
What explains the equity market valuations of listed water companies?

A review of Ofwat's use of financial market evidence to support its allowed cost of capital

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Executive summary

Ofwat contends that the February 2020 market equity valuations of two listed water companies support its allowed equity return for PR19. In particular, Ofwat reference some analysis from Europe Economics that indicates the implied market cost of equity is 2.8% to 3.8%, materially less than the PR19 allowed equity return of 4.18%.

Ofwat uses these market equity valuations as a cross check to its allowed return for PR19, characterising it as “overarching evidence” and asks the CMA to take it into account. Ofwat has acknowledged that its importance should not be over-stated.¹

A traded equity market premium in this context refers to the situation where the equity market value of a regulated business exceeds the value of the equity portion of its regulated asset base.

Ofwat has acknowledged that various factors influence the market equity value of regulated companies. However, any attribution of the market equity premium to regulated equity has to appropriately account for these factors to be considered meaningful and reliable evidence. We have concluded that uncertainty over the sources of value premia, and their respective valuations, makes it impossible in this case to infer the cost of equity with a meaningful confidence level to make such inference reliable and robust for regulatory purposes. The Competition Commission (CC) and the Competition and Markets Authority (CMA) have also come to this conclusion.

In this report, we assess the drivers of equity market valuations of the two listed water companies: Severn Trent and United Utilities. Given the focus of Ofwat on the implied cost of equity, we follow a ‘flows to equity’ approach to the valuation exercise, and update the analysis based on a more comprehensive review of the market expectations of the performance of the two firms. We also extend the time period of the analysis to cover average valuations over the four months since the Final Determinations, noting that the analysis from Europe Economics coincided with a peak in market sentiment towards equities.

We find that the expected level of outperformance on debt, ODIs and TOTEX by Severn Trent and United Utilities over AMP7 varies significantly across forecasters, and over time. While most analysts agree that there will be outperformance for these companies, our review shows that there is little consensus on the level of expected outperformance.

We consider a range of plausible scenarios, based on low and high analyst forecasts for the future performance of Severn Trent and United Utilities. Our analysis demonstrates that under plausible scenarios the current traded equity premia can be more than explained without any recourse to an assumption that the market cost of equity is lower than the regulated allowed base equity return. To the extent that conclusions can be drawn, the analysis is consistent with the conclusion that Ofwat has underestimated the cost of equity.

Expected outperformance against the Final Determination assumptions for Severn Trent and United Utilities can explain the premia in the share prices of these companies. The values of the non-regulated businesses and expectations of takeovers also contribute to the traded market premia. Ofwat aims to set allowed revenues so that an average efficient notional company is

¹ Ofwat (2020), ‘Reference of the PR19 final determinations: Cross-cutting issues’, p. 36, para. 5.10.

not expected to out- or underperform, and therefore the finding that Severn Trent and United Utilities are expected to out-perform does not mean the whole sector is systematically expected by the market to out-perform.

In light of the uncertainty in apportioning components of equity market valuations to individual elements of the regulated settlement, there is no reason to depart from the position as stated in previous CMA assessments and the UKRN cost of capital study—evidence from traded market premia does not provide a reliable guide in practice to the cost of equity used by investors in regulated utilities.

Introduction

In preparation for the RIIO-2 electricity and gas transmission and distribution price controls, the Energy Networks Association (ENA) has commissioned Oxera to provide advice on the use of financial market evidence on market premia to the regulated asset base.

In the context of the water sector PR19 Final Determinations, and the subsequent appeals by several water companies, Ofwat has suggested that the levels of the premia for listed water companies are too high to be explained by outperformance, and that this implies that the cost of equity set in the PR19 Final Determinations is not too low.² This is relevant for RIIO-2 because Ofgem is using Ofwat's cost of equity to benchmark the RIIO-2 cost of equity.³

This report investigates the sources of the traded premia. It is structured as follows:

- section 2 briefly reviews the concept of a premium to regulated equity, and explains the different contributions that may lead to the market value of the regulated business exceeding the equity portion of its regulated asset base;
- section 3 reviews previous CMA precedent in analysing market-to-asset ratios (MARs) as part of regulatory appeals;
- section 4 summarises the approach used by Ofwat and Europe Economics (EE) with regard to the interpretation of the valuations of the two listed UK water companies, Severn Trent and United Utilities;
- section 5 provides our own empirical analysis of the market valuations of Severn Trent and United Utilities, and decomposes the different components of the traded premia;
- section 6 concludes.

² Ofwat (2020), 'Reference of the PR19 final determinations: Cross-cutting issues', p. 36, para. 5.19.

³ For example, see Ofgem (2018), 'RIIO-2 Framework Consultation', pp. 89–90; and Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision – Finance', 24 May, para. 3.44 and figure 7.

1 What is a 'premium' to regulated equity, and what information does it contain?

A 'premium' to regulated equity in this context refers to the situation where the market value of shareholders' equity in a regulated business exceeds the notional equity portion of its regulated asset base—known as the regulated capital value (RCV) in the water sector.⁴

The measurement of these components raises significant methodological issues, as follows.

- The time periods over which the different components are valued should be consistent. That is, the premium to regulated equity is a forward-looking measure insofar as the market value incorporates all contemporaneous information that could affect the expectations of future returns. For example, the market value of equity continuously reflects investors' expectations regarding future regulatory decisions, individual companies' performances on TOTEX, and quality of service, as well as changes in the wider macroeconomic, political and regulatory environment. In contrast, the main regulatory assumptions underpinning the regulated asset value are updated periodically, e.g. every five years in the UK water sector.
- When the regulated entity is part of a wider group, a methodology for apportioning the market value 'premium' needs to be adopted. This is because the market value of the premium may be 'focused' on a particularly profitable business segment. For a company with both regulated and unregulated assets, it may be difficult to apportion the total value of the group.

Notwithstanding these concerns, the premium does provide an aggregate indicator of how financial markets respond to overall regulatory developments during a price control period.

While a premium to regulated equity can provide an insight into the market's view of the level of profitability and risk carried by a regulated business, this interpretation rests on an important theoretical link between the ratio's numerator and the denominator:

- the equity market value of the regulated business should represent the estimates of investors of the present value of all future cash flows that they expect to accrue to them, discounted using their cost of equity (that is, capital markets should be efficient);
- the regulator should set the equity portion of the allowed revenue of a regulated business such that it will be able to finance its operating and capital expenditures, and generate cash flows that will allow shareholders to earn a rate of return equal to their cost of equity.

It follows that, if investors anticipate that outturn business performance and economic conditions will be exactly in line with the regulatory assumptions—and this needs to be the case for all future regulatory determinations—there will be no premium or deficit.

⁴ This section draws on section 2 in Oxera (2007), 'Do market-to-asset ratios provide reliable evidence on the cost of capital?', Note prepared for gas DNs, <https://www.ofgem.gov.uk/ofgem-publications/48698/oxera-marsaugust-30th-2007.pdf>

A gap between the market value and the equity portion of the allowed revenue could arise for a number of reasons:

- investors may be pricing in cash flows allowed by regulators that are in excess of the rate of return allowed on the RCV, such as service or quality incentives, or other pain/gain-sharing mechanisms designed to incentivise firm performance;
- investors may anticipate that outturn cash flows will differ from the cash flows assumed by the regulator, such as outperformance on cost of debt financing, and/or under- or over-spending on operating and capital expenditure, compared with the regulatory assumptions in the price control period (as well as beyond the immediate price control period);
- investors' business growth expectations may not be identical to those factored into the regulatory controls at present. This could include unregulated growth opportunities if the business includes both regulated and unregulated activities;
- the market value may reflect the potential for the company to be taken over at a premium to the underlying value of the company;
- investors' assessment of their required return (i.e. the discount rate) may differ from the regulated allowed rate of return.

These factors can pull in different directions. For example, the premium to regulated equity might imply that investors are either expecting higher outperformance than the regulatory assumptions, and/or that they are applying a lower discount rate, and/or that they consider that the non-regulated parts of the business are creating additional value. The different components need to be considered together – to the extent they can be reliably determined.

2 CMA precedent on market-to-asset ratios

The market valuations of regulated businesses (and market-to-asset ratios (MARs), more specifically) are sometimes used as a cross-check for the whole package in regulatory determinations. It is less common for regulators to seek to infer an implied cost of equity from these ratios.

The Competition and Markets Authority (CMA) and its predecessor, the Competition Commission (CC), have considered the market valuations of regulated businesses, and market-to-asset ratios (MARs),⁵ more specifically, in the context of previous regulatory appeals. This has been mostly as a high-level cross-check for the whole package, without too much emphasis being given to the MARs evidence on account of the uncertainties and assumptions required to interpret the results.

Examples include the following:

- **Heathrow Airport Ltd and Gatwick Airport Ltd in 2007**—the CC recognised a variety of reasons why the MAR could exceed one, apart from the regulator allowing returns above the cost of capital at the time of the regulatory review:

Explanations include:

(a) The regulator set the allowable returns at the ‘true’ cost of capital at the time of the price determination. However, since the price determination markets have changed. Various possible changes may have occurred during Q4: the RFR may have fallen; the market may have changed its view of the risk (and therefore the asset beta); and the gearing level (and therefore the tax benefit) may have been higher. All these factors may explain why the MAR at the date of the Ferrovial acquisition may have been greater than 1.

(b) Regulation of BAA is an incentive-based regime. That is to say forecasts for the quinquennium are set and then BAA has the incentive to outperform (in terms of volume, cost, income and timing). Within the quinquennium BAA could outperform the forecasts on, inter alia, opex, capex, fixed asset disposal or commercial revenues.

(c) Regulators often aim high on the cost of capital as a matter of policy because they believe the cost of understating the cost of capital is much greater than the cost of overstating it.⁶

There are also significant and subjective assumptions to be made in calculating the MAR. For example, the calculation requires estimates and assumptions relating to the value of the unregulated aspect of the listed entity (in the case of BAA this is not immaterial) and the value of debt.⁷

- **Bristol Water in 2010**—the CC reviewed the assumptions used by Ofwat and Bristol Water. It recognised that MARs may be heavily affected by short-term market movements, and noted that:

MARs cannot be used to infer accurately the market’s current view of the cost of capital.⁸

⁵ The market-to-asset ratio (MAR) represents the ratio between the market value of a regulated business and its regulatory asset base—known as the regulatory capital value (RCV) in the water sector.

⁶ Competition Commission (2007), ‘Heathrow/Gatwick Review Report’, Appendix F, p. 49, para. 7, https://webarchive.nationalarchives.gov.uk/20111202214949/http://www.competition-commission.org.uk/rep_pub/reports/2007/fulltext/532af.pdf

⁷ Ibid., Appendix F, p. 49, para. 8.

⁸ Bristol Water (2010), Appendix N, para. 146, https://assets.publishing.service.gov.uk/media/55194c7240f0b614040003d2/558_appendices.pdf

In the same appeal, the Competition Commission assessed that MARs need to be interpreted with caution because:

Share prices are volatile and currently there are figures available for only about eight months since Ofwat's final determination.

The value of any non-regulated business, which has to be deducted in calculating the enterprise value of the regulated business, is based on brokers' estimates and may not accurately reflect the market view.⁹

- **Phoenix Natural Gas in 2012**—the CC noted that the increase in the MAR in the run-up to the 2007 determination was not surprising, given that uncertainty in a number of important areas had just been resolved. These uncertainties included the general market demand for infrastructure investments, the political climate in Northern Ireland, the prevailing regulatory arrangements (including the lack of a defined RAB), regulatory uncertainty due to a lack of clarity in 2004 as to the future of the regulatory regime, and investors' expectations of the regulated business's ability to recover its investments.¹⁰

- **Bristol Water in 2015**—the CMA noted that:

in principle, the market prices of asset transactions relative to the regulatory asset value (either M&A activity or traded share prices) can also provide an indication of the value of the cost of capital as a whole, and in particular whether the cost of equity appears to be consistent with observed market evidence. We can therefore use it to cross-check this level of cost of capital.¹¹

in practice, there are a number of reasons why investors may value assets at [a] figure greater than that implied by the RCV. The MAR is a single number which only produces a cross-check of investors' overall expectations of long-term returns on investment in water company assets.¹²

In summary, CMA and CC precedent recognises significant uncertainties associated with interpreting MARs, given the amount of assumptions that are required. As put in the UKRN cost of capital study (2018):

What is evident from this analysis is transaction premia alone do not provide sufficient evidence to make inferences about the cost of equity. Different drivers of outperformance are at play and multiple combinations of various drivers can explain observed premia. In addition, the role of expected outperformance means that the premia may result from unobserved investor assumptions that may be considered unrealistic or optimistic but are nevertheless the reality behind the premia.¹³

⁹ Bristol Water (2010), Appendix N, para. 148,

https://assets.publishing.service.gov.uk/media/55194c7240f0b614040003d2/558_appendices.pdf

¹⁰ Competition Commission (2012), 'Phoenix Natural Gas Limited price determination', para. 7.61, p. 129,

https://webarchive.nationalarchives.gov.uk/20140402202218/http://www.competition-commission.org.uk/assets/competitioncommission/docs/2012/phoenix-natural-gas-limited/phoenix_natural_gas_limited_price_determination.pdf

¹¹ CMA (2015), 'Bristol Water plc: A reference under section 12(3)(a) of the Water Industry Act 1991 – Report', para. 10.201, p. 336,

https://assets.publishing.service.gov.uk/media/56279924ed915d194b000001/Bristol_Water_plc_final_determination.pdf

¹² Ibid., para. 10.208, p. 338.

¹³ Wright, S., Burns, P., Mason, R., and Pickford, D. (2018), 'Estimating the cost of capital for implementation of price controls by UK Regulators', Appendix J, p.J-177.

3 Review of Ofwat and Europe Economics analysis

In its submission to the CMA on its determination of price controls as part of the water appeals, Ofwat referred to financial market evidence on the premium of enterprise value over RCV for Severn Trent and United Utilities as evidence that the PR19 allowed equity return was not too low, and that the determinations provided scope for efficient companies to earn returns that were commensurate with market expectations.¹⁴

The Ofwat submission to the CMA on the use of MARs makes an additional claim when compared with the use of similar evidence by Ofwat in the Final Determinations. In December 2019, Ofwat suggested that evidence on MARs could be used to inform its entire package of proposals, including its proposed allowances for the cost of debt, rewards and penalties from ODIs, TOTEX, and the cost of equity, among other considerations.

We interpret this MARs evidence as consistent with a market view that our overall package of proposals from draft determinations (including our allowed return) is stretching but achievable, with outperformance potential for not only high-performing companies, but their peers as well.¹⁵

In March 2020, in its submission to the CMA, Ofwat has now argued that the observed MARs for Severn Trent and United Utilities may be explained by investors requiring a lower return compared to Ofwat's allowance for the cost of equity. This is a bolder claim when compared with Ofwat's December 2019 position that MARs provide insights with respect to the entirety of its determination.

This analysis supports our view that our allowed return is not too low, and thus that our determinations provide scope for efficient companies to earn returns commensurate with market expectations.¹⁶

It does not follow that the MARs observed for Severn Trent and United Utilities are representative of other regulated water companies. Severn Trent and United Utilities are amongst the companies expected to generate the highest out-performance relative to the Final Determinations. An analysis based on the market valuations of two water companies cannot be generalised to the other 15 water companies in the sector.

Ofwat commissioned Europe Economics (EE) to analyse the market value premium over RCV implied by the share prices of Severn Trent and United Utilities. EE used a single equity analyst forecast (from Barclays¹⁷) of return on regulated equity for the two companies to infer the sources of the expected investor returns. Ofwat attributes any residual gap between market value and the RCV to a difference between the allowed return on equity and the cost of equity. According to Ofwat:

Europe Economics' analysis implies a cost of equity range of 2.8% to 3.8% (CPIH deflated) using February-average 2020 data; below our allowed return on equity of 4.19%. This analysis supports our view that our allowed return is not too low, and thus that our determinations provide scope for efficient companies to earn returns commensurate with market expectations.¹⁸

¹⁴ Ofwat (2020), 'Reference of the PR19 final determinations: Cross-cutting issues', March, pp. 33–36.

¹⁵ Ofwat (2019), 'PR19 final determinations: Allowed return on capital technical appendix', December, p. 27.

¹⁶ Ofwat (2020), 'Reference of the PR19 final determinations: Cross-cutting issues', March, pp. 35.

¹⁷ Barclays (2020), 'Happy Valentine's Day Ofwat – and could CMA referrals be a match for Ofgem', 14 February 2020.

¹⁸ Ofwat (2020), 'Reference of the PR19 final determinations: Cross-cutting issues', March, pp. 35.

The EE analysis has not been published, and a number of assumptions required to verify the results have not been disclosed.

In principle, Ofwat and EE recognise that the premia may be affected by factors other than the differential between the allowed rate of return on equity and the true cost of equity. Ofwat recognises that a positive market to asset value premium may exist due to an expectation that the companies will outperform regulated cost allowances and/or receive outperformance rewards related to service performance. Ofwat also suggests that the premium could reflect expectations that a change of ownership will drive speculative pressure on the share price, reflecting the fact that past transactions have historically involved a significant takeover premium.

It should be noted that EE's results and Ofwat's interpretation thereof, are known to rely on the following assumptions.

- A judgement on the extent to which any forecast outperformance in 2020–25 will persist in the future. It appears that EE assumes outperformance will persist at the same forecasted levels until 2050.¹⁹ It is likely that there will be incremental value expected to accrue to shareholders beyond the immediate price control due to the potential to earn outperformance in any price control (which is a fundamental feature of incentive regulation), combined with the potential for real growth in the RCV.
- An assumption that the capital markets are efficient and that there are no frictions. The existence of market frictions can create a wedge between the market value of a regulated business and the investor's expectations of future discounted cash flows from the investment. For simplicity, in the next section our approach also assumes efficient markets.
- Average February 2020 market valuations, with a sensitivity based on using market valuations in January 2020. It appears that there might be a time inconsistency issue in the EE analysis in terms of the time period used for the data on market capitalisation, net debt and value of non-regulated business activities (in the numerator of the MAR ratio) and the value used for the RCV (in the denominator of the MAR ratio). For example, Ofwat's opening AMP7 RCV balances for UU and SVT are for the period beginning 01 April 2020, rather than for February 2020.²⁰
- Adjustments for pension provisions and non-regulated business activities.
- An assumption that any unexplained 'residual' in the valuation is attributed to a difference in the required return of shareholders and the base allowed return on equity set by Ofwat in the PR19 price control. The EE analysis appears to apply a 'free cash flow to the firm' valuation approach, by estimating an enterprise value to calculate an RCV premium. Under this approach cashflows to the firm should be discounted using the weighted average cost of capital (WACC) to arrive at the valuation. For there to be inference about an implied cost of equity there needs to be an adjustment for the cost of debt. It is unclear if EE has made this adjustment, and if so, what assumptions have been used to assess the potential differential between the regulator's assumed cost of debt and the market cost of debt.

¹⁹ See Ofwat (2020), 'Reference of the PR19 final determinations: Cross-cutting issues', March, para. 5.18.

²⁰ For example, see Ofwat (2019), 'PR19 final determinations, Severn Trent Water, allowed revenue appendix', December, p. 10.

4 Analysis of the market valuations of Severn Trent and United Utilities

4.1 Introduction

In the context of valuing Severn Trent and United Utilities, there are a number of items that could contribute to a market premium to regulated equity. These include:

- **expected outperformance on debt financing**— Severn Trent and United Utilities are both forecast to have a lower cost of debt than the Ofwat allowance. Moody's notes that United Utilities has the lowest borrowing cost of any rated water company;²¹
- **expected outperformance on ODIs**— Severn Trent and United Utilities have the potential to earn financial rewards by performing better than Ofwat's targeted service levels between 2020 and 2025 and in future price controls. Given that companies on average outperformed the ODI targets over AMP6, Ofwat has raised the bar for service targets and incentives in AMP7. This makes industry-wide outperformance on ODIs unlikely over AMP7.²² However, some companies, including Severn Trent and United Utilities, are expected to continue to outperform;²³
- **expected outperformance on TOTEX**—companies are incentivised to outperform their TOTEX allowances for AMP7 by being more efficient on planned spending than expected by Ofwat. Both Severn Trent and United Utilities face AMP7 efficiency challenges on total TOTEX that are below Ofwat's industry-level average of 5%.²⁴ This makes both companies relatively well positioned to outperform their TOTEX allowances for AMP7. In relation to performance over the longer term, Credit Suisse expects Severn Trent to outperform on TOTEX from the beginning of AMP7 until 2045.²⁵ The companies will retain 50% of any TOTEX outperformance;
- **expected outperformance due to fast-track status**—as a financial reward for gaining fast-track status during each company's business plan submission, Severn Trent and United Utilities have been granted an additional 10bp on Ofwat's allowed base equity return over AMP7;
- **value from non-regulated business**—Ofwat does not regulate all business activities that contribute to the market capitalisation of Severn Trent and United Utilities. As a result, the regulator does not provide allowances for non-regulated business activities (e.g. investments in associates and properties) in setting the RCVs for AMP7. The difference between the market capitalisation of Severn Trent and United Utilities and the equity portion of their RCVs is therefore partially explained by the value of non-regulated business activities. Ofwat notes that Severn Trent Water and United Utilities Water have only small amounts of non-regulated activity.²⁶ While Severn Trent and United Utilities have smaller non-regulated business activities than some other water companies, the value of the non-

²¹ Moody's (2020), 'United Utilities Water Limited: Update following PR19 determination', Credit opinion, 4 March, p. 7, Exhibit 10, https://www.unitedutilities.com/globalassets/z_corporate-site/investors-pages/4mar2020moodysuuco.pdf

²² Moody's (2020), 'Regulated Water Utilities – UK: Outlook remains negative as price review leads to unprecedented number of appeals', 30 April, pp. 11–12.

²³ See Table 4.1.

²⁴ Citi Research (2020), 'UK Water, Running dry!', 14 February, p. 4.

²⁵ Credit Suisse (2020), 'Severn Trent: Pricing in outperformance versus the settlement', 04 May, pp. 6.

²⁶ Ofwat (2020), 'Reference of the PR19 final determinations: Cross-cutting issues', March, para 5.12.

regulated business activity is still material to investors, as reflected in the analyst reports (see Table 4.1).

Other important considerations that could explain a premium include:

- **the takeover premium**—Ofwat notes that expectations of a change of ownership might be driving speculative pressure on the share price, reflecting the fact that past transactions have historically involved a significant takeover premium.²⁷ The takeover premium in the UK is around 30%.²⁸ We have cross-checked this figure by looking at observed share price premia after the announced takeovers of Thames Water by RWE and the Kelda Group by Saltaire Water. In each case, we calculate the premia as the ratio of the share price observed after the acquisition announcement over the average share prices observed over the previous 20 trading days. Our analysis finds premia of 37% and 18% for the Thames and Kelda acquisitions respectively. To the extent that investors have anticipated the possibility of a takeover (a probability of 10% is assumed in this report), some of the takeover premium would be reflected in the share price, and might explain part of the premium to the value of the regulated equity.
- **pension funding**—United Utilities has a large pension surplus. Meanwhile, Severn Trent has a pension deficit that is partly funded by deficit repair payments allowed by the regulator. There is some uncertainty around how investors are pricing in the value of pension assets and liabilities in their overall market valuation of water companies;
- **other provisions**—besides provisions raised with respect to pension funding, other provisions (which reflect future liabilities) may affect the market value of equity;
- **revenue adjustments from price control reconciliations**—Ofwat adjusts the regulated revenues of water companies in AMP7 to reflect reconciliations between allowances and outturn values for AMP6;
- **accrued dividends**—the market capitalisation of a company is likely to include an expectation of dividends that have been accrued since the last ex-dividend date. Given that the final dividends for Severn Trent and United Utilities will be paid in June/July 2020, and the interim dividends have already been paid in November/December 2019, investors have therefore likely factored in their expectations of the June/July 2020 dividends into the share price;
- **market sentiment and volatility in share prices**—some equity analysts have revised their assumptions, since the EE analysis was conducted, to reflect more recent market developments. Most importantly, while market values vary from day to day, the allowed base equity return has to be appropriate for a five-year regulatory period.

This note has been written with the presumption that a firm should earn a regulated allowance for the cost of equity equal to the central estimate of the cost of equity. However, there is an important policy issue as to if this should be the target of the regulator given the uncertainties and the risk of disincentivising long-term investment in these sectors. Regulators have for this

²⁷ Ofwat (2020), 'Reference of the PR19 final determinations: Cross-cutting issues', March, para 5.15.

²⁸ This is based on an analysis of public company takeover premia for deals larger than \$500m by Citi's M&A Deal Intelligence team. Citi Group (2020), 'Executive M&A Summary: Banking, Capital Markets & Advisory, Mergers and Acquisitions', April, slide 25.

reason typically adopted an allowed equity return higher than the central estimate.

4.2 Methodology

There are several approaches to decomposing the premium to the regulated equity of listed companies. We follow a similar approach to that we assume has been adopted by EE, which is based on a PwC report,²⁹ and undertake the following steps to determine the components of the premium for each company.³⁰

1. Calculate the current premium of the average market capitalisation from January to April 2020 to regulated equity.³¹ The analysis from Europe Economics coincided with a peak in market sentiment towards equities, and we have extended the time period of the analysis to cover average valuations over the four months since the Final Determinations. Regulated equity is Ofwat's opening allowed RCV for AMP7 apportioned for the notional equity levels over AMP7 (i.e. 40%).
2. Use analyst expectations to calculate the nominal value of expected outperformance due to debt financing, ODIs, TOTEX, and the fast-track award over AMP7, as well as the value of non-regulated business activities (for an overview of analyst expectations, see Table 4.1). As it is possible that investors expect outperformance to persist beyond AMP7, we assume terminal values for the expected outperformance. Our assumptions are presented in section 4.3.
3. Discount the nominal value of each driver of outperformance (plus the associated terminal value) to present value terms. We have undertaken this analysis using Ofwat's nominal cost of equity assumption of 6.27% from the final determinations.³²
4. Add the total present value of expected outperformance and the value of non-regulated business activities to regulated equity. We also add revenue adjustments from the PR14 price reconciliation, accrued dividends, and a takeover premium of 30% of market capitalisation, with a 10% probability of takeover. While Ofwat refer to the existence of a control premium, the EE analysis appears to not have accounted for this in their final calculations.
5. Deduct the adjusted regulated equity from market capitalisation to determine the nominal present value residual market capitalisation that is not explained by expected outperformance, the value of non-regulated business activities nor the takeover premium.

4.3 Market expectations

Our analysis of the premium to regulated equity begins with a review of equity analyst forecasts contemporaneous to those used by EE.

We find that the expected level of outperformance on debt, ODIs and TOTEX by Severn Trent and United Utilities over AMP7 varies significantly across forecasters, and over time, as summarised in Table 4.1. For example, while Barclays expects that United Utilities will not outperform on ODIs, Citi Research and Deutsche Bank expect an outperformance of 0.5% and 1.3% of

²⁹ PwC Economics (2017), 'Refining the balance of incentives for PR19', June, p. 85.

³⁰ In our analysis for Severn Trent, we include the RCV for Hafren Dyfrdwy as it is wholly owned by Severn Trent and therefore likely to be reflected in its market capitalisation.

³¹ Our source for market capitalisation data is Thomson Reuters.

³² Ofwat (2019), 'PR19 final determinations, Allowed return on capital technical appendix', December, p. 5.

regulated equity respectively. The Barclays (14 February) total estimates of expected outperformance are near the middle of the range of Jefferies (10 February), and Citi Research (14 February).

While most analysts agree that there will be outperformance for each company, our review shows that there is little to no consensus on the level of expected outperformance. There is also variation in the analyst assumptions for the value of the non-regulated business units.

The impact of any deviation away from the Barclays level of expected outperformance will change the residual market capitalisation that is not explained by expected outperformance or the value of non-regulated business activities.

Table 4.1 Analyst expectations of outperformance and the value of the non-regulated business activities for Severn Trent and United Utilities over AMP7

Analyst	Date published	Outperformance on debt (% of RORE)	Outperformance on ODIs (% of RORE)	Outperformance on TOTEX (% of RORE)	Total outperformance (% of RORE)	Non-regulated business value (£m)
United Utilities						
Jefferies	10-Feb-20	1.1%	0.5% ¹		1.6%	n.a.
Barclays	14-Feb-20	1.3%	0.0%	0.7%	2.0%	n.a.
Citi Research	14-Feb-20	1.3%	0.5%	0.5%	2.3%	173
Credit Suisse	28-Feb-20	1.0%	1.0%	1.0%	3.0%	141
Bernstein	03-Mar-20	1.0%	n.a.	n.a.	1.0%	n.a.
Deutsche Bank	05-Mar-20	n.a.	1.3%	n.a.	1.3%	75
JP Morgan	01-Apr-20	0.5% to 1.0%	0.1% ²	n.a.	0.9%	144
Barclays	14-Apr-20	n.a.	0.0%	0.2% ³	0.2%	151
Moody's	31-Apr-20	1.3% ⁴	-2.5% to 1.3% ⁵	n.a.	0.7%	n.a.
Severn Trent						
Jefferies	10-Feb-20	1.1%	1.6% ⁶		2.7%	n.a.
Barclays	14-Feb-20	0.4%	1.1%	1.5%	3.0%	n.a.
Citi Research	14-Feb-20	1.2%	1.5%	1.0%	3.7%	549
Barclays	31-Mar-20	0.4%	1.1%	1.5%	3.0%	n.a.
RBC Capital Markets	07-Apr-20	n.a.	0.7%	n.a.	0.7%	500
Barclays	14-Apr-20	n.a.	0.8% ⁷	1.3% ⁸	2.1%	480
Moody's	31-Apr-20	0.6% ⁹	0.0% to 2.5% ¹⁰	n.a.	1.9%	n.a.
Credit Suisse	04-May-20	n.a.	1.0%	1.0%	2.0%	664

Note: All out-performance assumptions are presented as annual nominal returns on regulated equity. Where a range of outperformance is expected, we assume the mid-point when calculating the total outperformance across debt, ODIs, and TOTEX. ¹ The 0.5% is the expected outperformance for both ODIs and TOTEX over AMP7. ² We assume that the £30m in expected outperformance on ODIs over AMP7 is earned evenly. We then take the annual £6m in expected outperformance on ODIs and divide this by United Utilities' opening AMP7 regulated equity of £4,798m. ³ We assume that the £60m expected outperformance on TOTEX is earned evenly over AMP7. We take the resulting £12m per annum and express this as a proportion of United Utilities' opening AMP7 regulated equity of £4,798m. ⁴ We deduct the forecast cost of debt for United Utilities over AMP7 of 3.5% from Ofwat's allowed cost of debt of 4.4%. We multiply the

difference by notional gearing of 60% and divide by the notional equity of 40%. ⁵ Moody's estimates United Utilities' aggregate AMP7 ODI range as -1.0% to 0.5%, expressed as a percentage of average AMP7 RCV, and we divide this by the notional equity of 40%. ⁶ The 1.6% is the expected outperformance for both ODIs and TOTEX over AMP7. ⁷ We assume that the £162m expected outperformance on ODIs is earned evenly over AMP7. We take the resulting £32m per annum and express this as a proportion of Severn Trent's opening AMP7 regulated equity of £3,831m. ⁸ We assume that the £253m expected outperformance on TOTEX is earned evenly over AMP7 and express the resulting £51m as a proportion of Severn Trent's opening AMP7 regulated equity of £3,831m. ⁹ We deduct the forecast cost of debt for Severn Trent over AMP7 of 4.0% from Ofwat's allowed cost of debt of 4.4%. We multiply the difference by notional gearing of 60% and divide by the notional equity of 40%. ¹⁰ Moody's estimates Severn Trent's aggregate AMP7 ODI range as 0.0% to 1.0%, expressed as a percentage of average AMP7 RCV, and we divide this by the notional equity of 40%.

Source: Jefferies (2020), 'Utilities, when the facts change...upgrade UU to buy', 10 February; Barclays (2020), 'Happy Valentine's Day Ofwat - and could CMA referrals be a match for Ofgem?', 14 February; Citi Research (2020), 'UK Water, Running dry!', 14 February; Credit Suisse (2020), 'United Utilities, Closing in on the peak valuation. Benign macro and political environment', 28 February; Bernstein (2020), 'United Utilities: Confident of delivery - key take-aways from the CMD', 3 March; Deutsche Bank (2020), 'TP nudged up by £11 post CMD: reiterate Buy', 5 March; Barclays (2020), 'Severn Trent in line for 2020 but 2021 may see some downgrades', 31 March; JP Morgan (2020), 'United Utilities', 1 April; RBC Capital Markets (2020), 'Severn Trent Plc, a safe harbour in these uncertain times', 7 April; Barclays (2020), 'Covid-19: double upgrade Centrica, Engie to OW', 14 April; Moody's (2020), 'Outlook remains negative as price review leads to unprecedented number of appeals', 30 April; and Credit Suisse (2020), 'Severn Trent, Pricing in outperformance versus the settlement', 4 May.

Our assumptions

To show the sensitivity of this analysis to the assumptions on expected outperformance, we undertake our analysis with three different analyst reports from Table 4.1: Jefferies (10 February), Barclays (14 February), and Citi Research (14 February).

The Barclays report informs the assumptions on expected outperformance used by EE. We also consider the Jefferies and Citi Research reports which were published at a similar point-in-time to the Barclays report and provide a complete profile of expected outperformance forecasts across debt, ODIs, and TOTEX for both Severn Trent and United Utilities. Together these reports illustrate a range of market expectations for outperformance.

The Jefferies report estimates total expected outperformance of 2.7% and 1.7% for Severn Trent and United Utilities respectively. The Barclays report estimates total expected outperformance of 3.0% and 2.0%, whilst the Citi Research report estimates 3.7% and 2.3% for Severn Trent and United Utilities respectively. We also include a 10bp outperformance to each case due to the fast-track status of Severn Trent and United Utilities. For the value of the non-regulated business activities we take the average of the analyst expectations in Table 4.1, which is £548m and £137m for Severn Trent and United Utilities respectively.

We use the average market capitalisation observed for Severn Trent and United Utilities from 01 January until 30 April 2020. There has been significant volatility in share prices in recent months, so we consider it is appropriate to reflect a range of different market sentiment by using the average over the full period since the Final Determinations. This differs from the analysis of EE who use the average market capitalisation in January and February 2020 (in two different scenarios).

We add a takeover premium of 30% with an expected takeover probability of 10% to account for expectations of a change of ownership in the share price.³³

³³ We discuss the takeover premium in section 4.1.

We also include a terminal value based on 50% of expected outperformance on debt, ODIs and TOTEX continuing after AMP7 until perpetuity. Our analysis of real RCV growth rates over AMP5 and AMP6 suggests that real RCV growth rates for the industry were between 1.3% and 2.1%. We therefore make the conservative assumption of a real RCV growth of 1.5% for 10 years after AMP7 before zero real RCV growth until perpetuity. We include Ofwat's adjustments to Severn Trent and United Utilities' regulated revenues in AMP7 due to PR14 reconciliations of £163m and £29m respectively. Finally, we calculate accrued dividends of £61m and £102m for Severn Trent and United Utilities respectively to account for investors' expectations of June/July 2020 dividends on share prices.³⁴

We do not adjust for residual pension deficit/surplus in any case due to the uncertainty around how investors are pricing these values in their overall market valuation of water companies. Any such adjustment would be in opposite directions for Severn Trent and United Utilities, given their respective deficit and surplus. Our discount rate is Ofwat's nominal allowed cost of equity of 6.27%.

Our assumptions are summarised in Table 4.2.

Table 4.2 Assumptions for Jefferies, Barclays, and Citi Research cases

Assumption	<u>United Utilities</u>			<u>Severn Trent</u>		
	Jefferies case	Barclays case	Citi Research case	Jefferies case	Barclays case	Citi Research case
Period for average market capitalisation	January to April 2020	January to April 2020	January to April 2020	January to April 2020	January to April 2020	January to April 2020
Outperformance on debt financing	1.1%	1.3%	1.3%	1.1%	0.4%	1.2%
Outperformance on ODIs	0.3%	0.0%	0.5%	0.8%	1.1%	1.5%
Outperformance on TOTEX	0.3%	0.7%	0.5%	0.8%	1.5%	1.0%
Outperformance due to fast-track award	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Non-regulated company	£137m	£137m	£137m	£548m	£548m	£548m
Pension surplus (deficits)	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
Revenue adjustments for PR14 reconciliations ¹	£29m	£29m	£29m	£163m	£163m	£163m
Accrued dividends	£102m	£102m	£102m	£61m	£61m	£61m
Takeover premium	30%	30%	30%	30%	30%	30%
Takeover probability	10%	10%	10%	10%	10%	10%
Terminal value of outperformance	Included	Included	Included	Included	Included	Included
Terminal value growth rate (CPIH-real)	1.5% for 10 years	1.5% for 10 years	1.5% for 10 years	1.5% for 10 years	1.5% for 10 years	1.5% for 10 years

³⁴ We calculate accrued dividends at 28 February 2020 (i.e. the mid-point in our period of observed market capitalisation) by assuming the final and interim dividends for the 2019/20 financial year will be equal to the final and interim dividends for the 2018/19 financial year. We scale these dividends for the time period between the dates on which the dividends were declared for 2018/19 and 28 February 2020. These dividends represent earnings generated in AMP6 that have not yet been paid out to shareholders.

	after AMP7, followed by zero growth until perpetuity					
Proportion of outperformance to continue until perpetuity	50%	50%	50%	50%	50%	50%
Discount rate	6.27%	6.27%	6.27%	6.27%	6.27%	6.27%

Note: ¹ We convert revenue adjustments for PR14 reconciliations from 2017-18 prices into nominal prices using Ofwat's assumption for RPI (i.e. 3%). We assume that adjustments to AMP7 revenues are evenly spread in each year.

Source: Oxera analysis of Ofwat (2019), 'PR19 final determinations, United Utilities, allowed revenue appendix', December; Ofwat (2019), 'PR19 final determinations, Severn Trent Water, allowed revenue appendix', December; Jefferies (2020), 'Utilities, when the facts change...upgrade UU to buy', 10 February; Barclays (2020), 'Happy Valentine's Day Ofwat - and could CMA referrals be a match for Ofgem?', 14 February; and Citi Research (2020), 'UK Water, Running dry!', 14 February.

4.4 Results—components of the premia to regulated equity

This section sets out the results of applying the methodology above using the expected outperformance and other assumptions listed in Table 4.2.

Figure 4.1 and Figure 4.2 show the results of the decomposition of the premium to regulated equity for Severn Trent and United Utilities respectively.

Our analysis indicates that expected outperformance can explain the RCV premium for Severn Trent and United Utilities. The values of the non-regulated businesses, revenue adjustments due to PR14 reconciliations, accrued dividends and expected takeover premium also contribute to the RCV premium.

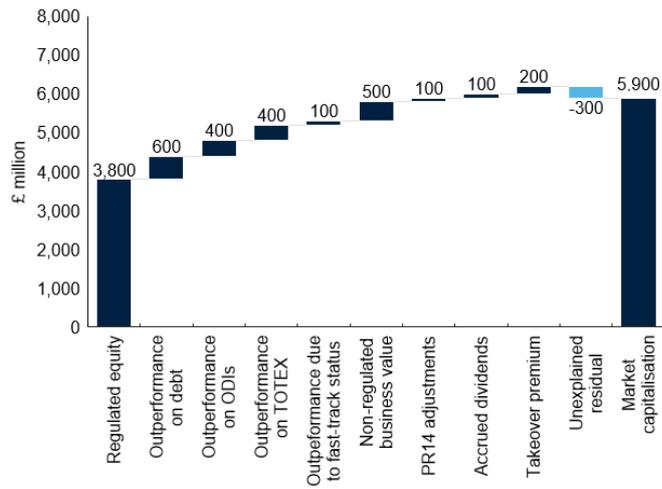
As explained in Section 4.1 above, the unexplained residual may be due to pension adjustments, other provisions and market sentiment, among other factors. Negative values for the residual mean that the market value is lower than can be explained by expected out-performance, and would be consistent with investors discounting future cash flows using a higher cost of equity than the base equity return allowed in the PR19 Final Determinations.

It is important to note that just because Severn Trent and United Utilities are expected to out-perform this does not mean the whole sector is systematically expected to out-perform. In fact, Moody's has recently downgraded many of the water companies leaving the sector on negative watch.³⁵

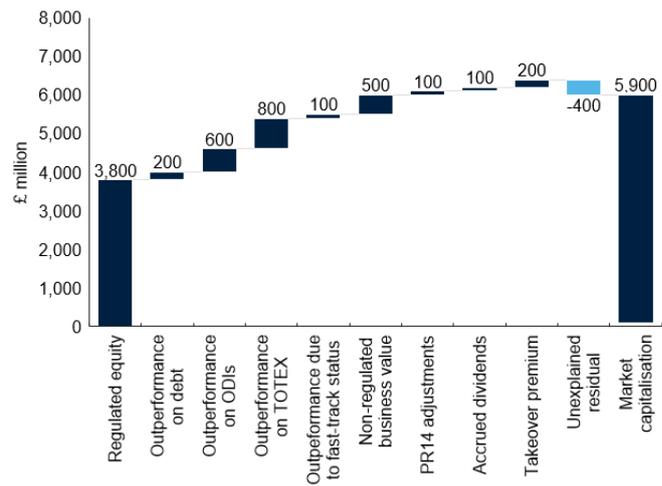
³⁵ Moody's (2020), 'Regulated Water Utilities – UK: Outlook remains negative as price review leads to unprecedented number of appeals', 30 April

Figure 4.1 Components of the premium—Severn Trent

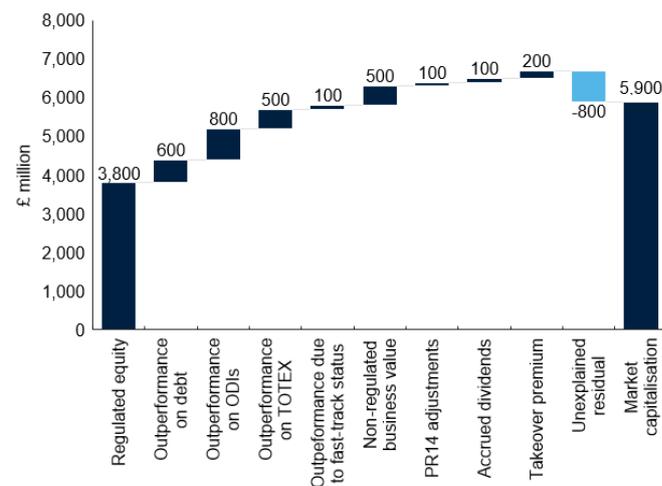
a) Jefferies case



b) Barclays case



c) Citi Research case

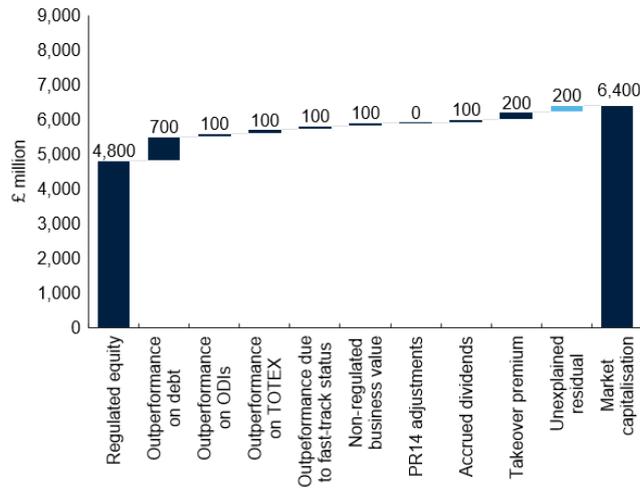


Note: These charts show the components of the regulated equity premia assuming Ofwat's allowed cost of equity of 6.27% nominal. The remaining assumptions for each case are listed in Table 4.2. Values are rounded to the nearest £100m. Totals may not reconcile due to rounding.

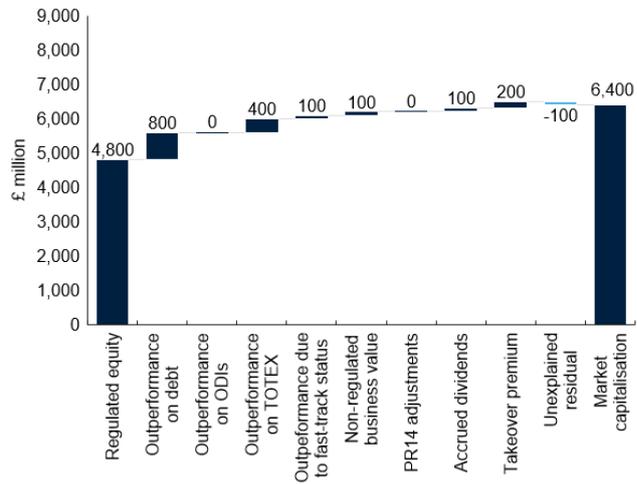
Source: Oxera analysis.

Figure 4.2 Components of the premium—United Utilities

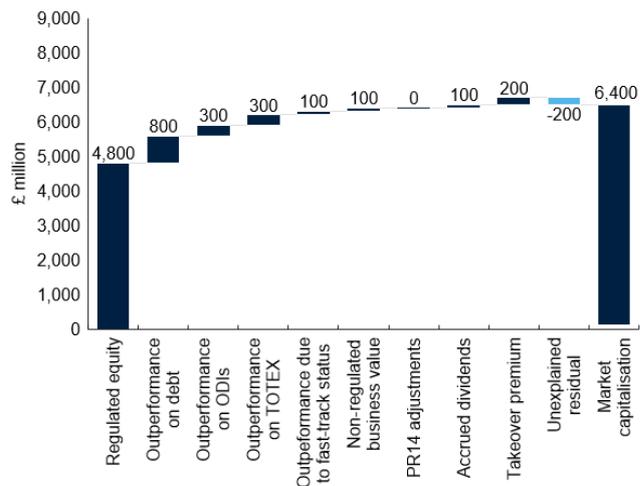
a) Jefferies case



b) Barclays case



c) Citi Research case



Note: These charts show the components of the premium to regulated equity assuming Ofwat's allowed cost of equity of 6.27% nominal. The remaining assumptions for each case are listed in Table 4.2. Values are rounded to the nearest £100m. Totals may not reconcile due to rounding.

Source: Oxera analysis.

5 Conclusions

Ofwat are using evidence from the valuations of listed water companies to make inferences about the cost of equity. This report has undertaken similar and extended analysis of market valuations. The analysis finds that:

- most analysts agree that there will be outperformance for Severn Trent and United Utilities against the PR19 Final Determination allowances for debt, ODIs, and TOTEX, albeit there is little consensus on the level of expected outperformance;
 - under a range of plausible scenarios, the current traded premia can be more than explained without any recourse to an assumption that the actual cost of equity is lower than the regulated allowed base equity return. To the extent that conclusions can be drawn, the analysis is consistent with the conclusion that Ofwat has underestimated the cost of equity;
 - in light of the uncertainty in this modelling, there is no reason to depart from the position as stated in previous CMA assessments and the UKRN cost of capital study—evidence from traded market premia does not provide a reliable guide in practice to the cost of equity used by investors in regulated utilities.
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