Competition and Markets Authority (2021), 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations', 17 March, para. 9.1391. Emphasis added.

¹⁰² Oxera (2024), '[Growth Zero](#)' (last accessed 9 December 2024).

¹⁰³ A proliferation of electric vehicles, for instance, means significant changes to transmission and distribution. Currently, electricity networks are set up to focus on supplying cities—big power plants and big transmission lines that keep the lights on in urban areas. Therefore, the grid infrastructure needs to change to cater to the 'electrification of everything'.

¹⁰⁴ Climate Change Committee (2024), '[UK off track for Net Zero, say country's climate advisors](#)', 18 July (last accessed 9 December 2024).

¹⁰⁵ Climate Change Committee (2024), '[2024 Progress Report to Parliament](#)', 18 July (last accessed 9 December 2024).

- 4.65 The choice of a specific return on equity allowance can help mitigate the risk of underinvestment by mitigating the risk that the allowed cost of capital is below the true cost of capital. However, a cost of equity uplift comes with additional direct and indirect costs:
- direct costs refer to the additional costs faced by consumers related to the increase in the allowed return on equity allowance;
 - indirect costs are the costs of additional investments that are undertaken and that would not have been undertaken by the companies at a lower return.
- 4.66 The indirect effects of additional investment being undertaken by the companies are unlikely to be detrimental to consumers, as Ofgem has cost assessment processes in place to evaluate and approve the proposed CAPEX programmes.
- 4.67 In particular, Ofgem retains a broad toolkit to assess both load related and non-load related CAPEX, using unit cost benchmarking, market testing data, engineering review and risk management considerations.¹⁰⁶ For projects that are not funded through the ex ante RII0-3 allowances, Ofgem has indicated that specific funding mechanisms will involve a review of the needs case and the costs of the project.¹⁰⁷
- 4.68 While it may be valid to raise concerns over some aspects of the cost assessment process, the crux of these mechanisms is to ensure that networks do not engage in inefficient investments. Therefore, it does not seem sufficient to justify rejecting uplifts to WACC as a regulatory mechanism on the grounds that it may encourage over-investment when other regulatory mechanisms can address this risk.
- 4.69 The direct cost to consumers of an increase in the allowed return on capital is the key consideration against which the benefits of a higher return on equity allowance should be considered. Allowed return on capital is a direct component of the electricity bill paid by the customers, hence, for the selection of a higher return on equity allowance to be justified,

¹⁰⁶ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – ET Annex', 18 July, paras 5.17–5.20.

¹⁰⁷ *Ibid.*, paras 2.241–2.242.

the implied benefits of such a selection should outweigh the costs to the customers—in terms of lower reliability or delayed transition towards a decarbonised energy system.

4.70 It is also important to note that in a climate of net zero related uncertainty about optimal levels of investment—for example, as evidenced by the wide forecast variations in future electricity demand in the UK¹⁰⁸—equity capital needs incentives to enter and stay. The selection of an appropriate point estimate within the cost of equity range would minimise the risk of these investments not being carried out when they are most needed. Incentivising timely investment would unlock social benefits in terms of higher reliability, timely delivery of net zero and potential growth impacts of the RII0-3 investment programmes.

4.71 Crucially, a return on equity uplift may also be, in the context of RII0-3, the most appropriate mechanism to ensure that TOs can raise the new equity needed to finance their investment programmes in a context of international competition for capital, thereby contributing to the investability of the regulatory settlement. This is discussed in the section below.

4.2.2 **Opting for a return on equity allowance that ensures that investments are adequately financed and implemented**

4.72 While aiming up represents one regulatory tool that helps to mitigate underinvestment risk, UK regulators have generally suggested that other avenues may be preferable. For example, UKRN guidance posits that the causal effects of setting a return on equity allowance below the 'true' cost of equity, and in particular the risk that it might lead to underinvestment (with impacts on reliability or the delivery of net zero, as discussed above), can be neutralised by alternative mechanisms to ensure investment is carried out.¹⁰⁹

4.73 The guidance considers that these 'reduce or remove the need to explicitly uplift the allowed rate of return'.¹¹⁰ The mechanisms that the UKRN recommends include (i) statutory requirements; (ii) service delivery incentives; (iii) separate treatment of large

¹⁰⁸ ESO (2024), 'Future Energy Scenarios: ESO Pathways to Net Zero', July, p. 26.

¹⁰⁹ UK Regulators Network (2023), 'UKRN guidance for regulators on the methodology for setting the cost of capital', 23 March, p. 28.

¹¹⁰ Ibid.

one-off projects; and (iv) pricing freedom for new investments when relevant.¹¹¹

- 4.74 Ofgem made similar arguments in its RIIO-2 FD, dismissing analysis made by Professor Dobbs on welfare loss asymmetry in regulatory settings,¹¹² on the grounds that this work omitted elements of Ofgem's regulatory settlement which, in Ofgem's opinion, mitigate underinvestment risk, in particular licence obligations and ODIs (i.e. mechanisms (i) and (ii) mentioned above).¹¹³ Ofgem reiterated that, in its view, aiming up was not necessary as these mechanisms addressed underinvestment risk in the short to medium term.¹¹⁴
- 4.75 However, we consider that neither licence obligations nor service delivery incentives are sufficient to guarantee, in and of themselves, an optimal level of investment especially in the context of the energy transition uncertainty—and, even if they were, that might not ultimately be in the consumers' interest.
- 4.76 Indeed, it is true that licence obligations compel networks to carry out a certain level of investments in order to continue meeting statutory requirements. However, the level of investment that will be carried out may not be the optimal level of investment if the cost of capital that remunerates the RAV is below the 'true' cost of capital (i.e. if the financing costs of the networks are not adequately compensated). This is because statutory requirements do not affect those investments that TOs have the discretion to identify, develop and undertake. Also, statutory requirements may have the potential to be met non-optimally by implementing short-term, less costly solutions rather than committing capital in the long term.
- 4.77 In addition, underestimating the cost of equity for several price controls while relying on statutory requirements for the investments to be carried out would be unsustainable in the long-run, as it would let networks accumulate losses and

¹¹¹ UK Regulators Network (2023), 'UKRN guidance for regulators on the methodology for setting the cost of capital', 23 March, p. 28.

¹¹² Dobbs, I.M. (2010), 'Modeling welfare loss asymmetries arising from uncertainty in the regulatory cost of finance', *Journal of Regulatory Economics*, **39**:1, pp. 1–28.

¹¹³ Ofgem (2021), 'RIIO-2 Final Determinations – Finance Annex', 3 February, para. 3.181.

¹¹⁴ Ofgem (2021), 'RIIO-2 Price Control: Response to appeals on finance issues and TNUOS', 5 May, para. 267.3. Ofgem also indicated that it was confident that its allowed return on equity was not underestimating the true cost of equity, and that it was expecting networks to outperform the allowed return on equity.

accelerate the exit of existing investors. This would tend to have reputational effects on the financial viability of the regulatory settlement, with remaining investors demanding higher returns for maintaining their investment. Ultimately, the financial viability of networks would be jeopardised, with potential ripple effects throughout the value chain and, ultimately, on consumers.

- 4.78 With regard to service incentives, it is true that in theory, they might incentivise networks to carry out the investments needed to meet performance targets. However, that is only true to the extent that the service incentive rewards are higher than the losses incurred from having investments remunerated at a lower rate than the 'true' cost of capital.
- 4.79 In any case, it is highly unlikely that relying on licence obligations or service incentives solely to incentivise investments by networks—even in case of a lower return on equity allowance than the 'true' cost of equity—would allow the optimal level of investment to be delivered.
- 4.80 Rather, these alternatives only incentivise a minimum level of investment to be carried out, i.e. the level that allows networks to meet licence obligations and/or service targets. It should be clear that, given the scale of the investment programmes to be carried out (shown in Figure 3.1) and the uncertainty around electrification pathways that networks need to account for (as shown in Figure 4.2), the optimal investment expenditure is likely to be unattainable by simply relying on non-cost of capital mechanisms to ensure that no underinvestment is taking place.
- 4.81 We note that in RIIO-3, the CSNPs, drawn up by NESO, will provide an investment roadmap for TOs to follow, essentially removing the TOs' initiative in proposing investments that will now fall under the perimeter of the CSNP.¹¹⁵ Ofgem also intends to subject timely delivery of CSNP investments to incentives.¹¹⁶ In principle, for investments that fall under the scope of the CSNP, this would help mitigate underinvestment risk as TOs would not be able to draw up business plans with reduced investment

¹¹⁵ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – ET Annex', 18 July, paras 1.13 and 2.8.

¹¹⁶ *Ibid.*, paras 2.169–2.184.

expenses, and will be subject to penalties if they do not deliver CSNP investments.

- 4.82 However, this still assumes (and relying on the service incentives or statutory requirements to deliver investments generally assumes) that adequate financing can be secured for these investments. In the context of RIIO-3 and the unprecedented financing requirements faced by TOs, it is unclear how this financing can be secured without resorting to regulatory mechanisms that incentivise investors, in particular equity investors (given the need to balance financing sources in order to ensure the financeability and financial resiliency of the networks), to provide new financing.
- 4.83 In this particular instance, aiming up is an appropriate tool to ensure that (i) underinvestment risk is mitigated; **and** (ii) networks and their investors are sufficiently incentivised to implement optimal levels of investment.
- 4.84 It is also important to look at the context of RIIO-T3—that utilities are engaged in a competition for capital as many sectors are seeking to raise the financing necessary to implement investment programmes compatible with net zero policies. In the energy sector, networks are competing for capital with renewable electricity production capacity, but also hydrogen and carbon capture, usage and storage (CCUS) as new technologies.
- 4.85 This competition for capital is also global, as more countries are implementing policies aimed at facilitating investments compatible with the transition to net zero. This includes, for example, the REPowerEU plan in the European Union, or the Inflation Reduction Act in the USA.¹¹⁷
- 4.86 As noted by Axa Investment Managers in a note on the funding of energy transition infrastructure (including electricity networks):

¹¹⁷ CBI (2023), 'Unlocking UK's net zero investment', March, p. 14.

However, despite growth and visibility, the return prospects of those investments must be attractive enough. Sustainability and profitability must go together to fully tap the capital pool.¹¹⁸

- 4.87 For new investors in particular, marginal returns should be sufficient to incentivise the entry (and subsequent retention) of equity capital at the point that new investments are needed. Aiming up can be, and should be, an appropriate regulatory response to this issue.
- 4.88 Correspondingly, we note that ensuring that water companies would be able to finance their investment programmes was a key determinant in Ofwat's decision to select an allowance towards the top end of its proposed return on equity range in its recent PR24 DD:

On balance, taking account in particular of negative investor sentiment and **the desirability of the sector being able to successfully raise the significant amounts of external equity** and debt required for 2025-2030, we propose a rounded allowed return on equity of 4.80%.¹¹⁹

- 4.89 As another example, we note that in early 2024, the Bundesnetzagentur (BNetzA, the German infrastructure regulator, tasked with energy network regulation) revised the marginal return on equity (i.e. the rate of return on new investments) to be significantly higher than the prior regulatory allowed return on equity. This recognised an environment of rising interest rates. The BNetzA states that it revised the rate of return allowance on new investments to guarantee the financing of the modernisation and expansion of the energy grids and to ensure the ability of electricity and gas networks to invest in the current interest rate environment.¹²⁰

Conclusion

¹¹⁸ Axa Investment Managers (2024), 'Infrastructure and the energy transition: Moving electrons and molecules', April, p. 11.

¹¹⁹ Ofwat (2024), 'PR24 draft determinations. Aligning risk and return – Allowed return appendix', July, p. 66. Emphasis added.

¹²⁰ 'In order to continue to guarantee the financing of the modernisation and expansion of the energy grids and to generally ensure the ability of electricity and gas grid operators to invest even in the current interest rate environment, the Ruling Chamber has therefore initiated a procedure to establish regulations for determining the imputed own capital interest rate for new investments in the capital cost mark-up in accordance with Sections 21 para. 3 sentence 4 no. 1 a), 29 para. 1 EnWG', Oxera translation of Bundesnetzagentur (2024), 'Beschluss_BK4-23-002', 17 January, p. 3 (fourth paragraph).

4.90 Overall, we find that regulators should consider how they might avoid setting the return on equity too low, as this could induce underinvestment risk, which could in turn lead to detrimental welfare consequences. The ambitious investment programmes to be delivered in RIIO-3 and beyond are necessary to decarbonise the energy system efficiently, and may also generate large welfare benefits through growth and job creation, consistent with the focus of Ofgem's new net zero and growth duties. In this context, the detrimental welfare consequences of setting the return on equity too low would be exacerbated.

4.91 In this context, we view the choice of a return on equity allowance above the midpoint of the unbiased cost of equity range as an adequate regulatory tool to address underinvestment risk, recognising that an unbiased estimate of the cost of equity may nonetheless be an underestimate of the true cost of equity. In particular, it is more efficient at incentivising delivery of optimal levels of investment than only relying on mechanisms such as licence obligations or ODIs, especially in a context of global competition for capital.

4.3 Conclusion on the investable return on equity allowance

4.92 It is important to calibrate the return on equity allowance such that it ensures the investability of the regulatory settlement.

4.93 In the first instance, the selection of an appropriate point estimate within the cost of equity range allows the regulator to take into account parametric uncertainty. In the context of RIIO-3, forward-looking risks and evidence from current market conditions mean that it would be appropriate for Ofgem to select a point estimate in the upper half of its asset beta and TMR ranges. Furthermore, an adjustment of the allowed return on equity can redress any residual asymmetry in the expected return resulting from the regulatory settlement (in particular from the cost allowances and incentive package).

4.94 In addition to the selection of an appropriate point estimate that adjusts for asymmetry of (parametric or price control package) risk within the return on equity range, aiming up can further enhance the investability of the regulatory settlement by ensuring that networks can raise the significant equity needed to finance their investment programmes over RIIO-3 and beyond. This would ensure that the risk of welfare losses arising from underinvestment is appropriately mitigated—something that is

of importance when the investment programmes that TOs need to implement are aimed at decarbonising the GB energy system, with potentially significant welfare benefits to unlock.

- 4.95 We also note that there is a role for cross-checks in assessing whether overall network returns are in line with required returns, or the opportunity cost of capital, including with reference to alternative international investment opportunities. It is beyond the scope of this report to examine the relevant cross-checks that can be used in such an assessment, but these may differ from, and extend beyond, Ofgem's cross-checks on the CAPM cost of equity.

5 Ofgem should maintain the flat WACC approach to calculate the cost of equity at 55% notional gearing

5.1 In this section, we discuss how Ofgem's SSMD suggests that the regulator will not continue with the approach adopted in RIIO-2 to set the allowed return on capital for TOs.

5.2 In RIIO-2, Ofgem implemented a 'flat WACC' approach, whereby the regulator explicitly assumed that the cost of capital for the business as a whole was identical at the 60% and 55% notional gearing assumptions (the former being applied to the gas distribution and transmission sectors, the latter being applied to the ET sector).¹²¹ This section discusses how Ofgem intends to account for the differential in the notional gearing assumption as part of RIIO-3.

5.3 We first comment on the approach that Ofgem suggests to follow for RIIO-3, assessing how it might differ from the 'flat WACC' approach adopted in RIIO-2. We then discuss why it would be appropriate for Ofgem to maintain the RIIO-2 flat WACC approach as part of the next price control.

5.1 The flat WACC approach and the RIIO-3 WACC calculation

5.4 In RIIO-2, Ofgem adopted two different notional gearing assumptions for the electricity transmission sector on the one hand, and the gas distribution and transmission sectors on the other. The notional gearing assumption for TOs was set at 55%, whereas the notional gearing assumption for gas networks was set at 60%. Adopting two different notional gearing assumptions would mechanically translate into different costs of equity for the ET sector on the one hand and the gas sectors on the other, holding all other parameters constant.

5.5 Instead, Ofgem chose to adopt a 'flat WACC' approach, where the cost of capital differential induced by two different notional gearing assumptions was neutralised by adjusting the cost of equity in the cost of capital calculation, such that the cost of

¹²¹ Ofgem (2021), 'RIIO-2 Final Determinations – Finance Annex (REVISED)', 3 February, para. 4.1.

capital at 55% notional gearing would be equal to that at 60% gearing (holding all else constant).

5.6 Table 5.1 below shows the cost of capital calculated by Ofgem at 60% notional gearing, as well as the cost of capital that would have been obtained by mechanically applying a 55% notional gearing assumption in the cost of capital calculation (i.e. re-levering the asset beta using the notional gearing assumption and then calculating the cost of capital using it to weight the cost of equity and the cost of debt). It also shows the calculation of the flat WACC that was ultimately adopted by Ofgem.

Table 5.1 RIIO-2 cost of capital calculation (CPIH-real), at the 60% and 55% notional gearing assumptions and according to the flat WACC approach

	60% notional gearing re-gearing	55% notional gearing re-gearing	Flat WACC at 55% gearing
Notional gearing	60%	55%	55%
Risk-free rate	-1.58%	-1.58%	n.a.
Total Market Return	6.5%	6.5%	n.a.
Asset beta	0.349	0.349	n.a.
Debt beta	0.075	0.075	n.a.
Equity beta	0.759	0.683	n.a.
Cost of equity	4.55%	3.94%	4.25%
Cost of debt	1.82%	1.82%	1.82%
Cost of capital	2.91%	2.77%	2.91%

Note: The cost of debt allowance was different between networks. For illustration purposes, we report our calculations with the cost of debt allowance of NGET and SPT. Source: Oxera calculations based on Ofgem (2021), 'RIIO-2 Final Determinations – Finance Annex (REVISED)', 3 February, p. 24 and Table 13.

5.7 This approach was based on the 'well-known principle that capital costs and returns are unaffected by gearing', as stated by Ofgem in the RIIO-2 DD.¹²²

5.8 In its RIIO-3 SSMD, Ofgem indicated that it is minded to retain the same notional gearing assumptions as in RIIO-2.¹²³ However, Ofgem has signalled that it does not intend to follow the flat WACC approach in RIIO-3.

5.9 In particular, we note that Ofgem has stated that:

While the SSMD's 'early view' of the cost of equity focuses on a central 60% gearing case in order to present metrics consistently, for DDs **we will set appropriate equity, debt and WACC allowances for ET companies in line with a 55% notional gearing level** (assuming that we decide to again apply a 55% notional gearing level for ET companies). **We expect to follow the same process used to assess the cost of equity at 60%, regearing our asset beta estimate to a 55% notional level of gearing following the process described in paragraph 3.221.**¹²⁴

5.10 This statement suggests that Ofgem intends to calculate the cost of capital allowance for TOs based on the 55% notional gearing re-gearing assumption rather than by following a flat WACC approach. Using, for illustration purposes, the mid-point of the ranges put forward by Ofgem in the SSMD for each cost of capital parameter, this would result in an allowed cost of capital of 4.11% (CPIH-real) at the 55% notional gearing assumption, instead of an allowed cost of capital of 4.20% (CPIH-real) at the 60% notional gearing assumption.

5.11 Under the flat WACC approach, the return on equity allowance would need to be set at 5.20% (CPIH-real), assuming Ofgem's SSMD parameters, in order for the cost of capital to remain identical at the 55% and 60% notional gearing assumptions. This is higher than the 5.00% (CPIH-real) return on equity allowance implied by the 55% notional gearing assumption.

5.12 Calculations are shown in Table 5.2 below.

¹²² Ofgem (2020), 'RIIO-2 Draft Determinations – Finance Annex', 9 July, para. 3.165.

¹²³ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 4.16.

¹²⁴ *Ibid.*, para. 4.20. Emphasis added.

Table 5.2 RIIO-3 SSMD cost of capital calculation (CPIH-real), at the 60% and 55% notional gearing assumptions and according to the flat WACC approach

	60% notional gearing re-gearing	55% notional gearing re-gearing	Flat WACC at 55% gearing
Notional gearing	60%	55%	55%
Risk-free rate	1.18%	1.18%	n.a.
Total Market Return	6.75%	6.75%	n.a.
Asset beta	0.35	0.35	n.a.
Debt beta	0.075	0.075	n.a.
Equity beta	0.763	0.686	n.a.
Cost of equity	5.43%	5.00%	5.20%
Cost of debt	3.38%	3.38%	3.38%
Cost of capital	4.20%	4.11%	4.20%

Note: In our calculations, we use the mid-point of each range put forward by Ofgem for each cost of capital parameter. The cost of debt includes the allowance for additional borrowing costs.

Source: Oxera calculations based on Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, Table 1, para. 2.156 and Table 13.

- 5.13 We consider that the c. 20 bps differential in the return on equity allowance and the c. 10 bps differential in the cost of capital allowance that exist between the flat WACC approach and the re-gearing at 55% notional gearing approach are material in the context of the overall risk-return balance of the price control.
- 5.14 Ofgem's proposed approach would amount to a reduction in the allowed cost of capital and cost of equity, relative to the approach adopted in RIIO-2. This would be a mechanistic reduction, rather than one that is well-evidenced. Such a reduction would harm the investability of a sector that is likely to raise significant amounts of new equity in RIIO-3 and subsequent price controls: this is inconsistent with ensuring the investability of the regulatory settlement.
- 5.15 Therefore, in order to improve the investability of the regulatory package, it would be appropriate to maintain the flat WACC approach. The continuation of the flat WACC approach is also appropriate for reasons pertaining to the stability of the

regulatory framework. It is also consistent with regulatory precedents. We discuss this further below.

5.2 Rationale for maintaining the flat WACC approach

- 5.16 Maintaining the flat WACC approach would improve the investability of the regulatory package. Besides this, we consider that it would be appropriate for Ofgem to maintain this approach in order to maintain regulatory consistency.
- 5.17 As indicated above, Ofgem adopted the flat WACC approach in RIIO-2 in order to maintain the 'well-known principle that capital costs and returns are unaffected by gearing'.¹²⁵
- 5.18 Table 5.2 above shows that although the differential between the costs of capital at the 60% and 55% notional gearing assumptions has narrowed since RIIO-2, it is still positive (i.e. cost of capital increases with gearing), despite higher interest rates. As a result, regulatory consistency would require Ofgem to apply the flat WACC approach for RIIO-3.
- 5.19 Besides, the regulator indicated, in the SSMD, that the approach to the calculation of the cost of capital would be similar to that adopted in RIIO-2:

The Finance Annex lays out our approach to setting the Weighted Average Cost of Capital and assessing Financeability. **Both approaches will be very similar to the respective approaches taken in RIIO-2,** although we are exploring incremental improvements to our assessment of financeability.¹²⁶

And:

Our approach to WACC will be broadly in line with RIIO-2.¹²⁷

- 5.20 These statements contradict the fact that the regulator does not intend to adopt the flat WACC approach, without providing any justification for why it would no longer be appropriate to

¹²⁵ Ofgem (2020) 'RIIO-2 Draft Determinations – Finance Annex', 9 July, para. 3.165.

¹²⁶ Ofgem (2023), 'RIIO-3 Sector Specific Methodology Decision – Overview', 18 July, para. 10.13.

Emphasis added.

¹²⁷ Ofgem (2024), 'RIIO-3 Gas Distribution & Gas and Electricity Transmission - Sector Specific Methodology Decision - Investor Call', 18 July, p. 14.

uphold the principle that the cost of capital should be invariant to gearing.

- 5.21 It would be against good regulatory practice to change the formulaic approach to calculating the cost of capital between two successive price controls when the underlying reason for adopting a given approach in the previous price control still holds in the next price control. Indeed, this undermines the predictability and the stability of the regime, one of the key criteria assessed by credit rating agencies when rating regulated energy utilities.¹²⁸ This is an element of regulatory risk that may be harmful for ensuring the investability of the sector.¹²⁹
- 5.22 We therefore consider that it would be appropriate for Ofgem to maintain the flat WACC approach in its DD. We note that this approach is also supported by regulatory precedents other than Ofgem's own RIIO-2 precedent.
- 5.23 Indeed, the CMA considered a similar issue as part of the NERL appeal, in which it was confronted with the issue that the notional gearing assumed by the CAA and NERL was 60%, when NERL's actual gearing was around 30% (around the same as that of some of the companies retained in the beta comparator sample).¹³⁰
- 5.24 The CMA noted that when the asset beta assumption was combined with its other cost of capital parameters, the cost of capital was increasing with gearing, contrary to what standard financial theory suggests.¹³¹
- 5.25 We note that such a counter-intuitive relationship between gearing and cost of capital would have been observed in RIIO-2, had the cost of capital of TOs been set if Ofgem had re-levered the asset beta using the 55% notional gearing assumption, as shown in Table 5.1 above. Similarly, Table 5.2 shows that this

¹²⁸ See, for example, Moody's (2022), 'Rating Methodology. Regulated Electric and Gas Networks', 13 April, p. 3.

¹²⁹ Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, para. 3.245.

¹³⁰ Competition and Markets Authority (2020), 'NATS (En Route) Plc/CAA Regulatory Appeal Final report', 23 July, paras 13.109 and 13.115.

¹³¹ *Ibid.*, para. 13.112.

relationship is also observed using the RIIO-3 SSMD parameters to calculate the cost of capital parameters.

- 5.26 In a technical appendix to its final report in the NERL appeal, the CMA put forward an alternative model, consistent with the Modigliani and Miller constant cost of capital theory.¹³² Under this model, the cost of debt is held constant for a small increase in gearing, and the cost of equity is calculated such that the cost of capital remains constant at any level of gearing.¹³³
- 5.27 In fact, this model is the one that Ofgem implemented in the form of the flat WACC approach in RIIO-2. Ofgem also cited the NERL appeal in its RIIO-2 DD.¹³⁴
- 5.28 Moreover, regulators are not the only ones applying a flat WACC approach. Investment hurdle rates used in practice are often invariant to gearing. For instance, for a study on hurdle rates used by real estate investors, the authors conducted 32 interviews with investors. In only one interview did the investor name gearing as a relevant factor for its assumed hurdle rates.¹³⁵
- 5.29 While leverage can and likely will change over time, it is an ongoing discussion in academia how the WACC is affected.¹³⁶ Lorenz et al. (2016) assess the stability of the WACC over time. They argue, that the WACC can be invariant to changes in the capital structure over time due to changes in operational risk and changes in financial risk cancelling each other out.

5.3 Conclusion on the flat WACC approach

- 5.30 We find that it would be appropriate for Ofgem to maintain the 'flat WACC' approach introduced in RIIO-2, and therefore to set the same cost of capital at the 60% and 55% notional gearing assumptions. Indeed, when reduced levels of notional gearing are associated with (the risk of) substantial investment programmes in RIIO-3, it would be perverse to reduce the level

¹³² Competition and Markets Authority (2020), 'NATS (En Route) Plc/CAA Regulatory Appeal Final report', 23 July, technical appendix D, paras 17 to 20.

¹³³ Ibid.

¹³⁴ Ofgem (2020), 'RIIO-2 Draft Determinations – Finance Annex', 9 July, para. 3.71.

¹³⁵ IPF Research Programme (2017), 'An Investigation of Hurdle Rates in the Real Estate Investment Process', May, p. 34.

¹³⁶ Lorenz, D., Kruschwitz, L. and Löffler, A. (2016), 'Are costs of capital necessarily constant over time and across states of nature? Some remarks on the debate on "WACC is not quite right"', *The Quarterly Review of Economics and Finance*, May, **60**, p. 81–85.

of allowed return as a mechanical result of retaining a relatively low sector-specific gearing assumption. Specifically, as this would amount to a reduction in the allowed return on equity precisely when TOs are expected to raise new equity in significant amounts over the next price control, we view the proposed discontinuation of the flat WACC approach as damaging to the investability of the regulatory settlement.

- 5.31 We consider that the continued use of the flat WACC approach, grounded in the CMA's precedent, as well as in Ofgem's own RIIO-2 precedent, is consistent with investment behaviour in setting investment hurdle rates invariant to moderate changes to gearing. It would also maintain regulatory consistency across two price controls.

6 Conclusion

- 6.1 In this report, we have extended the analysis of investability in the context of the RII0-T3 price control, taking into account relevant factors that affect the attraction and retention of equity.
- 6.2 First, we have established the importance of maintaining dividend yields at a level that is consistent with investors' expectations and benchmarks. In particular, we have discussed how, from a theoretical perspective, investors in utilities might favour dividend payments over share price appreciation as a form of remuneration due to clientele effects, and concluded that networks should be able to adopt a dividend policy that reflects their investors' preferences. We have also shown that this preference is evidenced by empirical data, as European electricity networks have maintained a stable dividend yield relative to the profile of their investments over time, at an average level that is higher than the 3.0% base assumption in Ofgem's SSMD. Similarly, UK utilities have consistently exhibited higher dividend yields than the market average.
- 6.3 Second, we have outlined a process for selecting a return on equity allowance that: (i) redresses any asymmetry in the estimation of the cost of equity and in the regulatory settlement as a whole; and (ii) avoids welfare losses associated with underinvestment risk and accounts for capital market constraints. At this stage of the RII0-3 process, we consider that both parametric uncertainty and the likelihood of underperformance being greater than that of overperformance would warrant an upward adjustment of the return on equity allowance where these cannot be fully remediated at source. This would redress an asymmetry of risks that would otherwise lead to a downside skew in the distribution of returns. There may then be further considerations of investability that are informed by Ofgem's new Growth and Net Zero duties. Specifically, in light of the significant investment programmes that TOs need to implement over RII0-3 and beyond, it would be appropriate to ensure that the level of allowance provides adequate incentives to TOs and their investors to avoid social losses from underinvestment, and to be able to achieve significant levels of new equity financing in an international market for capital to deliver decarbonisation.

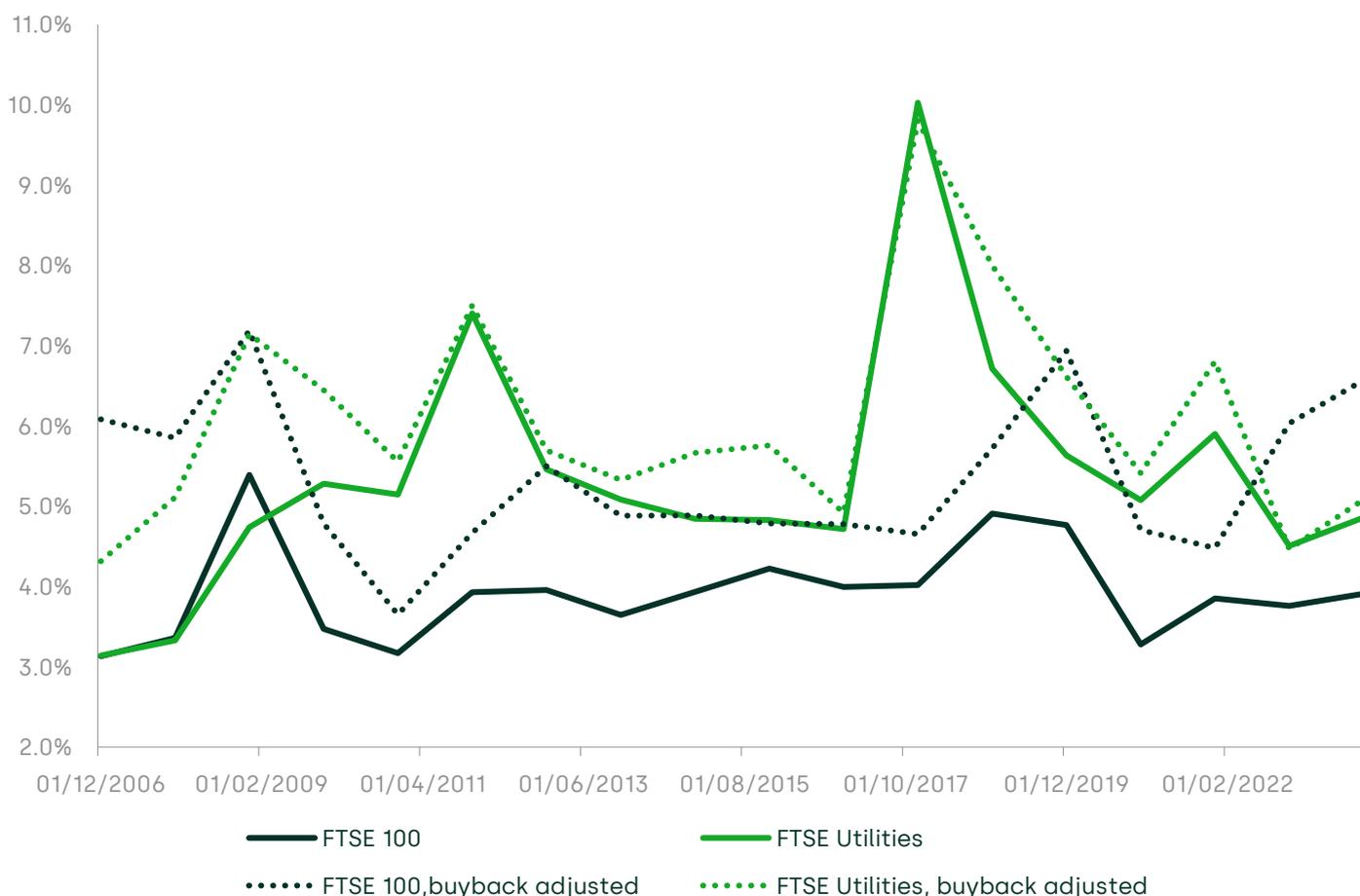
6.4 Third, we have discussed how maintaining stability in the cost of capital calculation methodology is crucial in order to maintain investment incentives (and therefore the investability of the price control), in particular with regard to the link between capital structure and allowed returns. Indeed, we have noted how the rationale that led Ofgem to introduce the flat WACC approach in RIIO-2 (i.e. that the cost of capital was decreasing with gearing) still holds at this stage of RIIO-3, and that regulatory consistency should therefore drive Ofgem to maintain the RIIO-2 approach in RIIO-3. We also note that the flat WACC approach is supported by the fact that investors' remuneration requirements are generally invariant to small changes in gearing.

A1 Dividend yield per year for European electricity networks

	TRN	RED	RENE	ELIA
2008	5.70%	2.72%	5.78%	3.65%
2009	6.28%	3.82%	5.49%	3.81%
2010	6.11%	4.17%	6.12%	3.78%
2011	6.96%	5.00%	7.33%	3.59%
2012	7.44%	6.28%	8.25%	3.49%
2013	6.08%	5.57%	7.59%	3.34%
2014	5.21%	4.07%	6.52%	3.09%
2015	4.75%	3.93%	6.38%	2.90%
2016	4.32%	4.23%	6.46%	2.50%
2017	4.30%	4.66%	6.29%	2.25%
2018	4.64%	5.16%	6.88%	2.13%
2019	4.14%	5.29%	6.66%	1.71%
2020	4.13%	6.32%	7.01%	1.67%
2021	4.16%	6.13%	7.07%	1.31%
2022	4.04%	5.62%	5.88%	0.91%
2023	4.13%	6.42%	6.05%	1.19%

Source: Oxera analysis based on Refinitiv data.

A2 Buyback adjusted dividend yields for FTSE 100 relative to FTSE Utilities, UK (%)



Note: Gross annual dividend yield is computed as the total gross dividend per share over the prior 12 months divided by the in-year share price. The gross dividend amount includes taxes, any related dividend fees or tax-related credits. Average dividend yields were calculated as the mean of the annual dividend yields of the indexes from 2006 to 2023. Buyback adjusted dividend yield is computed as the total gross dividend per share over the prior 12 months, plus buybacks of common stock, common stock warrants, other common stock equivalents, redemption of preferred share capital and purchases of treasury stock over the same period—all divided by the in-year share price.

FTSE Utilities comprises the following utility companies: National Grid Plc, SSE Plc, Centrica Plc, United Utilities Group Plc, Severn Trent Plc, Drax Group Plc, Pennon Group Plc and Renewi Plc. The spike in the FTSE Utilities index dividend yield observed in 2017 is most likely caused by National Grid Plc paying a special dividend in that year. In 2017, National Grid plc constituted over 45% of the index.

Source: Oxera analysis using Bloomberg data; and National Grid (2017), '[Notice of General Meeting](#)', April (last accessed 9 December 2024).

A3 Share by industry of FTSE 350 companies included in the FTSE UK Dividend Plus Index

Industry	Share
Consumer Staples	26.09%
Consumer Discretionary	11.90%
Financials	20.78%
Utilities	62.50%
Communications	11.76%
Health Care	14.29%
Industrials	2.04%
Energy	37.50%
Real Estate	18.52%
Materials	30.00%
Technology	0.00%

Note: The shares were calculated using the index components as of 10 September 2024.
Source: Oxera analysis based on Bloomberg data.



Contact

Sahar Shamsi

Partner

+44 (0) 20 7776 6624

sahar.shamsi@oxera.com

oxera.com



A large, stylized Oxera logo is mounted on a window. The letters are white with a glowing effect, and the window reflects the surrounding greenery and interior lights. The logo is partially obscured by three modern, white, teardrop-shaped pendant lights hanging from the ceiling.