

# Financial Resilience: Impact Assessment

KPMG LLP  
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# Important notice

This Report has been prepared by KPMG LLP ('KPMG', 'we' or 'our') for Anglian Water Services Limited, Northumbrian Water Limited, South East Water Limited, Southern Water Services Limited, Thames Water Utilities Limited, Wessex Water Services Limited and Yorkshire Water Services Limited ('the group of companies') on the basis of an engagement contract dated 16<sup>th</sup> September 2022 between the group of companies and KPMG (the "Engagement Contract").

The group of companies commissioned the work to assist the group of companies in its considerations regarding the Water Services Regulation Authority's (Ofwat) financial resilience consultation dated 28<sup>th</sup> July 2022. The agreed scope of work is included in Section 2.2 of this Report. The group of companies should note that our findings do not constitute recommendations as to whether or not the group of companies should proceed with any particular course of action.

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In particular, and without limiting the general statement above, since we have prepared this Report for the benefit of the group of companies alone, this Report has not been prepared for the benefit of any other person or organisation who might have an interest in the matters discussed in this Report, including for example water companies or regulatory bodies.

Our work commenced on 16<sup>th</sup> September 2022 and our fieldwork was completed on 29<sup>th</sup> September 2022. We have not undertaken to update this Report for events or circumstances arising after that date.

Information in this Report is based upon publicly available information and reflects prevailing conditions as of the date of the Report, all of which are accordingly subject to change. Although we endeavour to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. Information sources and source limitations are set out in the Report. We have satisfied ourselves, where possible, that the information presented in this Report is consistent with the information sources used, but we have not sought to establish the reliability or accuracy of the information sources by reference to other evidence. We relied upon and assumed without independent verification, the accuracy and completeness of information available from public and third-party sources. KPMG does not accept any responsibility for the underlying data used in this report.

The findings expressed in this Report are (subject to the foregoing) those of KPMG and do not necessarily align with those of the group of companies.

You should be aware that KPMG, including members of the engagement team, delivers other advisory services to individual companies who are within the group of companies.

KPMG has not made any decisions for the group of companies, nor for any individual company within the group of companies, on any aspect of its response(s) to the financial resilience consultation. KPMG has not assumed any responsibility for what the group of companies, or any individual company within the group of companies, decides, or has decided to, include in its response(s).

This engagement is not an assurance engagement conducted in accordance with any generally accepted assurance standards and consequently no assurance opinion is expressed.

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# 1 Executive summary

## Context and scope

On 28 July 2022, Ofwat published its *Consultation on proposed modifications to strengthen the ring-fencing licence conditions of the largest undertakers*, setting out proposed new regulation to improve financial resilience in the sector. Ofwat's proposed licence modifications include an increase in the cash lock-up level to BBB/Baa2 (negative outlook) from BBB-/Baa3 (negative outlook)<sup>1</sup> and amendments to the dividend licence condition to more closely link dividend payments to operational performance and customer service levels.

Any new regulation in the water sector, which is subject to extensive existing regulation, should be carefully considered against a high bar to ensure expected benefits clearly exceed expected costs. Ofwat is required to have regard to the principles of best regulatory practice, meaning that any additional regulation should be targeted at addressing a specific problem. As there is an existing regulatory framework in place to support financial resilience, any additional regulation introduced by Ofwat should be supported by a robust impact assessment to demonstrate that potential benefits for customers are real and significant and are not exceeded by likely costs. Based on the information available to us, the proposals are not currently supported by an impact assessment by Ofwat to evidence that the proposals meet their objectives.

In this context, a group of water companies commissioned KPMG to consider the potential benefits and costs of the key proposals set out in Ofwat's financial resilience licence modification consultation.<sup>2</sup> First, the report assesses whether there is a market failure which supports new regulation of financial resilience. Second, it considers the potential benefits of the proposals as set out by Ofwat in its consultation. Third, it considers the potential costs of the proposals drawing on academic theory and historic sector data. Finally, the report concludes on the overall balance of the potential costs and benefits of Ofwat's proposals.

## Assessment of whether there is a market or regulatory failure which supports the introduction of new regulation on financial resilience

Ofwat defines financial resilience as *"the extent to which an organisation's financial arrangements enable it to avoid, cope with and recover from disruption, whether that disruption is driven internally or externally to the company"*<sup>3</sup>. It is therefore important that a broad range of factors, including access to debt and equity investment, are considered when evaluating any additional regulation to impact regulated companies' financial position.

There are a number of existing regulatory protections in the water sector which are designed to ensure an efficient level of financial resilience. Given this, there is a high hurdle for introducing new regulation to avoid introducing distortions, additional costs and creating other unintended consequences.

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<sup>1</sup> Ofwat assesses this based on the rating assigned by Moody's, Fitch or S&P. We understand that the cash lock-up will apply if any one of these ratings held by a company falls to the lock up threshold

<sup>2</sup> Ofwat (2022), *Consultation on proposed modifications to strengthen the ring-fencing licence conditions of the largest undertakers*

<sup>3</sup> Ofwat (2021), *Financial resilience in the water sector: a discussion paper*, page 8

### *Analysis of whether there is a problem which supports the introduction of new regulation*

In the water sector, the principal market failure is potential negative externalities imposed on customers by companies with market power in the absence of regulation. There are two primary types of potential negative externalities relevant in this context – under-investment in customer service and costs of bankruptcy transferred to customers. There is also a potential for regulatory failure due to information asymmetry (and in particular regulatory failure to regulate properly to avoid these externalities). On this basis this section considers whether there is a clear market or regulatory failure which supports a requirement for new regulation.

Overall, it is not clear that there is a financial resilience “problem” which justifies the introduction of new regulation based on potential market or regulatory failures:

- First, **under-investment and/or under-performance in the sector could lead to deteriorating customer service levels**. However, it is not clear that there is a problem in this area that is not already addressed by existing regulation or that could not be better addressed by more targeted regulation focused on specific performance issues.
- Second, **there could be deadweight costs related to bankruptcy that are imposed on customers as externalities**. The regulatory framework includes a special administration regime, with the primary focus of maintenance of uninterrupted operations whilst the financial position of the company is stabilised. The special administration regime has not been used in the UK water sector. It is uncertain whether there will be externalities relating to bankruptcy or Special Administration.
- Third, **financial resilience issues could arise in the sector due to asymmetric information** across Ofwat and companies. Asymmetric information could result in a deteriorating financial position not being identified by Ofwat. Importantly there would have to be very significant asymmetric information to create customer harm however the utilities sector is one of the most transparent sectors and more information is available about utilities than almost in any other sector. As a result the missing information resulting in an information asymmetry would have to be *highly significant* to the calibration of regulation.

### **Analysis of the potential benefits of the proposals to customers**

This report analyses and quantifies possible costs and benefits of Ofwat’s proposals and considers whether the proposals could result in a more efficient outcome for customers through a reduction in the probability of default or in the cost of capital. The analysis of potential benefits covers two areas:

- **A reduction in probability weighted bankruptcy costs**. While bankruptcy might be somewhat less likely under the higher dividend lock-up trigger, the scale of this benefit should be considered in terms of any potential reduction to the risk to customers under relevant scenarios. The potential transfer of risk to customers in financial distress appears to be Ofwat’s primary motivation for the new regulation.
- **A reduction in cost of debt**. Assuming companies could achieve a higher rating as a result of Ofwat’s proposals, this could reduce debt costs funded by customers. This potential benefit needs to be considered in conjunction with other effects the new regulation is likely to have on the cost of capital, both in terms of the corresponding increase in the cost of equity (assuming the same asset risk) as well as an increase

in the overall cost of capital due to new regulation placing certain restrictions on cash flow rights.

### *Probability of default analysis*

Lowering the risk of default does not necessarily represent an improvement in customer welfare. In order to conclude that, there has to be clear evidence that the risk of default is inefficiently high in the absence of new regulation. Additionally, reducing the risk of default does not necessarily equate to a significant customer benefit because externalities of such an event are not clear.

This part of the analysis nonetheless assesses whether there might be a benefit to customers under Ofwat's proposals if the risk of default is materially lower at BBB/Baa2 than at BBB-/Baa3, assuming different degrees of passing deadweight costs onto customers.

The analysis estimates the difference in default probabilities between BBB/Baa2 and BBB-/Baa3 ratings for corporates and infrastructure, as well as the impact on default probabilities of the dividend lock-ups to estimate the potential benefit of Ofwat's proposals. The analysis concludes that the annual difference in default probabilities between BBB/Baa2 and BBB-/Baa3 for the infrastructure credits that benefit from a lock-up comprises less than half of such difference for generic corporates, leading to an improvement in the probability of default of around 7 basis points per year on average.

The analysis further discusses a potential for a default to have a negative impact on customers via externalised deadweight costs.

A reduction in the probability of default could only lead to more efficient outcomes if there are significant deadweight costs and externalities associated with bankruptcy which are not borne by the capital providers but transferred to customers. Ofwat has not set out evidence of the deadweight costs passed to customer in its consultation deadweight.

While it is not possible to estimate deadweight costs with any degree of precision, an illustrative analysis has been undertaken to reflect a number of possible outcomes. The deadweight costs were calculated as the costs in excess of the value of assets at default. The outcome of this analysis is that, depending on a specific default scenario, the annual benefit to customers from Ofwat's proposal to tighten the cash lock-up *could be assessed at about 0-2 basis points*.

Absent clear evidence to support specific assumptions around deadweight costs, no consumer benefit from the reduced default probability can be identified. Even in the presence of the deadweight costs where the benefit could be higher than zero, it is unlikely for it to exceed the 0-2 basis points set out above.

### *Cost of debt analysis*

Ofwat considers that there may be a benefit to customers of *higher* credit ratings in the sector translating into a *lower* cost of debt allowance. Ofwat sets out analysis of credit spreads showing that credit spreads increase at lower credit ratings.<sup>4</sup>

Any reduction in the cost of debt has to be considered together with corresponding increases in the cost of equity in line with Modigliani Miller theory as well as the likely increase in the

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<sup>4</sup> Ofwat (2021), Financial resilience in the water sector: a discussion paper, page 15

overall cost of capital due to additional restrictions on control rights. As a result, any benefit identified in relation to cost of debt alone would not consider the wider impacts.

The analysis of the credit spreads in the UK water sector indicates that there is no consistent differential in the Baa1/BBB+ and Baa2/BBB spreads for 10Y tenor debt. As a result, it is not clear that there would be a material change to debt pricing as a result of Ofwat's proposals which in turn and in isolation might be passed through to customers.

Importantly there are limited instruments at the Baa2/BBB level meaning it is difficult to draw robust comparisons between pricing at each credit rating level, without compromising the likeness of instruments within samples.<sup>5</sup> As a result of this limit on sample size, there is insufficient data to conclude whether a pricing differential exists in the sector. Whilst it is possible that there is a partial benefit to customers of the proposed regulation as an increase in the lock-up trigger could incentivise companies to hold a higher rating and therefore *reduce* the cost of debt.

Additionally, a change in the rating for a given company in the sector by one notch from Baa1 to Baa2 will have a minimal impact on the overall allowed cost of debt over the next five price controls due to the mechanics of the existing cost of debt allowance. Ofwat's proposed regulation, therefore, provides limited or no benefit to customers from the cost of debt perspective, because the cost of debt reflected in allowances would unlikely reduce substantively.

### Analysis of the potential costs of the proposals to customers

The report also considers whether Ofwat's proposals may have associated costs, which could arise from the following effects:

- **Reduced ability to respond to clientele effects** – these effects refer to empirical research that certain assets are tailored to preferences of certain investor groups. The relevant consideration is that utilities are considered income/dividend stocks that provide stable dividends. If dividends are restricted at certain times, utilities become less attractive as dividend stocks.
- **Restricted ability to adopt the optimal capital structure and increase in the cost of capital** – regulation of distributions and ratings will mean that in some circumstances some companies will not be able to choose their optimal capital structure. The optimal leverage is the result of all the relevant effects including taxes, agency costs, bankruptcy costs. This means that the cost of capital will increase by definition.
- **Potential for reduced value due to lower efficiency of additional cash available for management actions** – agency theory says that leverage and required distributions act as a financial disciplining device preventing management from taking on inefficient activities. Ofwat's justification for the new regulation does not take this

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<sup>5</sup> The following limitations to the analysis should be noted:

- In building composite indices, the datasets are limited within the sector
- Whilst characteristics of instruments have been aligned to match where possible, it is not possible to do so perfectly with the mismatches in remaining life to maturity



into account and seems to suggest that management control of additional cash balances is efficient.

- **Introduction of new regulatory covenants affecting allocation of value across debt and equity** – the proposals are equivalent to additional covenants but imposed by the regulator. As proposed the regulation will potentially enhance credit rights, lower the cost of debt and reduce the probability of bankruptcy – but at the cost of equity. A forced re-allocation by regulation of risk and cash flow rights in different scenarios between debt and equity providers must be costly to the extent it departs from a market outcome unless it can be shown that the market allocation is clearly inefficient.

Overall the proposals result in changes to restrict or constrain distributions (due to either trigger of cash lock up or regulatory assessment of service delivery) under different scenarios. Analysis included in this report draws on different methodologies, academic literature and market data to approximate the potential costs associated with Ofwat's proposals on cash lock up and dividends in combination, as well as consider potential costs in qualitative terms.

### *Agency theory*

The Modigliani-Miller (MM) theory assumes a perfect capital market and that there is no conflict of interests between management (the agent) and shareholders (the principal). However, in practice principal and agent interests may not always align, resulting in agency costs when management undertakes NPV-negative activities. These agency costs are particularly severe for firms with high free cash flow, as this provides managers with more cash to waste, and more leeway to act inefficiently. Dividends mitigate these agency costs by reducing the free cash flow available to management.

If a company chooses to pay out dividends, it is because it has exhausted all positive-NPV opportunities to invest, repay debt and hold precautionary cash. Paying out dividends is the best use of cash (having exhausted all those opportunities). Restricting dividends and forcing the company to allocate the cash to alternative uses is likely value-destroying – since the company wished to pay out the dividend, it is because this was a better use than all of the alternatives.

The introduction of regulation to restrict dividend payments may increase agency costs as cash held in the business is used for negative-NPV projects. Ofwat's proposed dividend restrictions could increase the cash available to management and hence increase agency costs and the required cost of capital.

### *Dividend signalling*

The MM theory assumes symmetric information between managers and investors. In practice, managers have superior information about their firms' prospects. Managers with positive information will wish to signal this to the market to command a higher valuation. However, the signal must be *credible* – it must be something that managers with negative information will not wish to replicate. Dividends represent a credible signal, since managers with negative information will know that they are unable to maintain the dividend. They will need to subsequently cut it, leading to a significant stock price drop.

The uncertainty around future cash flows to equity and restriction of dividend payments implied by Ofwat's proposals will have an impact on value in the water sector and result in

an increased return required by equity investors. As a result analysis of dividend signals and impacts on stock price can be used to approximate the impact of Ofwat's proposals on value.

This report considers analysis of historic United Utilities (UU) and Severn Trent (SVT) dividend announcements and evaluates the impact on equity value when lower than expected dividends are paid. The **reduction in the equity value is equivalent to an estimated 18-22bps on the cost of capital** based on UU and SVT. In practice this could under-state the potential impact of Ofwat's proposals as dividends for UU and SVT are relatively stable over time.

Costs might be expected to be *higher* than is implied by analysis of dividends for UU and SVT, given these two companies have historically stable dividend payments, and costs implied by dividend signaling represent a *lower* bound for the costs of Ofwat's proposals.

### *Preference shares*

Investors in utilities receive a stable stream of dividend payments, which can be seen as analogous to the stability of interest payments on debt.

The difference between interest payments on debt (which are regular and certain) and payments on preference shares (where shareholders do not have control over timing of payments) can be used as a proxy to evaluate the impact of Ofwat's increased regulation of dividend payments, and the impact on the cost of equity.

The **estimated difference between debt and preference share yields is equivalent to 45-98bps on the cost of capital**, based on analysis of preference shares in the sector. This estimate acts as an *upper bound* for the estimated impact of Ofwat's proposals on the cost of equity as shareholder control of cashflows is not the sole differential between debt and preference shares.

### *Duration of cash flows*

Ofwat's proposals could result in the non-payment of dividends in certain years if the credit rating lock-up threshold is met or dividends are restricted by Ofwat.

Duration of cash flow analysis, based on the Xia-Brennan model, considers how shifting dividends to future periods *increases* the equity payback period, which is equivalent to increasing the duration of cashflows, and estimates the impact on equity value. An analysis of different scenarios which could arise from Ofwat's proposals (for example, non-payment of dividends for three years) shows that **the impact of restricting dividend payments and increasing the duration of cash flows could have a 14-28bps** on the cost of capital.

This estimate could under-state the cost of the proposals as the simulation above measures the impact on dividends under relatively modest scenarios and does not capture in full the impact of the proposals on rights to shareholders or quantify changes in agency costs as a result of retention of cash within the regulated business in the event of non-payment of dividends. The costs implied by this approach represent a *lower* bound for the costs of Ofwat's proposals.

### Case study from the banking sector

Regulatory developments in the banking sector provide a relevant case study to consider how introduction of new regulation to improve financial resilience could impact the cost of capital and benefit customers in the water sector.

Ofwat's proposals resemble higher capital requirements introduced in the banking sector post financial crisis, when new regulation introduced stricter requirements for the quantity and quality of capital required to be held and required additional types of capital to ensure capital adequacy, such as convertible debt to equity to recapitalise the bank in times of distress.

The impact of recapitalisation in the banking sector has been estimated at up to 0.15%<sup>6</sup> per percentage increase in capital ratios, equating to c. 1.5% increase in cost of capital for a 10% increase in leverage. A number of academic studies commissioned by regulators in financial services indicate that this additional cost was lower than benefits from reducing systemic risk in the sector. The introduction of the new regulation in the water sector could result in a similar dynamic with new regulation of capital structures increasing the cost of capital in the sector.

However, there has been no observed financial crisis or equivalent *systemic* event which has materially impacted on financial resilience in the water sector. In water there is no systemic risk or potential benefit which is comparable to the banking sector as in water the risk is reduced to a single entity rather than the system or the sector overall. To date there have been no bankruptcies in the water sector and the Special Administration regime has never been used. As a result Ofwat's proposals could result in recapitalisation and *increase cost of capital* (as observed in banking) but *without the corresponding benefits*.

### Incentive properties of Ofwat's proposals

The introduction of new regulation could have implications for company and investor incentives. In this context the primary concern set out by Ofwat is that financial fragility might affect customer service levels and operational performance. Ofwat is concerned that if a company is in financial distress it might not be able to invest to maintain the levels of customer service and delivery. However, Ofwat does not set out evidence of either correlation or a causal relationship between customer service levels and financial resilience.

Ofwat's rationale for introduction of a cash lock-up appears to be to prevent the use of cash for prohibited purposes (e.g. the payment of dividends) in circumstances of weakened financial resilience. However, financial resilience is not improved by restricting the uses of cash and may ultimately *reduce* financial resilience. In particular the introduction of a cash lock-up requirement may deter equity investors from committing capital within the regulatory ringfence, thereby reducing the pool of available equity capital.

Ofwat may also have introduced new regulation of dividends to change management behaviour and incentives in relation to service delivery. It is not clear that changes to dividends would necessarily result in additional incentives around service delivery over and above incentives implied by existing regulation (for example) ODIs. However if linking dividends to service delivery does have incentive properties this reinforces that Ofwat's proposals have a cost.

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<sup>6</sup> Ibid, p. 15

## Conclusions

In summary, after considering the existing regulatory protections, there are three potential causes of market or regulatory failure which could support the introduction of new regulation in relation to financial resilience (1) asymmetric information; (2) externalities due to under investment in customer service; and (3) externalities as a result of bankruptcy. Overall, it is not clear that in relation to any of the above there is a clear inefficiency or market failure related to the level of financial resilience that justifies the introduction of new regulation.

This report assessed potential benefits arising from Ofwat's proposals. Based on the analysis performed there may be some small benefits of Ofwat's proposals relating specifically to a change in the probability of default and a reduction in the cost of debt due to higher credit ratings, although the latter must be considered against the corresponding increase in the cost of equity and the cost of capital overall.

It is not clear if the potential benefits mentioned above would be actually passed to customers. First, for a change in the probability of default to ultimately benefit customers, there have to be clear deadweight costs of bankruptcy which are not identified or evidenced. Second, potential impact of Ofwat's proposals on default rates in utilities is marginal. Third, a potential reduction in the cost of debt as a result of Ofwat's proposals is unlikely to be passed through to the customer bills. This partial effect would be also *at a minimum* offset by a corresponding increase in cost of equity and in addition to that a likely increase in the cost of capital overall. Therefore, based on the analysis presented in this report, no clear, quantifiable benefits to customers from Ofwat's proposals can be identified.

This report also assessed potential costs of Ofwat's proposals due to a change in equity value arising from agency costs, reduced ability to respond to clientele effects, impact of delays in cash flows on equity value and restricted ability to adopt the optimal capital structure. These effects – which conceptually are similar to the effects arising from regulatory intervention on capital structures in banking – would all else equal increase costs and the returns required by equity investors in the sector which would have to be funded by customers.

On balance, the proposals are therefore likely to result in costs to customers which materially outweigh the potential benefits. A summary of the potential costs is set out in the table below.

**Table 1: Summary of potential costs relating to Ofwat's proposals**

Potential cost of Ofwat's proposals	Cost of capital impact
<b>Increased cost of capital due to potential disruptions to stability of dividend flow</b>	
Dividend signalling	18-22bps
<b>Pricing changes in equity claims (in addition to uncertainty of dividend flow)</b>	
Preference shares	45-98bps
<b>Pricing increases in equity payback period</b>	
Duration of cash flows	14-28bps
<b>Total estimated range of costs associated with Ofwat's proposals</b>	<b>14-98bps</b>

## 2 Context – evolution of regulatory policy

Ofwat has published a licence modification consultation setting out proposed new regulation to improve financial resilience in the sector. Ofwat's proposed licence modifications include an increase in the cash lock-up level to BBB/Baa2 (negative outlook) from BBB-/Baa3 (negative outlook) and amendments to the dividend licence condition to more closely link dividend payments to operational performance and customer service levels. Ofwat has not carried out an impact assessment of these proposals.

In this context a group of water companies (Anglian Water Services Limited, Northumbrian Water Limited, South East Water Limited, Southern Water Services Limited, Thames Water Utilities Limited, Wessex Water Services Limited and Yorkshire Water Services Limited) has commissioned KPMG to carry out an initial impact assessment of Ofwat's proposed financial resilience licence modifications.

### 2.1 Development of Ofwat's approach to financial resilience

Financial resilience has been an area of focus for Ofwat in recent years. This section sets out how financial resilience has been considered, and regulated, taking into account the PR19 final determination, the PR19 CMA re-determination, Ofwat's approach leading up to PR24 and the July 2022 financial resilience consultation.

#### Ofwat's PR19 Final Determination and CMA re-determination

Ofwat included a Gearing Outperformance Sharing Mechanism (GOSM) in its PR19 Final Determination (FD), which claws back a certain percentage of the difference between the cost of equity (CoE) and cost of debt (CoD) on RCV financed with debt above a specified gearing level.

Following the PR19 Final Determination, four water companies appealed the decision to the CMA. This appeal resulted in a re-determination of Ofwat's FD for these companies covering all aspects of the price control, including the GOSM.

The CMA disapplied the GOSM for disputing companies within its Final Determination, concluding that the GOSM was neither effective in sharing benefits with customers nor as a tool to improve financial resilience. First, the CMA considered that Ofwat had not adequately evidenced the existence of the benefits from high gearing that companies would have available to share with customers. Second, the CMA found that to the extent that high gearing reduces financial resilience, the GOSM works only to encourage a reduction in gearing rather than to *require* a reduction in gearing. Finally, the CMA noted the other licence conditions and protections to customers in place.<sup>7</sup>

The CMA recognised legitimate concerns Ofwat may have about the financial resilience of water companies, and acknowledged it is appropriate to consider the potential risks and consequences, for customers and taxpayers, of a default event before it may occur. The

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<sup>7</sup> CMA (2021), PR19 Final Determination, summary, paragraph 102.

CMA acknowledged that “higher gearing levels increase the risk of financial failure”<sup>8</sup> but highlighted a number of existing regulatory and financial mechanisms that mitigate the risk from companies choosing high levels of gearing. From this the CMA concluded that observed high gearing in the sector exposes customers to limited risk.

### Ofwat’s approach leading up to PR24

In November 2021, Ofwat published the 2021 *Monitoring financial resilience report* (MFRR). The 2021 MFRR included a key metric dashboard setting out additional factors that might influence financial resilience, broadening the focus from gearing at PR19. The MFRR also considers headroom in maintaining an investment grade rating, interest cover ratios, return on regulatory equity (and drivers of the return), equity injections and dividend yield.

Ofwat emphasised the importance of clear rationale relating to dividend payments and the annual Long Term Viability Statement (LTVS) that should include robust, company specific assessment of downside risks and the measures in place to mitigate these risks. These aspects did not signal the requirement for new regulation at PR24, but instead emphasised the importance of arrangements already in place in mitigating the risk of financial distress.

The analysis presented by Ofwat in the MFRR presented a widening of the factors considered in evaluating financial resilience, however, even this broader approach remains limited because it ignores some key parameters and mechanisms.

In December 2021, Ofwat published *Financial resilience in the water sector: a discussion paper*. Ofwat considered a wide range of regulatory intervention including changes to the cash lock-up provision, a cap on gearing and increased reporting requirements to improve transparency.

In the discussion paper Ofwat set out concerns that there were companies in the sector with high levels of debt, weak levels of financial resilience and credit ratings with little headroom in the investment grade. Ofwat also drew links between weak levels of financial resilience and poor operational performance, which in parallel may have negative implications for customers.

### Ofwat’s July consultation

In July 2022, following the publication of the PR24 draft methodology earlier in the month, Ofwat published the Consultation under sections 13 and 12 A of the Water Industry Act 1991 on proposed modifications to strengthen the ring-fencing licence conditions of the largest undertakers. The proposed licence modifications would be the first licence modifications to be implemented under Ofwat’s new methodology and appeals process for licence modifications.

This consultation set out a subset of the proposals included in the 2021 discussion paper:

- Modify the cash lock-up licence condition to raise the cash lock-up trigger to BBB/Baa2 with negative outlook, effective from 1 April 2025.
- Modify the dividend policy licence condition to require that dividend policies and dividends declared or paid should take account of service delivery for customers and

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<sup>8</sup> CMA (2021), PR19 Final Determination, paragraph 9.1198.



the environment over time, current and future investment needs and financial resilience over the long term.

- Modify the licence to require companies to hold two issuer credit ratings, or to seek our agreement to an alternative arrangement.
- Modify the licence to require companies to notify us about any changes to credit ratings (including changes in rating and/or outlook, new ratings assigned or planned rating withdrawals), with reasons for the change, where applicable.
- Bring other ring-fencing provisions in Wessex Water's licence up to the current industry standard as set out in appendix A4 and as explained in our 2020 consultation on regulatory ring-fencing licence modifications.

This paper focuses on two of the proposals: increase in cash-lock up level and linking dividends more closely to performance.

## 2.2 Scope and structure of the report

The scope of this report is to evaluate the costs and benefits of Ofwat's proposals to consider whether the potential benefits of new regulation can be considered sufficiently to outweigh the costs to support the introduction of new regulation.

It is not necessarily the case that proposals are costless if they are not reflected in the allowed rate of return. If the required rate of return increases, the outturn returns have to increase as well. Not assessing potential costs or not reflecting them in the allowed rate of return does not change anything—it will be substituted by less investment, deeper cost cuts and a reduction in the number of risky projects which companies take on.

In this context this report sets out an impact assessment of Ofwat's proposed financial resilience licence modifications drawing on corporate finance theory and practice, academic research and precedent from other sectors. It quantifies the potential costs and benefits of Ofwat's proposals to establish whether the proposed regulation is justified.

The report is structured as follows:

- **Section 3** assesses whether there is a market or regulatory failure which supports additional regulation of financial resilience in the water sector. It draws on Ofwat's stated objectives of the proposals and explores market or regulatory failures which would support new regulation.
- **Section 4** evaluates the benefits of Ofwat's proposals. This section draws on analysis of the probability of default in the water sector and how this would change with the increase in the cash lock-up level to BBB/Baa2 (negative outlook). While there is no evidence that costs of a default would be fully or in part be borne by customers, this section assesses the scale of the benefit and consideration of what costs would be borne by customers. The section also evaluates a potential benefit of the proposals for the cost of debt, with customer impact measured as a change in the cost of debt allowance.
- **Section 5** considers the impacts of Ofwat's proposals on the cost of equity, drawing on the relevance of dividends for utilities, changes in equity claims and the implications for the cost of equity and draws on other sectors and academic methodologies to quantify any potential costs to customers.
- **Section 6** draws on the conclusions of sections 4 and 5 to evaluate if the benefits of the proposals outweigh the costs and whether on balance there is empirical support for the introduction of new regulation.

### 3 Assessment of whether there is a market failure which supports new regulation on financial resilience

This section explores Ofwat’s stated objectives for its proposed financial resilience licence modifications, based on the rationale set out in its July licence modification consultation.

This section considers whether *existing* regulatory protections in the water sector already support financial resilience and provide material levels of protection for customers. Given this, there is a high hurdle for introducing new regulation to avoid introducing distortions and creating unintended consequences and additional costs which might arise from restricting shareholders’ rights and scope for corporate actions. This section assesses whether Ofwat has demonstrated there is a need – for example a clear market or regulatory failure – that could justify such intervention.

This section is structured in two parts, first considering Ofwat’s objectives and second assessing the justification for potential regulatory intervention:

- Section 3.1 summarises Ofwat’s objectives and rationale as set out in the consultation document.
- Section 3.2 sets out a high level assessment and commentary on whether there is a financial resilience problem in the sector which could support new regulation.

#### 3.1 Overview of Ofwat’s objectives and rationale

In its licence modification consultation Ofwat sets out a proposed increase in the cash lock-up level to BBB/Baa2 (negative outlook) and amendments to the dividend licence condition to more closely link payments to customer service levels, the environment and current and future investment needs. This section sets out Ofwat’s rationale in support of the two mechanisms, as indicated in the consultation document.

##### Ensure company decisions are focused on long term financial resilience

Ofwat considers that its proposals will “*encourage companies to ensure the decisions they make support long term financial resilience, to maintain headroom well within the investment grade and to take early corrective action where required*”.

In addition, Ofwat notes that the new regulation will “*better enable us to act where the dividends paid or declared by a company do not promote the long term success of the company as a whole or may have an adverse impact on the long-term financial resilience of the regulated company and its customers, the community or the environment*”.

##### Consistent with statutory duties

Ofwat outlines that the increase in cash lock up is in line with its statutory duties as it reduces the likelihood that a company loses its investment grade rating. In particular, Ofwat considers “*it aligns with our duties to protect the interests of customers and to further the resilience objective to secure the long-term resilience of water companies’ water supply and wastewater systems*”.



## Align the licence with expectations regarding dividend payments

Ofwat is proposing “to modify the existing dividend policy licence condition to directly reflect our principles and to align them with expectations that we set and which companies agreed to meet at PR19 on ensuring dividends take account of delivery for customers and the environment.”

Ofwat considers it best practice to align licence conditions with the expectations it has for dividend payments as this “ensures consistency, removes the potential for ambiguity and promotes the importance of explaining dividend decisions clearly and as issues that matter for customers and the environment”.

Ofwat also explains that “to the extent the proposed amendments more clearly signal our expectations about credit quality and financial resilience, this improves the predictability of the regulatory framework and improves the investability of the sector.”

## Improves ‘investability’ of the sector

With these proposals Ofwat aims to ensure the sector has “continued, stable access to finance at a reasonable cost, allowing efficient companies to finance their statutory functions and licence obligations.”

Ofwat states that the proposals are “positive for equity investors” citing Moody's view that a 'stronger regulatory ring-fence may benefit operating companies'<sup>9</sup>.

## Protect customer interests and improve operational performance

Ofwat states that the proposals “seek to protect the interests of customers and the regulated company and increase the likelihood that a company has sufficient headroom to continue to meet its statutory and licence obligations”.

Ofwat states that the proposals will result in an increased “equity buffer so that investors have sufficient capital at risk to be strongly motivated to encourage companies to be efficient”.

## 3.2 Analysis of whether there is a problem which supports the introduction of new regulation

### 3.2.1 Potential sources of market or regulatory failure

Given there is an existing framework in place to address financial resilience, any additional regulation introduced by Ofwat should be supported by a robust impact assessment that demonstrates it is required. Ofwat has a statutory duty to have regard to whether licensees are able to finance their activities in a manner that “promotes economy and efficiency by water companies in their work”. As a result, an appropriate starting point for the assessment of new mechanisms is to consider whether the regulatory mechanism solves the problem and if it creates side effects of unintended consequences.

The primary basis for any regulatory intervention is the identification of a problem that needs to be addressed. This is consistent with the Better Regulation Task Force's principles of good regulation. Ofwat must have regard for the principles of best practice pursuant to s.

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<sup>9</sup> Ofwat (2022), Consultation on proposed modifications to strengthen the ring-fencing licence conditions of the largest undertakers, page 19

2(4) of the Water Industry Act 1991 (WIA91). The principles include targeting, which outlines that good regulation should be focused on the specific problem it aims to address and minimise any side effects.

In the water sector, the principal market failure is potential negative externalities imposed on customers by companies with market power in the absence of regulation. There are two primary types of potential negative externalities relevant in this context – under-investment in customer service and costs of bankruptcy transferred to customers. There is also a potential for regulatory failure due to information asymmetry (and in particular regulatory failure to regulate properly to avoid these externalities). On this basis this section considers whether there is a clear market or regulatory failure which supports a requirement for new regulation.

Market or regulatory failure can be characterised by an inefficient allocation of resources, goods, or services in the economy, reflected through sub-optimal prices and quantities of the good or service in question. The following categories are considered and discussed in further detail below:

1. **Externalities** (market failure) where a company does not internalise or factor in the wider impact of their behaviour on others. In the water sector this could include poor customer service levels and costs of bankruptcy.
2. **Asymmetric information** (regulatory failure due to asymmetric information) where regulators do not have sufficient information to understand conditions relating to a company's underlying operational performance, customer service levels or financial resilience.

### 3.2.2 Externalities – under-investment in customer service levels and service delivery

In a competitive market, poor service leads to loss of customers; as a result, firms internalise the costs of poor service and have incentives to invest to improve service levels. In a monopoly setting such as water, such customer switching is not possible, and so suboptimal service could be seen as an externality imposed on customers (for example providing a lower quality of service carries with it further negative consequences for customers which companies might not take into account).

Ofwat regulates the level of customer services through the calibration of totex allowances and the incentive framework. In addition, there are already extensive reporting requirements for companies relating to operational performance and levels of customer service.

It is not clear that financial resilience is directly linked to this externality. A financially resilient company might have little incentive to invest in customer service levels in the absence of regulatory intervention since the benefits go to customers. Thus, if the market failure is poor customer service, the most effective solution is to regulate service levels directly, e.g. through incentives linked to service levels, rather than to regulate financial resilience. This causes all firms, regardless of their level of resilience, to internalise the externality.

### 3.2.3 Externalities – bankruptcy

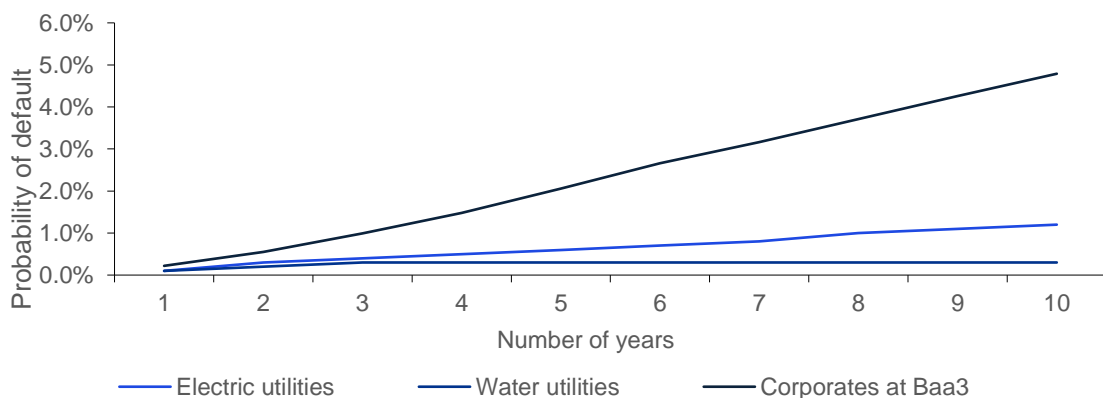
Another potential externality is costs to customers or taxpayers in the event that a water company enters Special Administration. The Special Administration regime has never been used in the water sector as other regulatory protections, such as the Interim Determination of

K (IDoK), the shipwreck clause and regulatory ringfence provisions provide protections to customers before Special Administration is reached.

The CMA notes that in a special administration scenario there could be a risk that it is difficult to find a buyer – and concludes that “*the valuable asset base, combined with a suitable cost of capital, also suggests that there should be sufficient demand from alternative investors if individual company owners were to go into a special administration process*”.<sup>10</sup> However, Ofwat does not appear to have considered the importance of setting an appropriate cost of capital and wider alignment of risk and return to support financial resilience as part of its assessment of bankruptcy costs.

Empirical evidence suggests that no market failure is present in relation to bankruptcy. Data collected by the credit rating agencies indicates that utilities have historically been one of the most resilient sectors globally in terms of the probability of default, as presented in Figure 1. Higher levels of financial resilience stem from utilities benefitting from relatively predictable cash flows, underpinned by the low cyclical nature and *relatively* high insulation from price, volume and cost risks through regulatory protections.

**Figure 1: Average cumulative issuer-weighted global default rates, %, Moody’s<sup>11</sup>**



Based on the empirically observed default rates across corporate sectors; Moody’s Annual Default Study Feb’22, 1970 - 2020 (p. 39,40)

Source: Moody’s Annual Default Study 2022

Additionally, three-year rating transition rates of utilities in the BBB rating category indicate that 4.7% of them get downgraded while 9.6% upgraded, with upgrades twice as likely as downgrades.<sup>12</sup> This contrasts with the transition rates for non-financial corporates, for which empirical data suggests that the risk of a downgrade is higher than the possibility of an upgrade<sup>13</sup>. Benign transition rates and default probabilities of utilities indicate lack of need for

<sup>10</sup> CMA (2021), PR19 Final Determination, 9.1202.

<sup>11</sup> Moody’s; Annual Default Study, February 2022; Exhibit 42, page 39/40. Data covers period 1983-2021 for Baa3 corporates and 1970-2021 for Electric and Water

<sup>12</sup> 'BBB' Category Transition Rates by Subsector (1981-2020), S&P 2020 Annual Infrastructure Default and Rating Transition Study, p. 23

<sup>13</sup> 'BBB' Category Transition Rates by Subsector (1981-2020), S&P 2020 Annual Infrastructure Default and Rating Transition Study, p. 21

additional regulation, contrary to other corporate industries with significantly greater risk exposure.

**Table 2: BBB category utilities three-year transition rates, S&P**

	A	BBB	BB	B	C/CCC	D	Not Rated
Utilities three-year rating transition rates	9.59	60.78	3.05	0.67	0.41	0.652	24.85

Source: S&P 'BBB' Category Transition Rates by Subsector

The probability of default data related to the UK water sector specifically is not available as there has never been a bankruptcy. Generally, credit ratings in the sector have migrated downwards over time due to considerations related to both business and financial profiles, and to some degree driven by the changes in the regulatory framework.

Overall, after taking into account the existing regulatory regime, there is not clear evidence of a market failure arising from bankruptcy costs within the UK water sector. Additionally, there is no evidence in relation to the high transfer of potential costs to customers if a bankruptcy occurs. In fact, it is likely that the cost will be mostly transferred onto capital providers, including both equity and debt investors.

### 3.2.4 Asymmetric information

There could be wrong and costly regulation (or lack thereof) where there is information asymmetry. In the water sector this could occur if Ofwat does not have sufficient information to understand conditions relating to a company's underlying operational performance or financial resilience. There is already close monitoring of operational performance, financial instruments and capital structures by rating agencies, lenders and within Ofwat's regular reporting requirements. However, if information asymmetry does exist this could limit the scope for, or the effectiveness of, regulatory intervention to protect customer service levels.

More generally there is a level of information asymmetry between company management and regulators in relation to financial resilience as well as ongoing operational performance. Importantly there would have to be very significant asymmetric information to create customer harm however the utilities sector is one of the most transparent sectors and more information is available about utilities than almost in any other sector. As a result the missing information resulting in an information asymmetry would have to be *highly significant* to the calibration of regulation.

In addition, such a level of asymmetry would only be an issue if management's incentives are not aligned. It is not likely that management would be incentivised to be in financial distress *per se*, and therefore it is unlikely that this should require regulatory intervention.

Where there are clear trends in either under-investment or deterioration in operational performance, Ofwat has significant information available to monitor performance, financial resilience, and levels of investment under the current regulatory requirements.

There may be merit in additional transparency measures where there are potential drivers of deterioration in customer service levels in the short or long term. This would mean that potential misalignments for example in terms of incentives calibration or specification of

service levels could be addressed at source. It could also be beneficial to increase reporting where there are concerns that there is not adequate monitoring of risks that could distort underlying credit quality.

There is already close monitoring of operational performance, financial instruments, capital structures by rating agencies and lenders, however there may be scope for additional reporting as part of a broader definition of financial resilience that includes equity as well as debt measures.

### 3.2.5 Conclusions

The analysis in this section indicates that, after considering the existing regulatory protections, there are three potential causes of market or regulatory failure which could support the introduction of new regulation (1) asymmetric information undermining effective regulation; (2) poor quality of services and externalities due to under investment or under performance in terms of service delivery; and (3) bankruptcy costs transferred to customers.

Overall, it is not clear that there is a financial resilience “problem” which justifies the introduction of new regulation based on potential market or regulatory failures:

- First, **under-investment and/or under-performance in the sector could lead to deteriorating customer service levels.** However, it is not clear that there is a problem in this area that is not already addressed by existing regulation or that could not be better addressed by more targeted regulation focused on specific performance issues.
- Second, **there could be deadweight costs related to bankruptcy that are imposed on customers as externalities.** The regulatory framework includes a special administration regime, with the primary focus of maintenance of uninterrupted operations whilst the financial position of the company is stabilised. The special administration regime has not been used in the UK water sector. It is uncertain whether there will be externalities relating to bankruptcy or Special Administration.
- Third, **financial resilience issues could arise in the sector due to asymmetric information** across Ofwat and companies. Asymmetric information could result in a deteriorating financial position not being identified by Ofwat. Importantly there would have to be very significant asymmetric information to create customer harm however the utilities sector is one of the most transparent sectors and more information is available about utilities than almost in any other sector. As a result the missing information resulting in an information asymmetry would have to be *highly significant* to the calibration of regulation.

## 4 Impact assessment – analysis of potential benefits of the proposals to customers

This section analyses and quantifies possible benefits of Ofwat's proposals, specifically with reference to reducing the customer burden from the deadweight costs of a bankruptcy, via a reduction in the probabilities of default due to a tighter dividend lock-up trigger. Additionally, this section looks at the potential customer benefit from the cost of debt perspective.

A reduction in the probability of default could only lead to a more efficient outcome if there are significant deadweight costs associated with bankruptcy not absorbed by capital providers and if the resulting impact on the cost of capital from shifting control rights between debt and equity has low costs. This section focuses on quantifying the benefits based on a range of deadweight cost scenarios as well as the extent to which potentially lower debt costs could feed into customer bills. The impact of the proposals on the cost of equity is considered in Section 5.

This section is structured as follows:

- Section 4.1 analyses the impact of the change in the cash lock-up trigger from BBB-/Baa3 (negative outlook) to BBB/Baa2 (negative outlook) on the probability of default for UK water companies and, consequently, on the avoided deadweight costs of a bankruptcy. This is translated to an annual cost savings for consumers as a percentage of RCV, based on the range of assumptions around gearing and unrecovered costs at default to assess the change in the cost to customers associated with the proposal.
- Section 4.2 outlines the impact of the change in the cash lock-up trigger on the sector's cost of debt and estimates how this change would translate to the cost of debt allowance which is funded by customers.

## 4.1 Probability of default analysis

### Overview

Lowering the risk of default does not necessarily represent an improvement in customer welfare. In order to conclude that, there has to be clear evidence that the risk of default is *inefficiently high* (in terms of economic efficiency) in the absence of new regulation. In contrast, a higher risk of default could actually be more efficient because, for example, it creates better incentives to limit risk taking, ensures the optimal risk-return trade-offs, and corresponds to the actual relative costs of debt and equity. Ofwat has not set out the customer harm arising from the current regulation which would support new regulatory intervention.

Additionally, reducing the risk of default does not necessarily equate to a significant customer benefit because externalities of such an event are not clear.

There are two potential types of the bankruptcy costs. First, capital providers might lose some part of their capital, which is not inefficient *per se* and does not have an impact on the customer costs. Second, there might be deadweight costs of bankruptcy, which are inefficient, and these might be passed to customers. However, there is no evidence that such costs exist or that they would be material.

This section nonetheless assesses whether there might be a benefit to customers under Ofwat's proposals if the risk of default is materially lower at BBB/Baa2 than at BBB-/Baa3, assuming different degrees of passing deadweight costs onto customers. This analysis does not opine of the efficiency of the current or proposed risk of default.

### Estimated impact

The analysis estimates the difference in default probabilities between BBB/Baa2 and BBB-/Baa3 ratings for corporates and infrastructure, as well as the impact on default probabilities of a cash lock-up.

Depending on a specific default scenario and the assumptions regarding the deadweight costs, the benefit from Ofwat's proposal from reducing the risk of bankruptcy could be around 0-2 basis points per annum, measured as a percentage of RCV. This average is based on the 12-year averaging time horizon.

Probability of default measures the likelihood that a borrower will not be able to make scheduled coupon payments or principal repayments of its debt financing. A default can have profound consequences, resulting in loss for equity holders, who will have the lowest ranking legal right to any recovery, but can also cause harm to other stakeholders such as the government or the customers. This section considers in detail the impact that Ofwat's proposed change to the cash lock-up trigger from BBB-/Baa3 (negative outlook) to BBB/Baa2 (negative outlook) credit rating has on the probabilities of default and ultimately on customers via the avoided deadweight bankruptcy costs.

### 4.1.1 Background to a distribution lock-up and its use in the debt structuring

To inform the impact assessment, it is important to first consider how a distribution lock-up is used in various types of debt financings and the benefit credit rating agencies attribute to it in terms of notching, and ultimately, its ability to reduce default probabilities.



## Background and mechanics

Distribution lock-up is a documentary feature used in various types of debt financings for the purpose of enhancing creditor protections and reducing the probability of default of a given corporate or a project finance entity. It is most commonly used in project finance and leverage finance, alongside other credit protections, such as security, cash sweep, liquidity buffer, amortising debt, etc. Dividend lock-up can help preserve creditor value and curb leakage of value to shareholders when an entity's financial health starts to deteriorate beyond a certain level, normally determined by financial covenants. To ensure that the value distributions work as intended, there are usually explicit instructions around how the locked-up cash is used, for example a cash sweep that mandates all excess cash to be used towards debt repayment.

Financial covenants that trigger dividend lock-up are designed, and their specific levels are selected on a case-by-case basis, to best reflect the nature of the specific industry / project and creditor risk tolerance. More rarely, distribution lock-ups are triggered by events other than financial covenant breaches, for example credit rating downgrades beyond a certain level.

When a lock-up is triggered, the entity in question can no longer pay dividends or make equity-like distributions until the lock-up is rectified. The profits that the entity generates are therefore retained within the business to improve equity buffer and resilience to shocks. This modestly reduces the probability of default as it affords some protection against the shareholder risk, but no protection against the market or performance risks. The credit enhancing value of the dividend lock-up is significantly increased when it is used alongside a cash sweep, directing the excess value towards debtholders.

## Rating benefit of a lock-up

A lock-up feature can be translated empirically into an equivalent credit rating uplift, based on the academic studies of the benefits of various credit enhancements. Academic research attributes a benefit equivalent to broadly one quarter of a rating notch<sup>14</sup> to the dividend-lock-up, based on studying a large, representative sample of structurally enhanced sub-investment grade debt. There is lack of such studies undertaken in the investment grade space because of the limited data availability, as defaults and use of the dividend lock-up by investment grade corporates are rare. In project finance, dividend lock up is a standard and baseline feature of any structure, together with a cash sweep, additional liquidity, security, and amortising debt structure. It is, therefore, difficult to separate out just the value of the lock-up in terms of the credit rating benefit it affords, because lock-ups themselves are not, in isolation, especially powerful. This aligns with the approach adopted by S&P, Moody's and Fitch in project finance, none of which allows a distinct credit rating uplift just for the presence of a lock-up.

In the regulated utilities space, the benefit of the regulatory ring-fence applied to the UK water and energy utilities, including a dividend lock-up, is generally recognised in the context of group relationships rather than on its own. For example, Moody's clearly states: "*Today, most UK water companies' licenses include specific terms that provide some protections against business and financial risk factors, including [...] limitations on distributions or other support to affiliated regulated companies. [...] Although these 'ring-fencing' features are important in protecting credit quality, they do not by themselves enhance credit quality.*"<sup>15</sup>

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<sup>14</sup> Ding J and Pennacchi G; Syndicated Loan Risk: The Effects of Covenants and Collateral, April 2021

<sup>15</sup> Moody's: "Regulated water utilities - UK: Covenanted financing structures help mitigate growing risks", 9 Oct 2018



The regulatory ring-fence on its own does not lead to a credit rating uplift but could protect the ratings of operating companies positioned at the mid-to-low end of the BBB rating category from the adverse impact of the consolidated group having a lower rating.

### Shareholder perspective

The presence of a lock-up feature within credit documentation is not borne cost free by equity holders. Most investors in corporates, infrastructure and project finance seek some cash yield, which a lock-up would naturally threaten if enacted. By agreeing to add the dividend lock-up feature to an asset's debt financing, shareholders explicitly give up their right to receive a dividend at the point of a financial difficulty. Further, when there are accompanying instructions regarding the use of the excess cash, a lock-up reduces the degree of autonomy shareholders hold over the allocation of capital. This is particularly prevalent within project finance, where cash sweep features (an extension of the lock-up) require all excess cash to be used to reduce debt. Shareholders therefore explicitly agree to bear the market and performance risk beyond the level set out in the lock-up covenants.

Equity holders require sufficient benefit in return for taking on additional risk and giving up dividend predictability. The benefit needs to be evident and easily quantifiable. For example, in project finance the inherently risky nature of the construction phase requires sufficient creditor protection for debt finance to be provided. Many project finance undertakings would not be able to attract debt financing without all of the standard credit enhancing features. Debt markets price credit risk in buckets, which are often linked to credit ratings, and availability of capital for certain projects is contingent on achieving a certain bucket. The presence of structural protections and cash lock-up reduces the risk for debtholders, which in turn benefits equity holders through a lower cost of financing. Only when a perceived benefit of attracting debt financing more than offsets the additional risk a shareholder takes, would a lock-up be implemented.

#### 4.1.2 Analysis of probabilities of default

In this sub-section, the analysis of the benefits afforded by a distribution lock-up is consolidated into the overall probability of default analysis. The probability of default at the BBB-/Baa3 and BBB/Baa2 levels are observed from historical corporate default rates published by credit rating agencies. This data is then adjusted for characteristics of infrastructure and utilities as an asset class and dividend lock-up, although the latter has a marginal effect on the default probabilities.

There is an inconsistency in the way Ofwat's proposed dividend lock-up would be applied. This is due to selecting different ratings to act as triggers from the three different agencies:

- Corporate family rating (CFR) from Moody's
- Class A debt rating or issuer credit rating (ICR) for S&P, and
- Issuer default rating (IDR) from Fitch

The trigger levels across the rating agencies all measure different things. Moody's defines its CFR as a loss given default, which effectively measures *creditor recovery from a corporate entity in a hypothetical default*. The recovery is measured at an entity level rather than the debt level and does not represent a particular debt instrument's seniority and is measured together with default probability. S&P and Fitch define their ICR and IDR, respectively, as *the expression of probability of default only*. Creditor recovery for a particular debt class represents another layer of analysis, which is then used to arrive at debt ratings by S&P and Fitch. Class A debt rating, being the senior secured one within the secured and covenanted

debt structures, benefits from the high recovery due to its priority and structural debt enhancement, which is in addition to the default probability. Linking a dividend lock-up to the inconsistent measures across the three rating agencies, which often can give rise to multi-notch differences, creates confusion around the targeted level of financial resilience.

The default probability analysis in this report is focused on the issuer-level credit ratings. It is acknowledged that Moody's CFR has a recovery component absent in S&P's and Fitch's ICR and IDR. The limitations stemming from this difference are appropriately factored in interpreting the results.

### Financial and non-financial corporates

Corporate default data from Moody's 2021 default study illustrates that the empirically observed difference in the cumulative default probabilities between the Baa2 and Baa3 ratings is around 90 and 190 basis points in the horizon of 5 and 10 years, respectively. The variance in the annual, non-cumulative default probability ranges between 1-30 basis points. It could be argued that these figures are already sufficiently small and would not make a significant difference to customers or the government, especially in combination with the absolute default probabilities at Baa2 and Baa3. However, the analysis is developed further to make the estimate as tailored to the water utilities as possible, based on the available data.

**Table 3: Cumulative Global Default Rates: Baa2 and Baa3 Rating<sup>16</sup>**

Years	1	2	3	4	5	6	7	8	9	10
<b>Baa2</b>	0.14%	0.34%	0.58%	0.89%	1.19%	1.50%	1.84%	2.17%	2.52%	2.89%
<b>Baa3</b>	0.22%	0.55%	0.99%	1.48%	2.06%	2.66%	3.16%	3.71%	4.26%	4.79%
<b>Difference</b>	0.08%	0.21%	0.41%	0.59%	0.87%	1.16%	1.32%	1.54%	1.74%	1.90%

Note: Data is for all Corporates at this level, including financial corporates.

### Utilities and infrastructure

Infrastructure and utilities are significantly more resilient and defensive than generic corporates in terms of their business risk exposure and hence require a lower degree of creditor enhancements to protect debtholders. They benefit from relatively stable and predictable cashflows due to the essential nature of services they provide, high barriers to entry and low cyclicalities. There is usually some protection against the demand and price risk.

The difference in comparative risk profiles of infrastructure versus the corporate universe are further evidenced when analysing credit risk through observed default rates. Across various time horizons, infrastructure debt defaults less frequently than that of non-financial corporates. Default data from S&P and Moody's indicates that the chance of infrastructure default is significantly lower than that of a non-financial corporate at the five- and ten-year horizons, with S&P showing that the gap continues to grow out to the fifteen-year horizon.

**Table 4: S&P Cumulative Default Rates 1981 - 2020: BBB Ratings<sup>17</sup>**

Time Horizon	Non-Financial Corporates	Infrastructure (All)	Delta
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<sup>16</sup> Moody's; Annual Default Study, February 2022; Exhibit 42, page 39. Data covers period 1983-2021

<sup>17</sup> S&P; Default, Transition, and Recovery: 2020 Annual Infrastructure Default and Rating Transition Study, October 2021; Table 2, page 10/11. Data covers period 1981-2020

<b>1 Year</b>	0.13%	0.13%	0 bps
<b>5 Years</b>	1.45%	1.05%	40 bps
<b>10 Years</b>	3.25%	1.95%	130 bps
<b>15 Years</b>	4.48%	2.63%	185 bps

Source: S&P 'BBB' Category Transition Rates by Subsector

**Table 5: Moody's Average cumulative default rates 1983 – 2020: Baa Ratings<sup>18</sup>**

<b>Time Horizon</b>	<b>Non-Financial Corporates</b>	<b>Infrastructure (All)</b>	<b>Delta</b>
<b>1 Year</b>	0.10%	0.10%	0 bps
<b>5 Years</b>	1.20%	1.00%	20 bps
<b>10 Years</b>	3.10%	2.00%	110 bps
<b>15 Years</b>	<i>Data not published</i>		

Further, based on a slightly longer time series, Moody's characterises the default rate within specific sectors, indicating a much lower rate of default within specific infrastructure sectors such as electric and water utilities. Unfortunately, this data is not rating category specific, limiting its use in the notch-specific analysis.

**Table 6: Average cumulative issuer-weighted global default rates 1970-2021<sup>19</sup>**

<b>Time Horizon</b>	<b>Utilities: Electric</b>	<b>Utilities: Water</b>
<b>1 Year</b>	0.1%	0.1%
<b>5 Years</b>	0.6%	0.3%
<b>10 Years</b>	1.2%	0.3%

To overcome data limitations (as notch-specific probabilities of default for infrastructure are not available from any of the agencies), rating-category level differences in default probabilities between non-financial corporates and infrastructure were interpolated to arrive at the notch-specific differences. These were then used to adjust the corporate notch-specific rates to synthetically arrive at the notch-specific default probabilities for infrastructure.

The data limitations present certain challenges and the interpolation method could lead to some inaccuracies. At the same time, the interpolation is based on two sets of data from S&P and Moody's and provides a useful approximation of the notch-specific default probabilities. The approximation illustrates that the difference in the cumulative default probabilities between the Baa2 and Baa3 ratings of infrastructure credits could be around 70 and 120 basis points in the horizon of 5 and 10 years, respectively, which is around 20% and 40% lower than the corporate rates.

<sup>18</sup> Moody's; Annual Default Study, February 2022; Exhibit 44, page 40. Data covers period 1970-2021

<sup>19</sup> Moody's; Annual Default Study, February 2022; Exhibit 44, page 40. Data covers period 1970-2021

**Table 7: Cumulative Default Rates, Interpolated: Infrastructure<sup>20</sup>**

Years	1	2	3	4	5	6	7	8	9	10
<b>Baa2/BBB</b>	0.14%	0.32%	0.52%	0.74%	0.93%	1.12%	1.32%	1.49%	1.65%	1.80%
<b>Baa3/BBB-</b>	0.22%	0.52%	0.88%	1.23%	1.60%	1.99%	2.26%	2.54%	2.79%	2.98%
<b>Difference</b>	<b>0.08%</b>	<b>0.20%</b>	<b>0.36%</b>	<b>0.49%</b>	<b>0.68%</b>	<b>0.87%</b>	<b>0.95%</b>	<b>1.05%</b>	<b>1.14%</b>	<b>1.18%</b>

Source: KPMG analysis, Moody's, S&P

### Infrastructure with a dividend lock-up

Finally, the impact of the proposed dividend lock-up, as discussed earlier, can be modelled as a benefit worth roughly a quarter of a rating notch, per academic studies<sup>21</sup>. When this is adjusted for, the difference in default probabilities between Baa2/BBB and Baa3/BBB- declines further.

**Table 8: Cumulative Default Rates, extrapolated: Infrastructure with a lock-up<sup>22</sup>**

Years	1	2	3	4	5	6	7	8	9	10
<b>Baa2/BBB</b>	0.13%	0.30%	0.49%	0.69%	0.85%	1.03%	1.20%	1.34%	1.48%	1.61%
<b>Baa3/BBB-</b>	0.20%	0.47%	0.78%	1.09%	1.39%	1.70%	1.93%	2.16%	2.35%	2.51%
<b>Difference</b>	<b>0.07%</b>	<b>0.16%</b>	<b>0.29%</b>	<b>0.40%</b>	<b>0.54%</b>	<b>0.67%</b>	<b>0.74%</b>	<b>0.82%</b>	<b>0.87%</b>	<b>0.90%</b>
<b>Annual Difference (non-cumulative)</b>	<b>0.09%</b>	<b>0.13%</b>	<b>0.11%</b>	<b>0.14%</b>	<b>0.13%</b>	<b>0.06%</b>	<b>0.08%</b>	<b>0.06%</b>	<b>0.03%</b>	<b>0.02%</b>

Source: KPMG analysis, Moody's, S&P

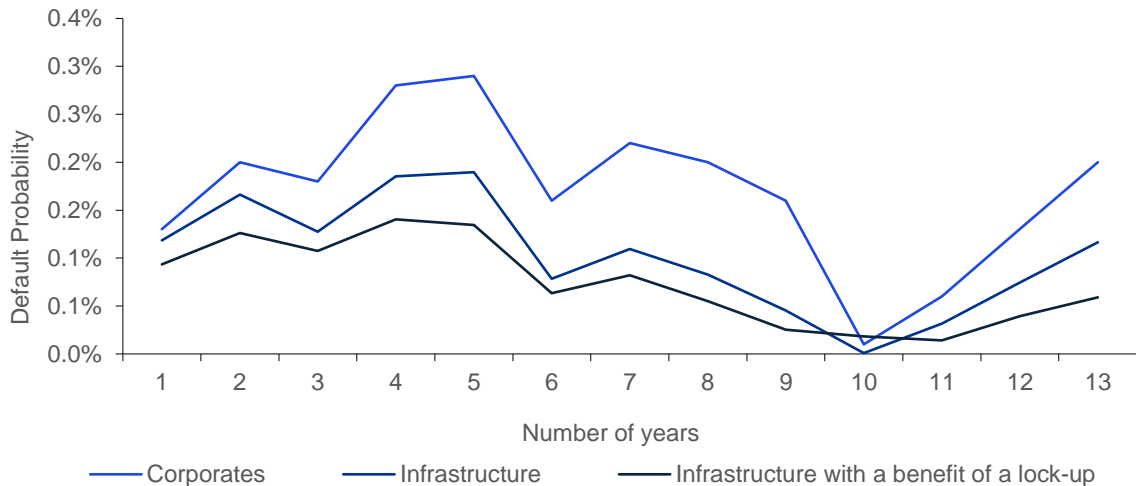
The annual difference in default probabilities between Baa2/BBB and Baa3/BBB- is therefore more than halved for the infrastructure credits that benefit from a lock-up in comparison with generic corporates. Individually these range between 0 and 14 basis points every year. It is appropriate to conclude that Ofwat's proposal to tighten the dividend lock-up would lead to an improvement in the probability of default of no greater than 14 basis points in every single year. In reality, this benefit is likely much smaller, because the UK water companies are regulated and have higher degree of risk protection than general infrastructure.

**Figure 2: Annual difference in default probabilities between Baa2/BBB and Baa3/BBB-**

<sup>20</sup> Interpolated using data from footnotes 10 to 13

<sup>21</sup> Ding J and Pennacchi G; Syndicated Loan Risk: The Effects of Covenants and Collateral, April 2021

<sup>22</sup> Interpolated using data from footnotes 10 to 14 and with reference to footnote 7



Source: KPMG analysis, Moody's, S&P

## Conclusion

Lowering the risk of default does not necessarily represent an improvement in customer welfare. In order to show an improvement in customer welfare, there has to be clear evidence that the risk of default is *inefficiently high* (in terms of economic efficiency) based on current regulation. Ofwat has not set out the customer harm arising from current regulation and dynamics which could support departure from the market equilibrium.

A reduction in the probability of default could only lead to more efficient outcomes if there are significant deadweight costs and externalities associated with bankruptcy which are transferred to customers. Ofwat did not set out evidence of the deadweight costs passed to customer in its consultation, and in addition, based on the Welsh Water precedent, the presence of deadweight costs being borne by customers is not likely<sup>23</sup>.

In reality, the decision about the existence of any deadweight costs and the extent of debt capital recoveries would likely be under the government's control, as a special administrative receiver would be appointed by the government. The bankruptcy would take the form of a going concern restructuring, with uninterrupted customer services being a priority. Decision-making would be impacted by multiple factors that are not predictable today.

Theoretically, if there were deadweight costs, the consumer benefit of the proposed change could be presented as avoided insolvency cost and calculated as the amount of deadweight costs at default, multiplied by the reduced default probability.

While it is not possible to predict or estimate deadweight costs with any degree of reliability, an illustrative analysis has been undertaken to reflect a number of theoretically possible outcomes. An illustrative default scenario analysis below considers four different levels of leverage at default and assumes that the deadweight costs would equal to costs not absorbed by debt or equity, with the total assets valued at the 1.0x multiple of RCV, debt recovery of 80% and administrative costs at 10% RCV at default for simplicity. It also

<sup>23</sup> In 1999/2000, following the Windfall Tax on utility profits and the 1999 Ofwat price review, an electric and water multi-utility Hyder that owned Welsh Water got into financial difficulties which led to its breakup. Later on a company was set up to own Welsh Water for the public benefit, for £1, along with £1.85 billion of debt. Although the company has no equity, no deadweight cost was passed onto the government or customers.

assumes that the cost of the day-to-day running of the company would be covered through allowed revenues.

The deadweight costs are then calculated as a balancing figure between the value of assets at default and the costs that these assets need to cover. For example, the first scenario assumes leverage at default of 120% net debt to RCV. In such case, equity holders will entirely lose their invested capital, debtholders will get 96% RCV (based on the assumed recovery of 80% of their invested capital of 120% RCV) and another 10% RCV will be used to cover administrative expenses. The externalised deadweight costs not absorbed by either debt or equity would amount to 6% RCV. The same logic is applied in the 130%, 140% and 150% gearing scenarios.

To arrive at the avoided default costs, the incremental benefit of a lower probability of default is multiplied by the assumed deadweight costs in each scenario. Table 9 reflects the magnitude of the impact in each case.

The outcome of this analysis is that, depending on a specific default scenario, the benefit to customers from Ofwat’s proposal to tighten the cash lock-up in a given year could be *between 0 and 4 basis points*, with the *overall cumulative impact over 12 years between 5 and 27 basis points*, measured as a percentage of RCV. Based on the cumulative impact over 12 years, the *average annual impact could be assessed at about 0-2 basis points*, which is sensitive to the averaging time horizon selected. The benefit is higher in the early years and diminishes in the later years because default probability increases at a slower pace.

Absent evidence to support specific assumptions around deadweight costs, this report assumes no consumer benefit from the reduced default probability. In the presence of the deadweight costs the benefit could be higher than zero but is unlikely to exceed several basis points of RCV annually.

**Table 9: Stylised default scenario analysis**

		Avoided default costs as a percentage of RCV, %													
		<i>Deadweight costs * Reduced default probability</i>													
Leverage at default, % of RCV	Dead weight cost, % of RCV	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Average over 12 years	Total for 12 years
120	6	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
130	14	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.13
140	22	0.02	0.03	0.02	0.03	0.03	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.02	0.20
150	30	0.03	0.04	0.03	0.04	0.04	0.02	0.02	0.02	0.01	0.01	0.00	0.01	0.02	0.27

Source: KPMG analysis

## 4.2 Impact arising from changes in the cost of debt

### Overview

There may be a partial benefit to customers of the proposed regulation as an increase in the lock-up trigger could incentivise companies to hold a higher credit rating and therefore *reduce* the cost of debt. The analysis estimates the impact of a change in rating from BBB/Baa2 to BBB+/Baa1 on a company's cost of debt, through analysis of observed spreads. The level of ratings is one notch above the existing and proposed lock-up triggers as companies would aim to have at least one-notch of headroom against the lock-up.

A higher credit rating would require greater equity buffer and would in turn lead to a *higher* cost of equity. At the minimum the cost of capital would, absent market frictions, remain constant. Absent market frictions there is no evidence to suggest that the combination of a higher rating and lower cost of debt is efficient for the overall cost of capital.

### Estimated cost of capital impact

The impact of a given company's upgrade on the allowed cost of capital was estimated by employing the sector average methodology for the cost of embedded debt allowance used by the CMA at PR19.

This section estimates the impact of the reduced cost of debt, setting aside all the other impacts on the cost of capital and concludes that there could be a reduction in the cost of debt equivalent to a cost of capital impact of up to 1bps arising from the changes to rating. At the same time, it cannot be assumed that the cost of equity would be constant in this scenario and that the only impact of these proposals on the cost of capital would be through a reduced cost of debt. The impact of these proposals on the cost of equity is estimated in Section 5.

This section considers the potential benefit to customers if Ofwat's proposals in isolation (and abstracting from any offsetting impacts on cost of equity) result in a *higher* credit rating and consequently a *lower* cost of debt allowance and lower customer bills. First, it analyses the spread differential between credit rating levels in the sector and how credit rating events changed the actual cost of debt. Second, it sets out how the change in the actual cost of debt for a company would translate into the cost of debt allowance and impact customer bills.

A particular bond's assigned tenor and credit rating can affect its yield considerably. KPMG carried out extensive analysis as part of the recent CMA appeals of the drivers of cost of debt in the water sector. Specifically, KPMG assessed whether water companies are able to systematically outperform the iBoxx benchmark on account of sector-specific factors, controlling for the impact that a bond's tenor and credit rating has on its yield.

The analysis found that tenor explained the majority of outperformance. The impact of credit ratings on pricing – although significantly lower than tenor – was driven by *differences between credit rating categories* (for example between A-rated water company debt and the iBoxx benchmark (A/BBB)) rather than *differences within each rating category* (for example BBB compared to BBB+).



There is still a significant level of variation in issuance yield around the benchmark, even after controlling for tenor and credit profile. The variation in issuance yields is due to a number of factors, such as the introduction of particular debt covenants. This is consistent with Ofwat's evidence to the CMA which noted that "*analysis of yield-to-maturity on nominal debt instruments issued by Baa3-rated Southern Water showed that its yields were lower than our cost of new debt benchmark (the iBoxx A/BBB minus 25 basis points) up to tenors of 30 years... This contradicts the view that outperformance of the index is not possible at credit ratings below Baa1.*"<sup>24</sup>

This section assesses – given that tenor is the key driver of debt costs and the 'noise' around performance above – whether ratings within the BBB rating grade are likely to result in material pricing differentials in the water sector.

Ofwat comments on the potential pricing differential between credit rating notches, quoting a report published by S&P which is based on historic pricing for general corporate issuers. The infrastructure and utilities sector however benefits from defensive properties that translate into: (i) lower default rates at a given credit rating than other non-financial corporates, and; (ii) a tighter spread of default probabilities between sequential credit ratings than other non-financial corporates. Both factors could impact on the pricing differential between credit ratings within the water sector, when compared to the pricing differential on a cross sector basis.

This section: (i) reviews the spread differential between credit ratings within the sector, and; (ii) reviews the impact of a credit rating action on a given issuer's spreads (including upgrades and downgrades, as well as changes to outlooks). For the former, the analysis focuses on the differential between Baa2/BBB to Baa1/BBB+ as we expect companies in the sector would aim to be rated at least one notch above the proposed dividend lock-up level.

The analysis undertaken aims to provide an in-sector view of whether the cost of debt could be expected to improve for a given issuer should their credit rating improve.

#### 4.2.1 The spread differential between credit rating grades in the sector

This section reviews whether there is a clear trend in pricing between Baa1/BBB+ and Baa2/BBB credit rating within the sector, which would allow us to conclude whether a higher rating would likely provide an improvement to the cost of debt for issuers<sup>25</sup>.

##### Approach

This section creates a composite index of bonds within the sector at the two credit rating levels to allow for average pricing to be compared at each notch. This has been done for two separate maturity profiles with c.10 and c.20 years remaining to maturity as this provided the greatest comparable sample size.

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<sup>24</sup> Ofwat, Reference of the PR19 final determinations: Risk and return – response to common issues in companies' statements of case, May 2020

<sup>25</sup> As an additional point of comparison, Baa3/BBB- instruments were reviewed for inclusion but no appropriate instruments were identified at this rating level that fit the criteria above for the purpose of the analysis. For example, instruments around this level had split issuance ratings between agencies so were not included on this basis.



To support the validity of any comparisons drawn between instruments, bonds included in the composite indices have been selected on a like-for-like basis. This has been done by selecting instruments that:

- (1) Are sterling fixed-rate bonds only
- (2) Have similar remaining years to maturity<sup>26</sup>

There are limited instruments at the Baa2/BBB level across the sector that fit criteria (1) above for any given remaining maturity. At the Baa1/BBB+ level, the c.10-year index comprises 5 instruments and the c.20-year index comprises 4 instruments.

## Results

The data shows that it is difficult to comment on the correlation between pricing and credit ratings, and by extension, pricing differentials between notches. Market pricing instead appears to be driven by holistic assessments of credit risk of which credit rating is one factor. This is since:

- 1) There is evidence of instruments with a Baa2/BBB rating pricing inside of instruments with a Baa1/BBB+ rating, despite otherwise having similar characteristics including remaining life to maturity;
- 2) The limited sample of Baa2/BBB rated instruments in the sector prevents robust conclusions being drawn on the expected pricing of instruments at this level; and
- 3) The range of pricing within the Baa1/BBB+ notch alone where there is a larger sample size prevents robust conclusions being drawn on the expected pricing of instruments at this level.

### 10-year results

For the 10-year index with the fullest sample overall, the instruments at the Baa1/BBB+ rating level have on average priced from 6-63bps lower than the single Baa2/BBB instrument since early 2021 (18bps on average over the period). All else being equal, this implies that there is a pricing benefit for a higher credit rating, though this has not been consistent. We note in particular the lower average maturity of instruments in the Baa1/BBB+ sample which is likely to over-state the pricing differential.

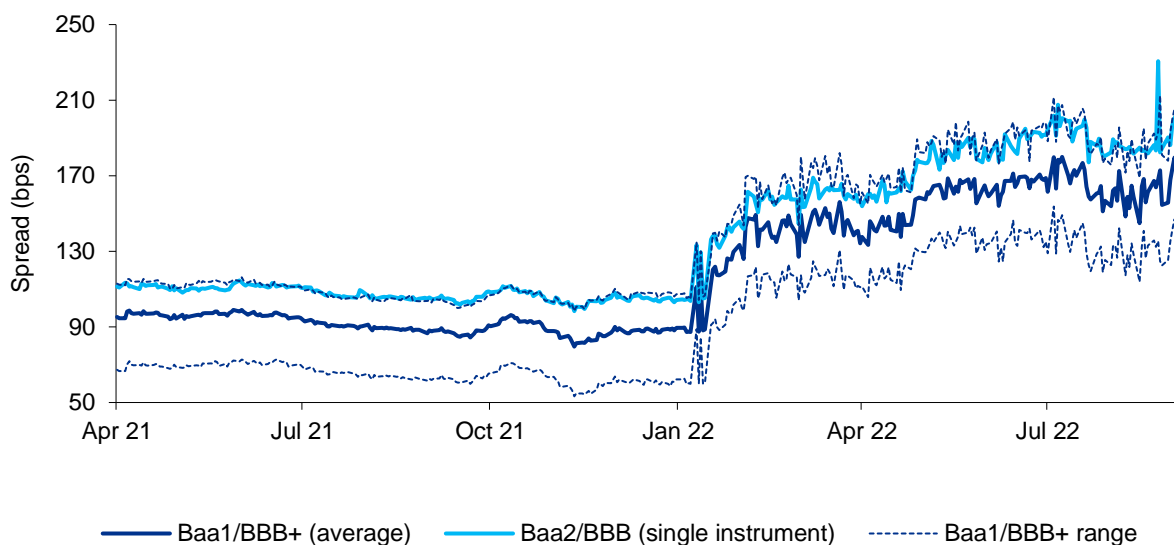
The pricing deviates meaningfully between the Baa1/BBB+ instruments despite the same credit rating level with an average range of 47bps and a peak variance of 88bps within the same notch over the period, suggesting that there is not a set cost of debt that can be expected to be achieved at a given credit rating and that individual issuer factors are a key pricing driver. We note that the Baa1/BBB+ sample is being compared to a single instrument at the Baa2/BBB level, limiting the scope to draw a robust comparison.

These movements are set out in the chart below.

### Figure 3: 10-year pricing differentials (sample)

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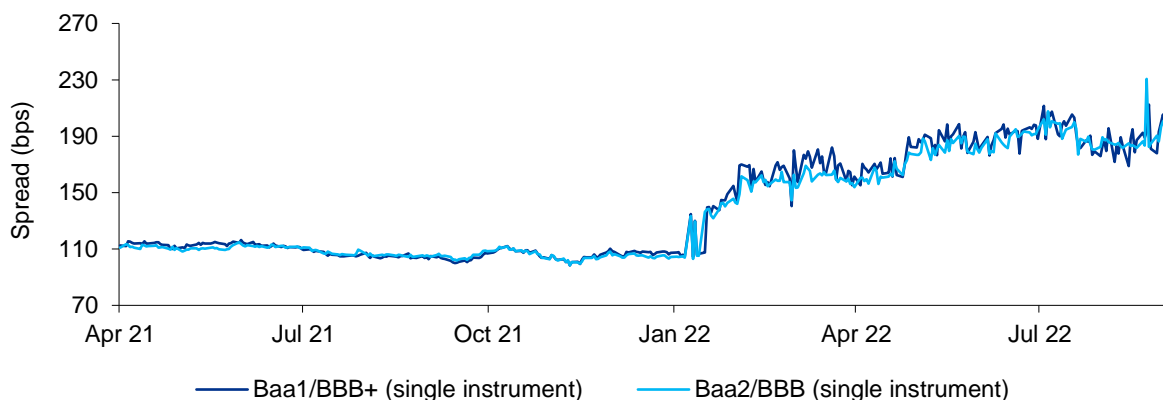
<sup>26</sup> Instrument maturities are within 2.6 years for the c.10-year index and within 1.75 years for the c.20-year index.



Source: Eikon Refinitiv

When comparing the standalone Baa2/BBB instrument to the instrument most closely aligned to it within the Baa1/BBB+ sample (based on remaining years to maturity), the pricing of the two instruments is much more closely aligned despite the one-notch difference in credit rating. The spread of the Baa2/BBB instrument ranges from being 37bps higher to 30bps lower than the Baa1/BBB+ instrument (on average, 2bps lower across the period). These movements therefore indicate that credit rating alone is not the only factor that has driven pricing. These movements are set out in the chart below.

**Figure 4: 10-year pricing differentials (individual instruments)**



Source: Eikon Refinitiv

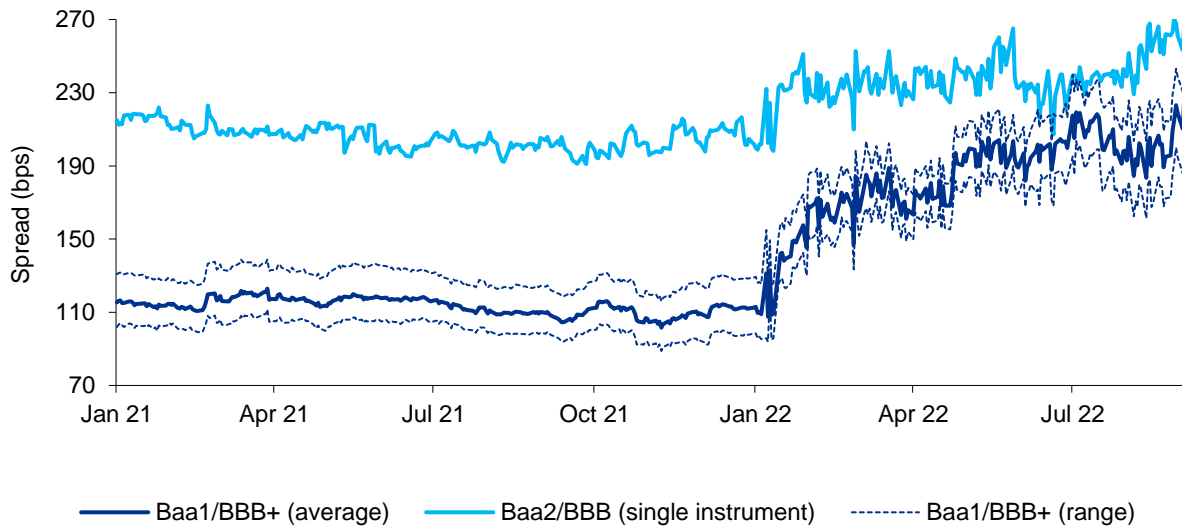
## 20-year results

For the c.20-year index, the four Baa1/BBB+ instruments have priced on average between 13bps and 108bps lower than the single Baa2/BBB instrument since early 2021 (an average of 77bps lower over the period). This implies there is a pricing benefit for a better credit rating but again, this has been inconsistent.

The range of spreads within the Baa1/BBB+ sample is significant, peaking at 59bps over the period assessed.

The Baa2/BBB instrument in this case has been issued by one of the highest geared companies in the sector and importantly a WoC (Water only Company) rather than a WaSC (Water and Sewerage Company), which may impact on pricing differentials.

**Figure 5: 20-year pricing differentials (sample)**

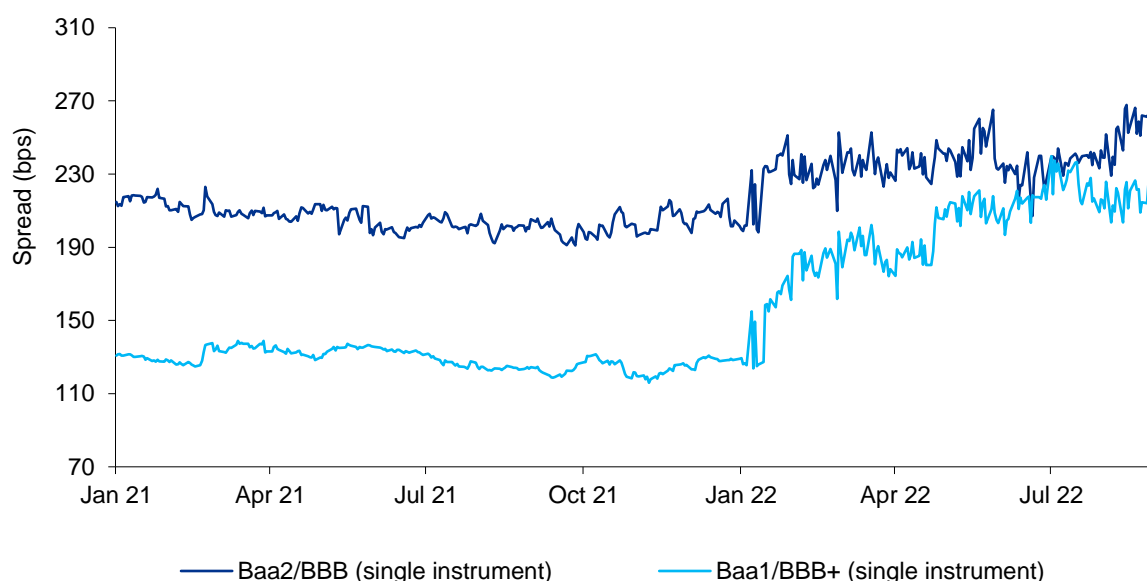


Source: Eikon Refinitiv

When comparing the standalone Baa2/BBB instrument to the instrument most closely aligned to it within the Baa1/BBB+ sample (based on remaining years to maturity), the pricing of the two instruments shows a pricing differential up to early 2022 but since then, this has substantially narrowed. This is shown in Figure 6. The spread of the Baa2/BBB instrument ranges from being 106bps higher to 11bps lower than the Baa1/BBB+ instrument (on average, 62bps higher across the period).

The Baa2/BBB instrument was issued by a WoC and is being compared to a Baa1/BBB+ instrument that was issued by a large WaSC. As a result, it is not clear that the differential observed – which is volatile over time – can be clearly ascribed to rating dynamics.

**Figure 6: 20-year pricing differentials (individual instruments)**



Source: Eikon Refinitiv

## Conclusions

Based on the analysis set out above, there is no consistent differential in the Baa1/BBB+ and Baa2/BBB spreads for 10Y tenor debt in the sector. As a result, it is not clear that there would be a material change to debt pricing as a result of Ofwat's proposals which in turn and in isolation might be passed through to customers.

There is an observed differential for 20Y tenor debt, with the upper end of the range relating to a WoC instrument, which may have other company specific factors driving the higher spread, and so the differential cannot be ascribed clearly to the rating. Pricing is not solely driven by the credit rating of an instrument, as indicated by the range of spreads between instruments even within a single credit rating notch and the fact that lower rated instruments have at times priced inside those with a better rating. It appears that market pricing reflects a more holistic view of credit risk of which credit ratings are just one element.

There are limited instruments at the Baa2/BBB level meaning it is difficult to draw robust comparisons between pricing at each credit rating level, without compromising the likeness of instruments within samples.<sup>27</sup> Because of this limit on sample size, there is insufficient data to conclude whether a pricing differential exists in the sector.

Overall, this section concludes that it is possible that there is a partial benefit to customers of the proposed regulation as an increase in the lock-up trigger could incentivise companies to

<sup>27</sup> The following limitations to the analysis should be noted:

- In building composite indices, the datasets are limited within the sector
- Whilst characteristics of instruments have been aligned to match where possible, it is not possible to do so perfectly with the mismatches in remaining life to maturity

hold a higher rating and therefore *reduce* the cost of debt. As above it is difficult to draw robust conclusions and it is difficult to show robustly a clear pricing differential relating to credit ratings. However, this would in turn in theory lead to a *higher* cost of equity as the cost of capital would (absent market frictions) remain constant.

It cannot be assumed that the cost of equity would be constant in this scenario and that the only impact of these proposals on the cost of capital would be through a reduced cost of debt. *At a minimum* it is expected that the potential reduction in the cost of debt would be offset by changes to the cost of equity in line with Modigliani Miller theory.

#### 4.2.2 The impact of credit rating events on cost of debt in the sector

Given the inability to draw a conclusion from the analysis from the Section 4.2.1, we have also looked at whether there is a meaningful and consistent impact on the pricing of instruments within the sector as a result of credit rating events.

#### Approach

We have looked at the movement in spreads of issuer instruments following a rating action by comparing the spread at close on the day before and the day of the action and also, a week after the actions. In terms of rating actions, we have included a sample of (i) downgrades; (ii) upgrades, and; (iii) movements in outlook. For each action, we have taken a sample of the issuer's instruments.

#### Results

The data does not support the assumption that an improvement in credit rating would lead to a material improvement in pricing within the sector since:

- 1) Movements in spreads immediately and in the week following a rating action appear to be minimal;
- 2) In some cases, spreads have moved in the opposite direction to what would otherwise be expected e.g. a reduction in spreads following a downgrade; and,
- 3) When compared to the BBB index, the water companies appear to have been insulated from wider market movements in some instances and in others, this has not been the case.

The average movements in spreads of the sample of each issuer's instruments are summarised below. This has been summarised for two time periods, being between the end of the day before the announcement vs: (i) the end of the following day and (ii) the end of the day a week later. Movements for both have then been compared to the movement in spreads of the iBoxx non-financials BBB index.

**Table 10: Sample of issuer's instruments**

Issuer	Rating action	Date of rating action	Rating before action	Rating after action	Average movement (bps) (one day)	Net movement vs BBB index (one day)	Average movement (bps) (one week)	Net movement vs BBB index (one week)
Southern Water	Downgrade and on	26-Jun-19	Baa1	Baa2 (negative)	-2.1	-1.5	+0.4	+2.9

	negative outlook							
Southern Water	Downgrade	27-Sep-19	Baa2	Baa3	-0.7	-2.0	-1.1	-9.1
Thames Water	Downgrade of Class A and Class B debt	24-Jul-17	A- (Class A) and BBB (Class B)	BBB+ (Class A) and BBB- (Class B)	+1.0	+1.3	+4.7	+5.7
Thames Water	Downgraded	16-Sep-22	BBB+ (Class A) and BBB- (Class B)	BBB (Class A) and BB+ (Class B)	-4.1	-4.2	+18.9	+20.5
Affinity Water	Placed on negative outlook	22-May-18	Baa1	Baa1 (negative)	+2.4	+1.3	+3.5	-11.9
Anglian Water	Placed on negative outlook	22-May-18	Baa1	Baa1 (negative)	+1.4	+0.3	+3.7	-11.7
Thames Water	Placed on negative outlook	22-May-18	Baa1	Baa1 (negative)	+2.4	+1.3	+5.4	-10.0
Wessex Water	Placed on negative outlook	22-May-18	A3	A3 (negative)	+1.7	+0.6	+1.8	-13.6
Northumbrian Water	Placed on negative outlook	20-Dec-19	Baa1	Baa1 (negative)	0.0	+0.2	-2.3	-1.6
Anglian Water	Placed on stable outlook	30-Mar-21	Baa1 (negative)	Baa1 (stable)	+0.6	-0.0	-1.3	+2.5
Anglian Water	Upgraded	17-Jun-21	Baa1	A3	-2.1	-2.6	-3.4	-2.4

Source: Moody's, S&P, Eikon Refinitiv

The range of movements from the day before to one week later (before comparing to the BBB index) can be summarised as follows:

- For downgrades: -1.1bps to +18.9bps<sup>28</sup>
- For negative outlook: -2.3bps to +5.4bps
- For stable outlook: -1.3bps
- For upgrades: -3.4bps

When reviewing these movements relative to the BBB index, there is no particular trend which limits the conclusion that can be drawn from the data. In respect of the movement to negative outlook in May 2018 for four of the companies, it appears that the water companies have been insulated from broader market movements. In contrast, it appears that Thames

<sup>28</sup> The 18.9bps movement occurred on Friday 23<sup>rd</sup> September when there was substantial market volatility as a result of UK government budgetary announcements. Similar movements in spread were noted on other bonds within the sector.

Water and other sector issuers were less insulated from recent market volatility around the time of the Bank of England interest rate rise and mini-budget announcement when compared to the BBB index.

## Conclusions

There is a minimal movement in spreads in either the immediate period or the week following a rating action for the sample above, particularly compared to the magnitude of potential movements quoted by Ofwat being a 10-30bps increase from Baa1/BBB+ to Baa2/BBB and 40-55bps from Baa2/BBB to Baa3/BBB- (based on credit rating agency reports). The average movements across the sample indicate that generally, there is a small tightening in pricing on upgrade and a small widening on negative outlooks or downgrades. When assessing over a longer period of a week and comparing to the BBB index in order to isolate movements associated with the issuer from those in the market, there is no particular trend.

The data does not therefore support the assumption that an improvement in credit rating would lead to a material improvement in pricing.<sup>29</sup> Even if it is assumed that there are material deadweight costs and negative externalities associated with bankruptcy, and the level of financial risk and probability of default prior to Ofwat's proposed regulation is inefficient (neither of which is supported by evidence or any theory of harm), there would be limited or no benefit to customers because the cost of debt would unlikely reduce substantively.

### 4.2.3 Translating cost of debt differentials into cost of debt allowances

This section sets out how the impact of a change in credit rating for any given company will impact the overall cost of debt allowance for the sector. This is relevant as where a change in cost of debt pricing achieved by any given company does not translate into the cost of debt allowance, it would not impact on customer bills and hence provide no customer benefit.

Evidence would suggest that a movement in credit rating would not necessarily result in a pricing impact for any given instrument; the sample of data above suggests that where there

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<sup>29</sup> There are limited examples of upgrades and downgrades in the sector that we have deemed to be appropriate for the purpose of this analysis

- For downgrades, the majority of these that have occurred recently in the sector occurred around the time of the Covid-19 pandemic. It is likely therefore that movements in spreads at the time were skewed by this so we feel it is inappropriate to attempt to draw a conclusion from actions taken around this time. The impact of these downgrades has not therefore been considered in this analysis
- For upgrades, there are a limited number of such events recently within the sector
- There is the potential that markets react further in advance or after a rating action than the period assessed
- We cannot be certain what is driving the movement in spreads and whether it is a rating action or other factors, and whether these are specific to the issuer or not
- The sample of rating actions are not like-for-like across issuers, comprising different forms of actions and in respect of different credit rating levels

have been changes to credit ratings and outlooks, the movement is minimal. This analysis therefore considers Ofwat's estimate of the impact of an upgrade on the cost of debt.

This impact will be further diluted by Ofwat's approach to setting the cost of debt allowance. Ofwat's approach is based on an allowance for new debt (to be raised in the price control) and embedded debt (which was raised prior to the start of the price control).

### **Impact on the cost of new debt allowance**

Ofwat's approach for setting the cost of new debt allowance is based on a benchmark index (iBoxx GBP 10+ A/BBB-rated non-financials index). Under this approach the credit rating and actual cost of debt for each company in the sector has no impact on the cost of new debt allowance.

The increase in credit rating for a company will have no impact on the costs to customers through the cost of new debt allowance.

### **Impact on the cost of embedded debt allowance**

The cost of embedded debt allowance is calculated using the sector average by taking the average cost of debt across the sector at the start of the price control. How a change in credit rating may impact the sector average depends on the following:

- Whether the company is included in the calculation of the sector average and if a change in the rating of a given company would change the sector average cost of debt used to estimate the cost of embedded debt allowance.
- The averaging approach used to calculate the sector average for the cost of embedded debt allowance.
- Composition of the portfolio and dynamics over time.

#### *Whether the company is included in the calculation of the sector average and if a change in the rating of a given company would change the sector average*

Ofwat's cost of embedded debt allowance methodology is not yet clear for PR24. However, the CMA calculated the sector average using a subset of the sector which included all Water and Sewerage Companies (WaSCs) and the larger Water only Companies (WoCs).

If the company upgraded is one of the four companies not included in the sector average then the credit rating upgrade would have no impact on the cost of debt allowance.

#### *The averaging approach used to calculate the sector average for the cost of embedded debt allowance.*

At PR19, the CMA calculated the cost of embedded debt allowance based on the median cost of debt for the 13 WaSCs and large WoCs. The allowance would only change if (1) the median company cost of debt changes or (2) the cost of debt of a company above the median decreased below the median company due to the credit rating change.

#### *Composition of the portfolio and dynamics over time*

Any increase in the cost of debt would also take twenty five years to be fully reflected in the cost of embedded debt, based on Ofwat's assumption that there is 20% new debt in each AMP.

The illustrative impacts for debt raised at a higher rating in AMP7 are as follows:

- AMP7: 0%



- AMP8: 25%
- AMP9: 50%
- AMP10: 75%
- AMP11: 100%

### Estimated impact on the cost of capital based analysis of credit spreads and Ofwat’s assessment

Ofwat draws on analysis from Moody’s which states that spreads could decrease by 10-18bps (14bps on average) when moving from a Baa2 to Baa1 rating<sup>30</sup>. To calculate the impact of one company being upgraded on the allowed cost of capital the following steps are applied:

**Table 11: Impact of one company rating upgrade on the WACC**

Step	Methodology	Ofwat’s estimate
<b>Impact of downgrade on cost of debt</b>	Based on Ofwat consultation and analysis above. This estimate is likely to overstate the impact of the credit rating differential. Further analysis of pricing differential is set out in the analysis above.	-14bps
<b>Step 1: impact on the cost of embedded debt</b>	Multiply by 4/17 (estimate of number of companies which would change sector average calculation, as they are within 14bps above the sector average). If the company is not one of the four then the impact would be zero (see methodology above).	-3bps
<b>Step 2: average impact over time on cost of embedded debt</b>	Multiply by 50% (average impact on cost of embedded debt over the five AMPs).	-2bps
<b>Step 3: impact on cost of debt</b>	Multiply by 83% (proportion of embedded debt).	-1bps
<b>Step 4: impact on WACC</b>	Multiply by 60% (notional gearing).	-1bps

Source: KPMG analysis

### Conclusions

A change in the credit rating of a company in the sector can only impact the cost of embedded debt allowance, which is set based on the sector average cost of debt and will not alter the cost of new debt allowance, which is set based on an index approach.

The change in the rating for a given company in the sector by one notch from Baa1 to Baa2 will have a minimal impact on the overall allowed cost of capital over the next five price controls. Ofwat’s proposed regulation, therefore, provides limited or no benefit to customers from the cost of debt perspective, because the cost of debt reflected in allowances would unlikely reduce substantively.

Based on Ofwat’s assessment of the impact of a change in rating on the cost of debt, and the analysis of how this impact could translate into customer bills, the estimated potential benefit of a change in credit rating on the cost of capital is in the range of 0-1bps. This potential reduction, however, would be offset by changes to cost of equity. In theory, the

<sup>30</sup> Ofwat (2022), Consultation on proposed modifications to strengthen the ring-fencing licence conditions of the largest undertakers, page 15

potential reduction in the cost of debt would be offset by an increase to the cost of equity, with no impact on the overall cost of capital. The theory only holds true if there is a net neutral effect from the risk transfers between debt and equity, with the overall asset risk exposure unchanged.

In case of the Ofwat's proposals, while the creditor risk exposure would marginally go down, as demonstrated in the sections 4.1 and 4.2, the risk exposure of equity holders would increase dramatically due to uncertainty around the timing and control over the dividend distribution. The impact of the proposals on the cost of equity is considered in detail in Section 5.

# 5 Impact assessment – analysis of the potential cost of the proposals to customers

## 5.1 Introduction

Ofwat states that the proposals are positive for equity investors citing Moody's view that a '*stronger regulatory ring-fence may benefit operating companies*'<sup>31</sup>. This section of the report also considers whether the proposed financial resilience licence modifications may have associated costs which would need to be priced in. Specifically, the report considers whether any changes which may reduce certainty of future dividend payments might result in an increased cost of capital and hence an increased cost for customers.

This section considers the importance of dividend payments for investors in the UK water sector and assesses different methodologies which could be used to price the impact of the change in risk exposure on the cost of equity. This section is structured as follows:

- **Section 5.2** considers whether dividends and restrictions on dividends for utilities matter, drawing on academic studies of the relevance of dividends, agency theory and dividend signalling analysis.
- **Section 5.3** summarises how changes in equity claims can impact the cost of equity, drawing on analysis of preference shares.
- **Section 5.4** estimates the impact of changing the duration of future cash flows, and therefore investors' payback period, on the cost of equity.
- **Section 5.5** includes a case study based on regulation of the banking sector before and after the financial crisis, the impact on the cost of capital in the sector and parallels with Ofwat's proposed financial resilience licence modifications.
- **Section 5.6** summarises the incentives for companies and investors relating to Ofwat's proposals.

## 5.2 Relevance of dividend policy for the value of utility firms

In the context of Ofwat's proposals, there will be a benefit or cost to customers if dividends matter in the water sector. The relevance, or irrelevance of dividends, has been a subject of extensive debate among finance academics. The enduring nature and extensive range of the debate has spawned a vast amount of literature, including the seminal theory on dividends i.e. the Modigliani and Miller's ('MM') Dividend Irrelevance Hypothesis ('DIH').

MM (1961)<sup>32</sup> showed that, in perfect capital markets,<sup>33</sup> a firm's payout policy does not affect its value. The equity value of a firm is the present value of cash flows to equity holders, and so it does not matter whether those cash flows are paid out to equity holders in the form of

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<sup>31</sup> Ofwat (2022), Consultation on proposed modifications to strengthen the ring-fencing licence conditions of the largest undertakers, page 19

<sup>32</sup> M. H. Miller and F. Modigliani (1961), "Dividend Policy, Growth and the Valuation of Shares," Journal of Business 34, pp. 411–433.

<sup>33</sup> Perfect capital markets involve no taxes, no transaction costs, no agency problems, symmetric information, and price-taking behaviour for all market participants. Furthermore, according to MM the dividend policy should be considered after holding firm's assets, investments and borrowing policy fixed.

dividends or retained in the firm (to be reinvested on behalf of equity holders, or to be paid out to equity holders later). Dividend policy only changes the timing of payouts to shareholders; it does not change their value.

However, in the real world, capital markets are imperfect. These imperfections mean that there are several reasons why dividend policy may be relevant:

- *Taxes.* Dividends are taxed at higher rates than capital gains. This consideration tends to favour lower dividend payout rates.
- *Transaction costs.* Dividends increase the likelihood that companies need to raise capital in the future, which incurs transaction costs. This consideration tends to favour lower dividend payout ratios.
- *Agency costs.* Agency costs arise when managers have different interests from investors. For example, they obtain more prestige from running a larger firm, and thus may overinvest. If managers would waste free cash on negative-NPV projects, then paying out this cash in the form of dividends would increase firm value. Not only do higher dividends reduce the amount of cash that might be wasted this year, but they also require the firm to pay higher dividends in future years (since cutting the dividend will cause the stock price to fall significantly), thus curbing wasteful expenditure in future years. This consideration tends to favour higher dividend payout ratios.
- *Information asymmetry.* If managers have more information about firm prospects than investors, they can signal positive future prospects by paying a dividend. This signal is credible because only companies with genuinely positive prospects will pay the dividend. A company with poor prospects will not do so, since it knows that it will be unable to sustain the dividend; as we will show, cutting a dividend leads to a significantly negative stock price reaction. This consideration tends to favour higher dividend payout ratios.<sup>34</sup>

Empirical evidence supports the idea that dividends increase firm value by reducing agency costs and information asymmetry. As a result, Ofwat's proposed restrictions on dividends may seriously harm the value of utility companies. The next sections discuss these negative consequences in greater detail.

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<sup>34</sup> Miller and Modigliani recognise the possibility of signalling but argue that it does not change the firm's fundamental value (the present value of future cash flows) but the market's perception of firm value (the stock price). However, stock prices can feed through to fundamental value, e.g. by affecting the terms at which the firm can raise new equity.

## 5.2.1 Agency costs

### Overview

The MM theory assumes a perfect capital market and that there is no conflict of interests between management (the agent) and shareholders (the principal). However, in practice principal and agent interests may not always align. For example, managers may not exert the effort required to cut costs or improve efficiency or may waste the firm's cash on negative-NPV projects to grow the firm. These agency costs are particularly severe for firms with high free cash flow, as this provides managers with more cash to waste, and more leeway to act inefficiently. Dividends mitigate these agency costs by reducing the free cash flow available to management.

### Estimated cost of capital impact

The introduction of regulation to restrict dividend payments may increase agency costs as cash held in the business is used for negative-NPV projects. Ofwat's proposed dividend restrictions could *increase* the cash available to management and hence *increase* agency costs and the required cost of capital.

### Summary of academic literature on agency costs

The academic literature comprises of both theoretical research, arguing that dividends can attenuate agency costs, and empirical research demonstrating that they do so.

#### Theory

- Jensen (1986)<sup>35</sup> pointed out that managers can use free cash flow to pursue their own objectives, even if these are not shareholders' objectives. Dividends reduce this free cash and thus mitigate agency costs: *"The interests and incentives of managers and shareholders conflict over such issues as the optimal size of the firm and the payment of cash to shareholders. These conflicts are especially severe in firms with large free cash flows (...) Payouts to shareholders reduce the resources under managers' control, thereby reducing managers' power"*.
- Easterbrook (1984)<sup>36</sup> argued that, if firms pay dividends, they will need to raise capital to finance major new investments. The providers of that capital will scrutinise these new investments to ensure they are truly NPV-positive.

#### Empirics

- DeAngelo et al. (2009)<sup>37</sup> concluded that dividend payments can reduce agency costs relating to management's behavioural biases, including over-confidence and mistakes *"dividends increase stockholder wealth because retained cash yields uncertain future cash flows so that investors would be better off with cash in hand than with the hope that risky corporate reinvestment would pay off"*.

<sup>35</sup> Jensen, Michael C., 1986, Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers, American Economic Review 76, 323-329.

<sup>36</sup> Easterbrook, Frank H., 1984, Two Agency-Cost Explanations of Dividends, American Economic Review 74, 650-659.

<sup>37</sup> DeAngelo, Harry and DeAngelo, Linda and Skinner, Douglas J., Corporate Payout Policy (2009). Foundations and Trends in Finance, Vol. 3, Nos. 2-3, pp. 95-287.

- La Porta et al. (2000)<sup>38</sup> performed a comprehensive study of 4,000 companies across over 30 countries to test the agency cost hypothesis. The study found that dividends are used to reduce conflicts between shareholders and management and that the agency approach is highly relevant to an understanding of corporate dividend policies, *“by paying dividends, insiders return corporate earnings to investors and hence are no longer capable of using these earnings to benefit themselves. Dividends (a bird in the hand) are better than retained earnings (a bird in the bush) because the latter might never materialise as future dividends (can fly away).”*

Academic studies indicate that inability to direct payment of dividends, and the resulting increase in cash available to management, does not necessarily improve company performance and may result in agency costs and hence a reduction in equity value.

### Agency costs and potential implications for Ofwat’s proposals

Ofwat’s proposals are designed to achieve a benefit for customers by ensuring that capital cannot be allocated to dividends under certain credit rating and service delivery scenarios.

It does not necessarily follow that an increase in cash available will translate to improved operational performance and customer service levels. Agency theory dictates that dividends, i.e. non-retention of cash in the business, provide an incentive for the agent to reduce the costs associated with the principal/agent relationship. However, when faced with a dividend restriction, management effectively have four choices of how to allocate excess cash which would otherwise have been distributed:

- Additional expenditure.
- Debt repayment.
- Cash held on the balance sheet.
- Buy back shares.

For each of the potential uses of cash, the benefit to consumers and impact on investors should be considered.

#### *Outcome 1: additional expenditure*

Management might use the additional cash available to spend on operating expenditure to run the network, or capital expenditure to maintain or improve the network. On the face of it, this might seem an attractive consequence of restricting dividends. However, executives typically only increase the dividend once all value-creating expenditures have been made. In other words, they *first* undertake all positive-NPV operating and capital expenditures, and *then* only increase the dividend if they have exhausted all profitable investment opportunities. If management wishes to increase the dividend, it is because they have already taken all positive-NPV investments. Thus, any additional investments prompted by dividend restrictions are likely to be value-destroying and could be very inefficient from the customer as well as the investor perspective.

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<sup>38</sup> La Porta, Rafael, Florenico Lopez-De-Silanes, Andrei Shleifer, and Robert W. Vishny, 2000, Agency Problems and Dividend Policies Around the World, *Journal of Finance* 55, 1-33.

Simply put: dividend restrictions do not enable positive-NPV investments, since they will have been undertaken anyway.

### *Outcome 2: debt repayment*

The company could use excess cash to repay debt and reduce levels of gearing. On the face of it, this might seem an attractive consequence of restricting dividends, if lower gearing allows for more investment in customer service levels. However, there are two flaws in the argument.

First, if debt repayment were a positive-NPV use of cash (e.g. due to high interest rates), management would have paid down debt anyway, even without the dividend restriction. Similar to the above argument, management will exhaust all positive-NPV uses of cash (operating expenditure, capital expenditure, and debt paydown) first and then consider whether to use any leftover cash to increase the dividend. Restricting dividends is not necessary to facilitate debt paydown as companies can always pay down debt anyway.

Second, there is not a clear causal relationship between gearing and customer service levels or operational performance. Regulation of capital structures resulting in recapitalisation and the impact on the cost of capital is considered further in section 5.5.

Even if a correlation between high gearing and poor service performance were found, a correlation would not imply causation. There could be *omitted variables* that cause both, such as poor management, which could lead to both high gearing (through making a company less profitable and thus unable to pay back debt) and poor service performance. In this case, regulating dividends to reduce gearing would not improve customer service performance since the underlying cause is bad management. Alternatively, it could be that there is *reverse causality* – poor service performance might lead to fines and penalties, which in turn exerts pressure on financial resilience.

More evidence is clearly required in relation to (1) any correlation between customer service levels and financial resilience; and (2) whether this relationship is causal or driven by omitted variables or reverse causality.

### *Outcome 3: cash held on the balance sheet*

This outcome assumes that management does not use the cash available from non-payment of dividends and the cash is held in the company.

The increased cash available would increase the buffer available for the management of downside shocks which would improve financial resilience of the company. However, following earlier arguments, if holding cash were positive-NPV, companies would choose to do this anyway, even if the absence of dividend restrictions. Indeed, there is substantial evidence that companies hold significant amounts of precautionary cash.<sup>39</sup> Forcing companies to hold additional cash, beyond what they would choose to otherwise, through dividend restrictions, destroys value as £1 of cash on the balance sheet is typically valued at significantly less than £1.

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<sup>39</sup> See, for example, Bates, Thomas W., Kathleen M. Kahle and René M. Stulz (2009): “Why Do U.S. Firms Hold So Much More Cash Than They Used To?” *Journal of Finance* 64, 1985-2021.



Dittmar Mahrt-Smith found that “governance has a substantial impact on value through its impact on cash: \$1.00 of cash in a poorly governed firm is valued at only \$0.42 to \$0.88”<sup>40</sup>. Faulkender Wang also studied the value of cash, “for the “cash cow” firms, we find a marginal value of cash of only 53 cents”<sup>41</sup>. Since water companies are old economy firms with few growth opportunities they can be defined as cash cows.

In addition to cash retained on the balance sheet being undesirable for shareholders, it is also undesirable for society as the cash cannot be invested in faster-growing sectors of the economy.

#### *Outcome 4: shares bought back.*

This outcome assumes that management does not use the cash available from non-payment of dividends and the cash is used to buy back shares.

The repurchasing of shares is unlikely to have any impact on the level of operational performance and customer service provided by the business and therefore does not achieve the desired effects of Ofwat’s proposals.

### **Conclusions**

If a company chooses to pay out dividends, it is because it has exhausted all positive-NPV opportunities to invest, repay debt and hold precautionary cash. As a result, paying out dividends is the best use of cash (having exhausted all those opportunities). Restricting dividends (as implied by Ofwat’s proposals) and forcing a company to allocate the cash to one of these four alternative uses is likely to be value-destroying and inefficient for the company and customers – since the company wished to pay out the dividend, it is because this was a better use than all of the alternatives. Dividends act as a cash sweep to avoid agency costs arising from the four alternative uses; Ofwat’s proposals *increase* agency costs and expose customers to *inefficient outcomes*.

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<sup>40</sup> Dittmar, Mahrt-Smith (2005), Corporate governance and the value of cash holdings, Journal of Financial Economics 83 (2007), page 599

<sup>41</sup> Faulkender Wang (2006), Corporate Financial Policy and the Value of Cash, THE JOURNAL OF FINANCE VOL. LXI, NO. 4, page 1987.

## 5.2.2 Dividend signalling

### Overview

The analysis of dividend signalling considers how a lower than expected dividend payment might impact on equity value. Ofwat's proposals may result in divergence between market expectations of dividends and actual dividends paid, therefore dividend signalling analysis, which considers the impact of lower than expected dividend payments, may be a good proxy for the impact of Ofwat's proposals on value.

### Estimated cost of capital impact

The observed impact of differences between the announced and expected dividends for UU and SVT was analysed, which resulted in an estimate of **18-22bps** on the cost of capital. The cost of Ofwat's proposals might be expected to be *higher* than is implied by analysis of dividends for UU and SVT, given these two companies have historically stable dividend payments.

The MM theory assumes symmetric information between managers and investors. In practice, managers have superior information about their firms' prospects. Managers with positive information will wish to signal this to the market to command a higher valuation. However, the signal must be *credible* – it must be something that managers with negative information will not wish to replicate. Dividends represent a credible signal, since managers with negative information will know that they are unable to maintain the dividend. They will need to subsequently cut it, leading to a significant stock price drop.

### Summary of academic literature on agency costs

The academic literature comprises of both theoretical research, arguing that dividends can signal positive information, and empirical research demonstrating that they do so.

#### Theory

- Ross (1977)<sup>42</sup> showed that firms can use higher leverage to credibly signal positive information. Firms with negative information will not mimic the signal, since they know that they may be unable to pay off the higher debt. While Ross focused on leverage as a signal, he notes in footnote 13 that dividends could also be a signal. In addition, paying dividends is one way to increase leverage.
- Bhattacharya (1979) explicitly models dividends and shows that they can be used to credibly signal positive information. John and Williams (1985) and Miller and Rock (1985) are also models featuring dividends as positive signals.<sup>43</sup>

#### Empirics

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<sup>42</sup> Ross, Stephen A. 1977. The Determination of Financial Structure: The Incentive-Signalling Approach. The Bell Journal of Economics 8: 23

<sup>43</sup> Bhattacharya, Sudipto, 1979, Imperfect Information, Dividend Policy, and "the Bird in the Hand" Fallacy, Bell Journal of Economics 10, 259-270. John, Kose, and Joseph Williams, 1985, Dividends, Dillution, and Taxes: A Signalling Equilibrium, Journal of Finance 40, 1053-1070. Miller, Merton H., and Kevin Rock, 1985, Dividend Policy Under Asymmetric Information, Journal of Finance 40, 1031-1051.

- Ham et al (2020)<sup>44</sup> found the average decrease has an announcement window return of **3.3%**, compared to 0.9% for the average increase, suggesting a greater reaction to dividend decreases.
- Aharony and Swary (1980)<sup>45</sup> found that dividend decreases are associated with the stock price falling by **3.76%**. A later study by Jagannathan, Stephens and Weisbach (1999) indicates that the reduction in stock price after a decrease in dividend is 5-6%. *“The positive association between the dividend change and announcement returns suggests that investors update their valuation of the firm in response to the dividend change. Investors update their assessment of valuation in response to dividend changes, suggesting they infer new information from these corporate actions. In this paper, we provide robust evidence that dividend changes precede a persistent shock to future cash flows, consistent with dividend changes conveying to investors the firm is moving to a new and persistent level of future earnings”*.<sup>46</sup>

There is extensive empirical research investigating how stock prices respond to the announcement of dividend changes and the extent to which dividends contain informational content regarding future earnings. The findings of this research for the overall market (i.e. across a broad range of sectors) is mixed whereas analysis of utilities data shows that, in this sector, dividends do matter.

- Mondher (2011) is a recent example of study of why capital structure is not irrelevant in some circumstances.<sup>47</sup> It gives an empirical analysis using US Electric Utilities and oil companies showing that the relationships between leverage and firm value are significantly affected by the firm’s payout ratios, with statistically significant results.
- Dhanani (2010)<sup>48</sup> uses a survey approach for UK companies to examine the relevance of the various theories of dividend policy that have been put forward since the original MM dividend irrelevance theorem. In general, his results support theories that dividends are important because they *provide signals on value to investors* i.e. a dividend increase conveys indirect information that management is positive about future value, while a dividend cut conveys the reverse. Dividends are found to be more important in utilities than in other sectors. *“Industry analysis provides clear evidence that companies in the financial and utility sectors support the dividend signalling hypothesis more than their counterparts”*.
- The negative reactions to dividend cuts by utilities, including water companies, is well documented in corporate finance empirical studies. Investors react strongly to announcements of dividend cuts. For example, Impson, in an empirical study of US firm share price responses to dividend announcements, says: *“The evidence from this study also documents significantly stronger negative market responses to dividend-decrease announcements by public utilities compared with unregulated firms, even when yield, price-standardized dividend change firm size and Tobin’s Q differences are considered. This evidence is consistent with all of the hypothesized*

<sup>44</sup> Ham, Kaplan and Leary (2020), Do dividends convey information about future earnings?, Journal of Financial Economics 136, page 551.

<sup>45</sup> Aharony and Swary,(1980), Quarterly Dividend and Earnings Announcements and Stockholders' Returns: An Empirical Analysis, The Journal of Finance , Mar., 1980, Vol. 35, No. 1, page 8

<sup>46</sup> Ibid, page 551

<sup>47</sup> Mondher, K. A re-examination of the MM Capital Structure Irrelevance Theorem: A Partial payout approach. International Journal of Business and Management, Vol. 6, No. 10: Oct 2011

<sup>48</sup> Dhanani, a. Corporate Dividend Policy: The Views of British Financial Managers, Journal of Business and Financial accounting, 32 (7) and (8), September/ October 2005.

*effects: investor surprise at the revelation of insider expectations that the regulatory process may not yield a fair return, disappointment of a clientele who prefer high yields, objection to overinvestment in unsupported projects and the possibility of a rise in agency costs.”<sup>49</sup>*

- There are numerous studies that show investors in utilities expect to receive a proportion of return in the form of dividends. Barker (1999) provides both survey and market-based evidence that analysts’ preferences between valuation models vary systematically according to stock market sector.<sup>50</sup> *“On the basis of this evidence, it is hypothesised that services, industrials and consumer goods shares are PE-valued, and that financials and utilities shares are ‘yield valued’... For yield shares, dividends are of very significantly greater value-relevance than retained earnings.”*

Dividends signal company performance as investors do not always have a clear view of the circumstances of the firm and its performance.

Typically a stable dividend is paid in the utilities sector. As a result, for water companies dividend signalling is likely to be about information. In particular, in the context of Ofwat’s proposals, this could be information about *regulatory and rating agency perception of the firm’s performance* and the company’s prospects for changing under-performance.

In summary, the uncertainty around future cash flows to equity and restriction of dividend payments implied by Ofwat’s proposals will have an impact on value in the water sector and result in an increased return required by equity investors. Dividend signalling may have an increased impact on value under Ofwat’s proposals due to a reduction in the certainty of future dividend payments and the subjectivity of Ofwat’s dividend policy licence wording.

### **Quantitative assessment on how negative dividend announcements would impact UU and SVT’s stock prices using dividend signalling theory**

Dividend signalling theory suggests that there is a strong relationship between the level of dividend declared relative to market expectations and share price performance on the announcement date. There is uncertainty regarding how Ofwat might apply the dividend policy licence wording and rating agencies might apply judgments in relation to credit quality – as a result it is not clear how performance might translate into dividend payments under Ofwat’s proposals.

This section carries out an assessment to quantify the correlation for the UK water sector using UU and SVT’s historical dividend announcements data from 2014 to date and looking at<sup>51</sup>:

- The level of dividend declared relative to market expectations; and
- Share price performance on the announcement date.

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<sup>49</sup> Impson, M., Market Reaction to Dividend Decrease Announcements: Public Utilities vs. Unregulated Industrial Firms. *Journal of Financial Research*, Fall 1997.

<sup>50</sup> Barker, R., Survey and market-based evidence of industry-dependence in analysts’ preferences between the dividend yield and price-earnings ratio valuation models. *Journal of Business Finance and Accounting*, April / May 1999.

<sup>51</sup> For UU and SVT, 2014 is the earliest year that market’s expectation on dividend is recorded on both Bloomberg and Eikon.

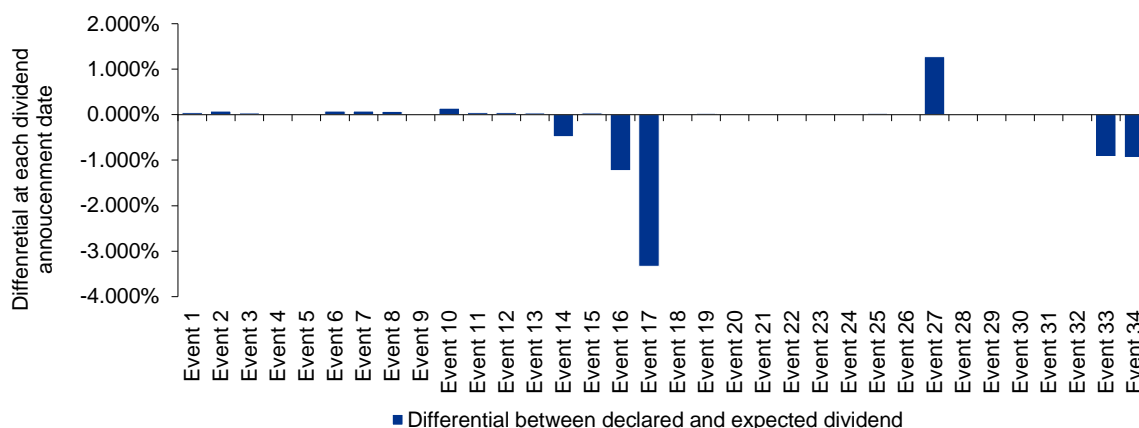
## Variance between dividend declared and market expectations:

The quantification of this component is achieved by taking the differential between declared and expected dividends, where:

- **Announcement date and the amount of dividends declared:** are taken from UU and SVT’s announcements on London Stock Exchange (LSE).
- **Market dividend expectation:** are taken from Bloomberg before the announcement date, which is calculated through seven factors including: Company Guidance, DVD Health Score, Industry Analysis, Put-Call Parity, Trend Tool, Regression Analysis and Analysts’ valuation models.

Figure 7 below presents the differentials on all of UU and SVT’s dividend announcements from 2014, which quantifies the difference between the declared and forecast dividend. The observed differential from the UU and SVT data shows that if the declared dividend is 3.4% below the expected dividend there is material impact on share price. Full statistical distribution is presented in Appendix 2: Dividend signalling – Detailed calculation.

**Figure 7: UU and SVT’s differential between declared and expected dividend for all UU and SVT’s dividend announcement events from 2014**



Source: Bloomberg, Eikon, KPMG analysis

## Share price performance on the announcement date:

The quantification of this component is achieved by calculating the ‘excess return’ of UU and SVT’s stock price on the announcement date. The ‘excess return’ is the unanticipated profit or loss produced from the securities and measures the market reaction to dividend announcements.

Effectively on announcement date, this ‘excess return’ is the difference between:

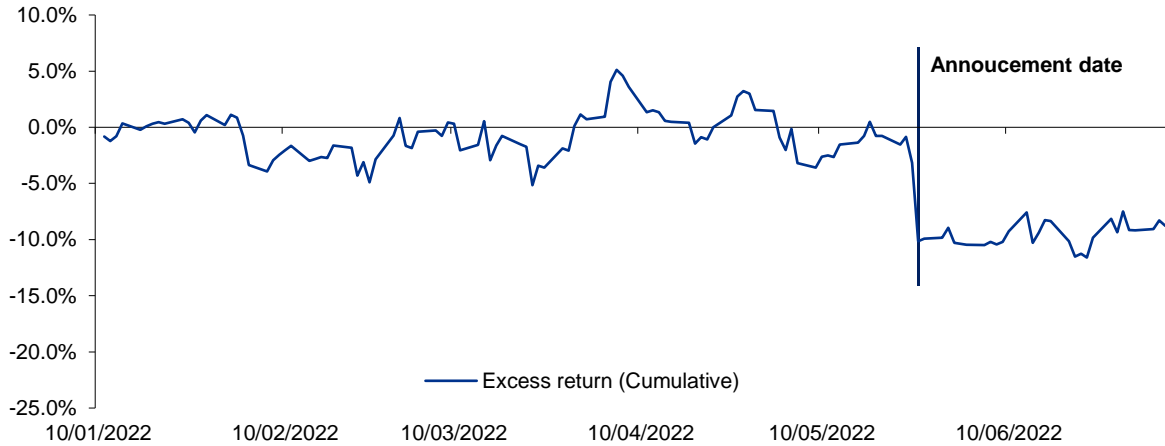
- **Expected return:** the expected level of the stock price in absence of the dividend announcements<sup>52</sup>; and

<sup>52</sup> The expected return is derived by Capital Asset Pricing Model (CAPM) using historical stock returns prior to announcement dates.

- **Outturn performance of the stock:** observed as the movement in the stock price, which includes both expected return and the market's reaction to the announcement.

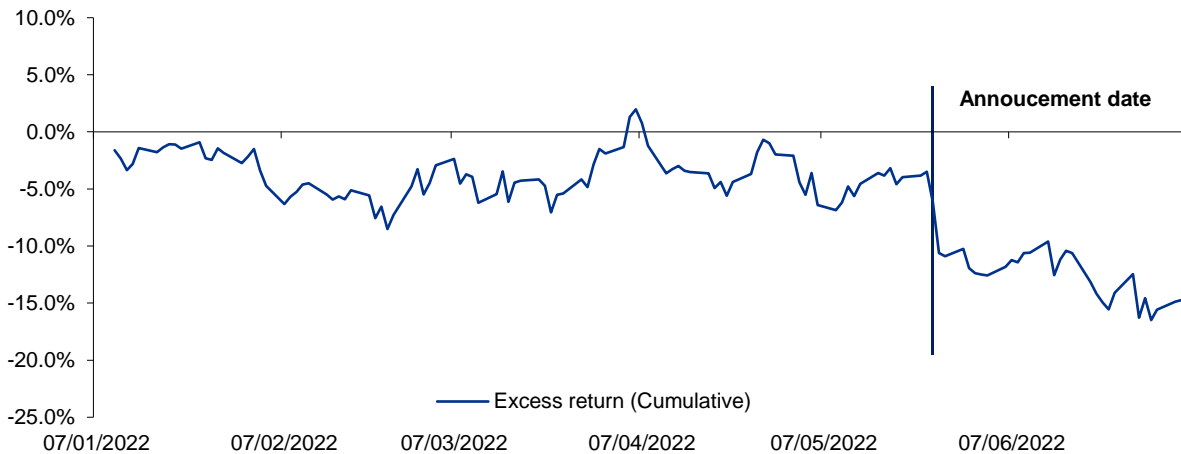
The differential between outturn and expected returns provides a quantitative indication of how the market reacted to the dividend announcements. For example, the two graphs below illustrate 'excess return' related to recent negative dividend announcements from UU (on 26th May 22) and SVT (on 25th May 22)<sup>53</sup>, implying 'excess return' of -7.216% and -2.775% respectively.

**Figure 8: Market reaction to UU dividend announcement, implying 'excess return' of -7.216%**



Source: Bloomberg, Eikon, KPMG analysis

**Figure 9: Market reaction to SVT dividend announcement, implying 'excess return' of -2.775%**

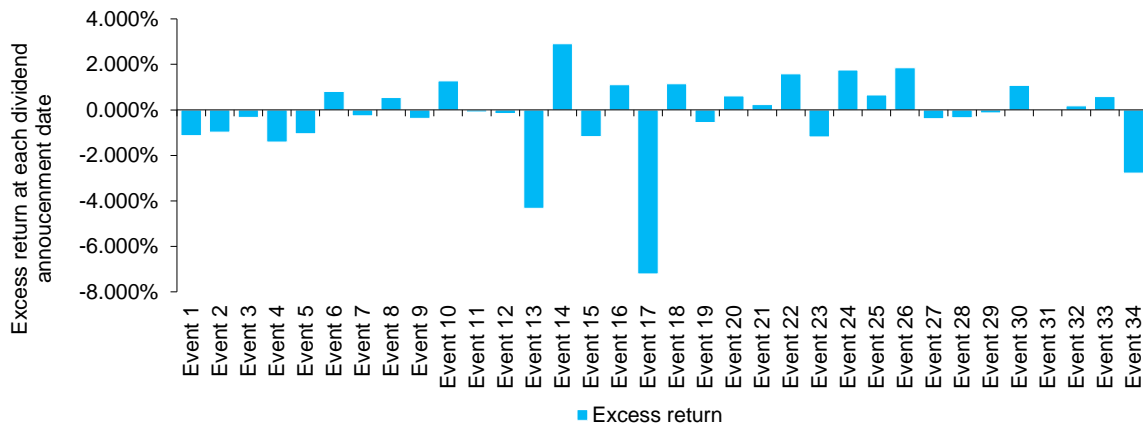


Source: Bloomberg, Eikon, KPMG analysis

Further analysis was performed to calculate the 'excess return' for each of UU and SVT's dividend announcement dates. The figure below presents the derived 'excess return' on all of UU and SVT's announcements from 2014:

<sup>53</sup> 'Excess return' is often referred to as Abnormal return in academic literature.

**Figure 10: 'Excess return' on all UU and SVT's dividend announcement events from 2014**



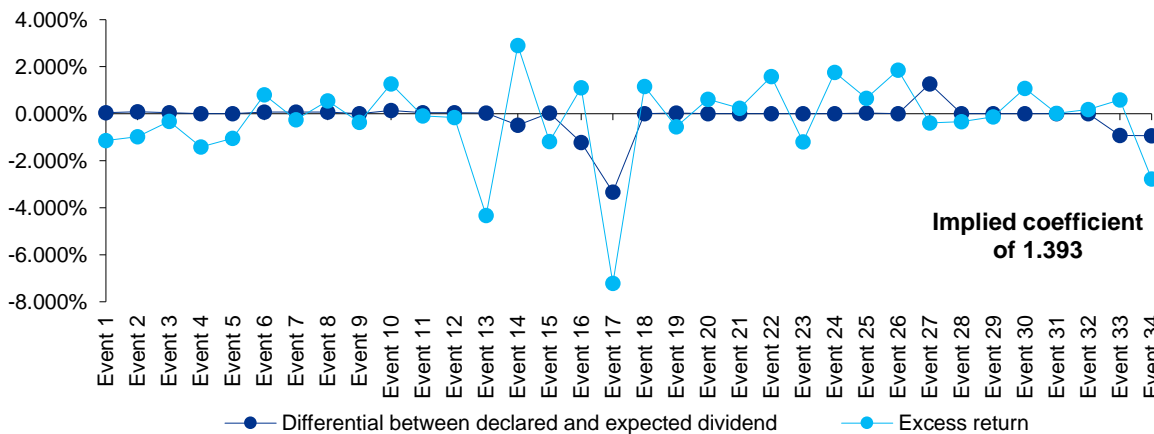
Source: Bloomberg, Eikon, KPMG analysis

Using regression analysis, the relationship (which is measured using correlation) between the dividend differential and 'excess return' is calculated to quantify the impact of dividend announcements on UU and SVT's share prices.

The figure below shows a correlation of 1.393, between the dividend differential and the 'excess return'. This analysis implies that a -1% change in expectation differential would result in 1.393% reduction in equity value<sup>54</sup>. Full results of the regression analysis are presented in Appendix 2: Dividend signalling – Detailed calculation.

In summary, the analysis of UU and SVT's past dividend announcements and market data shows that a negative dividend announcement results in a reduction in stock price or equity value.

**Figure 11: Relationship between dividend differential and 'excess return' on all UU and SVT's dividend announcement events from 2014**



Source: Bloomberg, Eikon, KPMG analysis

<sup>54</sup> The 1.393 coefficient is statistically significant with P-value of 0.0218 at 95% confidence interval. This suggests that statistically on a mean-expected basis, the equity value is moved by factor of 1.393 for every unit of change in expectation differential.



## Implications of the dividend signalling quantitative assessment for the cost of equity

The quantitative assessment on UU and SVT's dividend differentials above suggests that negative announcements would result in a reduction in the stock price or equity value of the underlying security. Specifically, the analysis shows that the mean-expected returns for UU and SVT's share price during announcement window is -3.39%, which is consistent to findings of -3.3% from Ham et al (2020)<sup>55</sup>.

The reduction in the stock price can be expressed through a change in cost of capital to quantify the potential impact of dividend signalling on customer bills. Ofwat's proposals on restricting dividend distributions could result in material volatility of dividend payments. As a result, there is an increased probability that what happened to UU's 'excess return' on 25th May 2022 would be observed in other water sector dividends in the future. The latest dividend announcement from UU on 25th May 2022 implies a differential of -3.33%, which is equivalent to the 3rd percentile of the differential distribution. This in turn suggests that there is structural exposure to the left-tail, between the 1<sup>st</sup> and 5<sup>th</sup> percentiles, of the differential distribution.

As a result, the analysis has assumed a Value at Risk (VAR) range of 1% to 5%, which represents a differential at 1<sup>st</sup> percentile (i.e. -3.72%) and 5<sup>th</sup> percentile (i.e. -3.00%) respectively<sup>56</sup>. The full statistical differential distribution is presented in Appendix 2: Dividend signalling – Detailed calculation. Table 12 below quantifies the uplift required on the cost of equity based on a range dividend differential between -3.72% and -3.00%.

**Table 12: Required uplift on cost of equity**

UU and SVT combined average	-3.00% differential	-3.72% differential
Dividend differential	-3.00%	-3.72%
Coefficient	1.393	1.393
Change in equity value	-4.180%	-5.183%
Required uplift on CoE	0.45%	0.56%

Source: KPMG analysis

The analysis is based on two key inputs (1) the dividend differential and (2) the coefficient.

- **Differential:** -3.72% and -3.00% as explained above to quantify the impact on the cost of equity.
- **Coefficient:** Regression analysis from the above section suggests a coefficient of 1.393, which implies that a -1% change in expectation differential would result in 1.393% reduction in equity value.

<sup>55</sup> Ham et al showed that the average decrease has an announcement window return of -3.3%, compared to 0.9% for the average increase, suggesting a greater reaction to dividend decreases. Ham, Kaplan and Leary, Do dividends convey information about future earnings? (2020)

<sup>56</sup>VAR statistical threshold of 5% is often used to quantify the expected loss of a given security or portfolio.

The analysis shows that if Ofwat proposals were to be implemented, investors would require **a range between 45bps and 56bps uplift on CoE**, or between 18bps and 22bps on the cost of capital, to compensate for the implied equity value lost.

UU and SVT have historically stable dividend payments. As a result it is expected that the impact on the water sector overall will be higher due to the increased volatility of dividend payments. Market participants might consider UU and SVT's negative dividend announcements, i.e. negative differential, to be a one-off event which may not reoccur in the future. As a result, the market reaction to UU and SVT's negative dividend announcements could be muted and under-state impacts on equity value.

It is important to note that the above range could under-estimate the true cost of Ofwat's proposals given the scenarios are based on the assumptions that companies would only reduce dividend payments when rating and operational thresholds are breached. The analysis considers an equity discount value of 4.18% and 5.18% (for the 3.00% and 3.72% differential scenario respectively). These equity discount values are calculated based on the coefficient and differential set out above. The higher the differential assumed the greater the equity value required due to the reduced dividend payments

Karpavicius and Yu (2015) examined whether dividend policy, proxied by book-to-market ratio, impacts firms' valuation by comparing stock prices of dividend paying and non-dividend paying stocks<sup>57</sup>. They found that not paying dividend decreased valuation and the average equity value discount was estimated to be between 5.3% and 27.9%<sup>58</sup>.

As a result, if water companies were to stop paying dividend for a sustained period of time and investors start to consider them as non-dividend paying stocks, the discount on equity value could increase significantly, relative to the current level of 4.18% and 5.18%.

### 5.3 Pricing changes in equity claims

A standard implicit assumption in equity valuation is that all equity claims are identical<sup>59</sup>, whereas in practice claims on equity can vary across a number of dimensions, including in terms of cash flow and control rights.<sup>60</sup> Damodaran (2008)<sup>61</sup> considers the empirical evidence on the values of these differential claims and sets out a framework for their valuation. To the extent that the proposed financial resilience licence modifications result in a change in the nature and scope of the equity claims for water company investors, the evidence set out by Damodaran can provide a valuable reference point for assessing the magnitude of the impact on shareholder value and the cost of equity.

Differential cash flow and control rights appear to be the most relevant dimensions based on the nature of Ofwat's proposed changes.

<sup>57</sup> Karpavicius, Sigitas and Yu (2015), Fan Dividend Premium: Are Dividend-Paying Stocks Worth More? pg. 5

<sup>58</sup> The results showed (1) Using Panel data regressions, dividend premium for firms' equity is 27.9%, and (2) Using Propensity score matching methodology, dividend premium for firms' equity is 5.3%.

Karpavicius, Sigitas and Yu (2015), Fan Dividend Premium: Are Dividend-Paying Stocks Worth More? pg. 22

<sup>59</sup> Such that the value of each claim can be estimated by dividing the aggregate value of equity derived from discounted cash flow models by the number of shares outstanding.

<sup>60</sup> Damodaran (2008) outlines the following additional dimensions: (1) whether claims are direct (shares) or contingent (options, warrants), (2) differential rights to protect their [investor's] interests, for example, right to partake in subsequent financing at preferential terms as well as the redemption rights, allowing them to reclaim capital, (3) differences in claim liquidity.

<sup>61</sup> Damodaran, Aswath (2008), Claims on Equity: Voting and Liquidity Differentials, Cash Flow Preferences and Financing Rights

Differential cash flow rights can arise where different sets of investors are entitled to different amount of dividends, one set of investors has priority in receiving dividends, and / or one class of equity investors gets first claim on the cash flows, if the firm is liquidated. The first two cases are directly relevant for the estimation of the impact of the proposed license modifications on the cost of equity as they imply a change in dividend entitlement relative to status quo. The latter case is of limited relevance given that liquidation of a regulated water company is not a plausible outcome. This is because water companies are providers of essential service and embedded protections in the existing regulatory framework and in companies' financial structures are designed to strengthen financial resilience and mitigate the risk of financial distress. Some of these mechanisms are designed to ensure that operations continue even if the company has to declare bankruptcy.

Damodaran's approach for valuing differential claims to dividends is focused on preferred stock which has priority in terms of dividends relative to common stock. Section 5.3.1 below sets out the estimation of the impact of Ofwat's proposals on cost of equity on the basis of this evidence.

### 5.3.1 Analysis of cash flow rights based on preference shares

#### Overview

Investors in utilities receive a stable stream of dividend payments, which can be seen as analogous to the stability of interest payments on debt.

The difference between interest payments on debt (which are regular and certain) and payments on preference shares (where shareholders do not have control over timing of payments) can be used as a proxy to evaluate the impact of Ofwat's increased regulation of dividend payments, and the impact on the cost of equity.

#### Estimated cost of capital impact

The **estimated difference between debt and preference share yields is equivalent to 45-98bps on the cost of capital**, based on analysis of preference shares in the sector. This estimate acts as an *upper bound* for the estimated impact of Ofwat's proposals on the cost of equity as shareholder control of cashflows is not the sole differential between debt and preference shares.

This section assesses the impact of Ofwat's proposed financial resilience licence modifications on the cost of equity by drawing a comparison between rights for equity shareholders under the new regulation (compared to current regulation) and preference shareholders (compared to bondholders).

Investors in utilities receive a stable stream of dividend payments, which can be seen as analogous to the stability of interest payments on debt. The restrictions that Ofwat's proposals imply would add uncertainty to the payment of dividends for water companies.

The difference between interest payments on debt (which are regular and certain) and payments on preference shares (where shareholders do not have control over timing of payments) can be used as a proxy to evaluate the impact of Ofwat's increased regulation of dividend payments, and the impact on the cost of equity. To put it differently – as a result Ofwat's proposals are analogous to management receiving additional control of payments on debt and the timing of payments. A comparison of debt pricing and preference shares is a

proxy for the restriction of management freedom of distributions to equity implied by Ofwat's proposals.

The potential restriction of dividends implies a reduction in the stability and predictability of dividend payments that is expected by equity shareholders. Consequently, water companies may become less attractive as income stocks and higher remuneration may be required to attract equity capital to the sector.

This section estimates the potential impact of a reduction in control rights and dividend stability on returns based on preference share pricing, on the basis that the impact of Ofwat's proposals could be seen as analogous to the difference in cashflow rights between preference shareholders and bondholders. As a result, the variation in cost of equity required by equity shareholders to commit capital to the sector based on Ofwat's proposals can be proxied by the spread of the preference share yield over the iBoxx.

### Features and characteristics of preference shares

Preference shares are a class of shares which entitle the holder to a dividend, the payment of which takes priority over other classes of share capital but below all classes of debt, including in the event of bankruptcy.

There are many types of preference shares; it is not possible to classify preference shares as a single type as they vary in terms of their contractual and financial characteristics. The common characteristic of all preference shares typically is a fixed and regular payment of dividend over a long or near-indefinite period which is senior to equity payments and junior to debt service.

The key variants of preference shares can be distinguished by:

- **Cumulative or non-cumulative:** Cumulative preference shares, which are the most common class, ensure that any arrears of dividend are cumulative and paid before any payments to equity. Non-cumulative preference shares do not allow arrears of dividends to be claimed.
- **Convertible or non-convertible:** Convertible preference shares are preference shares with an in-built option that allow preference shares to be converted into equity at a certain price and within a certain period.
- **Redeemable or non-redeemable:** Redeemable preference shares are preference shares with an in-built option to the firm that enables the firm to redeem the shares at a certain price and within a certain period.
- **Participating or non-participating:** Participating preference shares enable preference shareholders to share in any excess profits while non-participating preference shares are only entitled to the fixed rate of dividend. Non-participating preference shares are more common.

In general, preference shares have both debt- and equity-like characteristics and in terms of risk exposure sit between equity and debt.

Preference shares are similar to debt insofar that payments on preference shares (dividends) are treated as an interest cost in the accounts in accordance with FRS 25. Furthermore, the capital amount of the preference shares is treated as long term debt.

At the same time, preference shares are similar to equity for a number of respects. First, it is common that payment might be postponed or delayed; second, preference shares that are irredeemable and non-convertible tend to have indefinite maturities, similar to equities which are assumed to be indefinite unless the business enters bankruptcy; third, in terms of tax, both preference shares and equity receive dividends that are not deductible.

### Comparison between preference shares and bonds

Under Ofwat’s proposed licence modifications, equity investors would have less control over the stability of dividend payments and control rights over distribution. This is similar to the status of preference shareholders (when compared to bondholders), which may be required to forego dividend payments at management’s discretion, and do not have control rights to influence the associated decision-making process.

The change in equity shareholders’ status under Ofwat’s proposal can be compared to the difference in status between bondholders and preference shareholders:

**Table 13: Attributes of different classes of investors**

Investor class	Remuneration	Control rights over remuneration
Comparison: bonds to preference shares		
Bondholders	Stable	Unrestricted (preferential claim over equity holders)
Preference shareholders	Conditional (to management decision)	Restricted (no voting right)
Comparison: equity holders before and after Ofwat’s proposal		
Equity holders (based on current regulation)	Stable (to rating > Baa3 neg.)	Unrestricted (if rating <= Baa3 neg.)
Equity holders (with proposed licence modifications)	Conditional (to rating > Baa2 neg.)	Restricted (if rating <= Baa2 neg.)

Source: KPMG analysis.

As outlined in the table above, senior bondholders benefit from a stable and predictable remuneration, whilst preferred shareholders’ dividends are not guaranteed. The bondholders’ right over remuneration is protected by their overriding claim with respect to preference and ordinary shareholders, whilst preference shareholders do not have control rights around preference share dividends distribution. Likewise, under Ofwat’s proposed licence modifications equity shareholders lose certainty and stability around remuneration and the right to exert their decisional power.

Given that the impact of Ofwat’s proposal on equity shareholders is analogous to the difference between preference shareholders and bondholders, it follows that the additional equity remuneration required can be estimated as the differential (spread) between yields on preference shares and bonds for companies with a comparable business risk profile.

### Estimation the impact of Ofwat’s proposals on cost of equity

#### Selection of comparator preference shares

In order to derive the adjusted yield to approximate the impact on the cost of equity, suitably comparable preference shares need to be identified. Comparable preference shares have been identified using the following approach<sup>62</sup>:

- The starting point for the selection of suitable comparator preference shares was the universe of preference share securities issued in the UK;
- Preference shares issued by financial services companies were excluded from this sample due to different business risk characteristics;
- Preference shares with illiquid or no data available were excluded;
- Preference shares issued by companies with sub-investment grade issuer credit ratings or special characteristics have been excluded, as water companies have a licence obligation to maintain investment grade rating and the proposed dividend restrictions would also apply at an investment grade rating;
- Preference shares of regulated utilities have been investigated in detail since they can be considered to have the most similar business profile.

The preference shares selected based on the initial criteria are set out below:

**Table 14: Selected non-financial preference shares with sufficient liquidity**

Preference share	Sector	Debt credit rating	Properties
Bristol Water	Utilities	Baa2 ( <i>Moody's</i> )	Cumulative, non-redeemable
Northern Electric	Utilities	A / A3 ( <i>S&amp;P / Moody's</i> )	Cumulative, non-redeemable
BP	Oil & Gas	A2 ( <i>Moody's</i> )	Cumulative, redeemable

Source: Bloomberg, KPMG analysis.

Preference shares issued by BP have also been excluded on the basis that these securities are redeemable, whilst equity is assumed to be indefinite (unless the business enters bankruptcy). BP also operates on a significantly larger scale globally than water companies and hence might not be a useful comparator. Therefore, the comparators selected for the analysis are preference shares issued by Bristol Water (BW) and Northern Electric (NE), both regulated utilities with investment-grade issuer credit rating.

On balance, BW and NE's preference shares display more debt than equity-like characteristics, i.e. fixed and mandatory coupon payments (which accrue if not paid), no voting rights (unless no payment is made), adverse consequences of failing to make payments (dilution), and no upside available from additional profits. Their main equity-like features are the fact that they are not redeemable and automatically acquire voting rights in case of non-payment.

The yield of the preference shares is calculated by dividing the coupon at issue by the share price.

### Derivation of bond yield benchmark indices

In order to derive the adjusted yield, the trading yields for the comparator preference shares are compared to daily yields of a benchmark index for non-financial UK investment grade bonds with similar credit rating, as a proxy of the companies' bond yields.

<sup>62</sup> All data have been sourced from Bloomberg and Thomson Reuters Eikon (Eikon)



Two benchmark indices are derived, one for A-rated bonds and another for BBB-rated bonds. Each index is derived from daily yield curves, built by interpolation of the iBoxx non-financials investment grade bond index at different maturities. Each daily benchmark index is obtained by selecting yields at the desired maturity from all daily curves of the relevant rating category.

The comparator bond indices require a long-term maturity, to reflect that both selected preference shares and ordinary equity are irredeemable. The selected maturity is 20 years, as this is the longest maturity for which the iBoxx indices interpolation provides reliable estimates.

By applying the interpolation methodology to the daily A rated iBoxx bond index at different maturities, and then to the analogous BBB rated iBoxx index, and finally selecting 20 years maturity along both classes of daily curves, the two comparative yield indices for A and BBB rated bonds are obtained.

BW preference shares are currently rated Baa2 by Moody's and therefore are compared against the BBB rated bond benchmark index; similarly, NE shares are rated A3 by the same agency and therefore are compared against the A rated bond benchmark index.

Preference shares ratings at issuance were not available and therefore the current ratings and associated benchmarking indices (BBB for BW and A for NE) are applied to the full estimation period.

### Estimation of impact on cost of equity

The summary charts and table below show the spreads of preference share yields over the applied benchmark bond yields. The data is sourced from Bloomberg and Eikon and covers a period of 17 years (as there is limited available data prior to this period) up to July 2022.

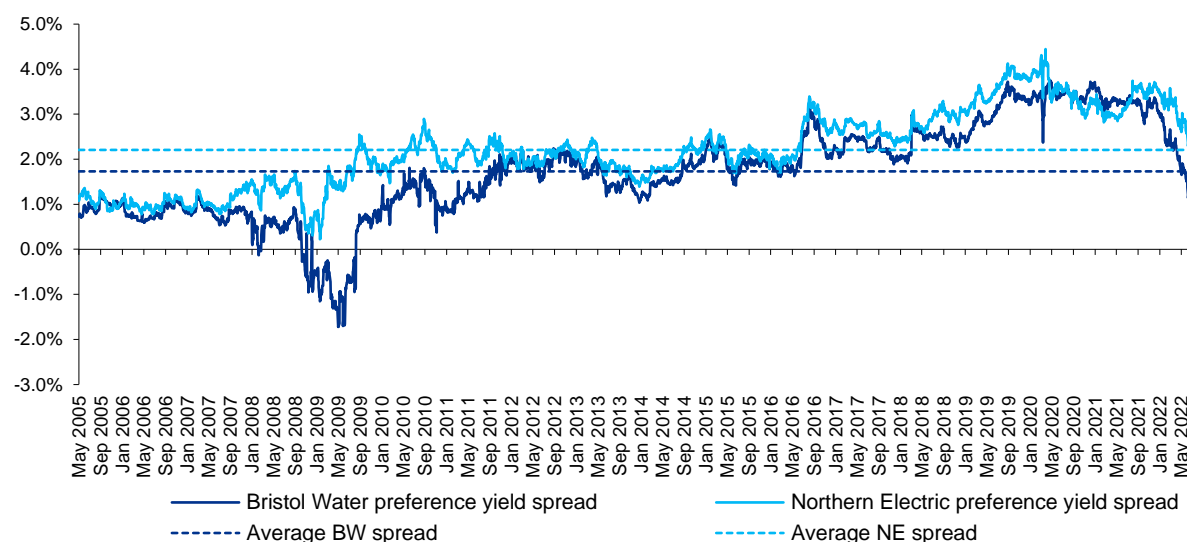
**Table 15: Summary of preference yields spread over selected A and BBB iBoxx benchmark index yield**

Preference share	Debt credit rating	Comparative iBoxx index	Average spread	Lower quartile	Upper quartile	Properties
Bristol Water	Baa2 (Moody's)	BBB	1.73%	0.74%	2.18%	Cumulative, non-redeemable
Northern Electric	A / A3 (S&P / Moody's)	A	2.21%	1.51%	2.74%	Cumulative, non-redeemable

Source: Bloomberg, Eikon, KPMG analysis.



**Figure 12: Spread of BW and NE's preference yields over yields of 20Y A and BBB iBoxx benchmark index**



Source: Bloomberg, Eikon, KPMG analysis

The yields on Bristol Water and Northern Electric's preference shares have both averaged 6.4% over the past 17 years. The benchmark 20Y yield indices for A and BBB rated bonds have averaged 4.2% and 4.6% respectively over the same period.

This results in an average spread of 173 bps and 221 bps for BW and NE respectively. The interquartile range (average over NE and BW) is 113 bps to 246 bps. This translates to an increase in the cost of capital of 45 bps to 98bps at 60% notional gearing.

### Limitations

The assessed cost of equity impact could be overestimated or underestimated due to the following assumptions and limitations of the analysis performed:

- **Comparator preference shares:** financial information provided in BW and NE annual reports shows that dividends on preference shares have been paid regularly and in full since issue. The yield spread calculated using these shares may not capture the full impact of potential dividend restrictions under the proposed licence changes. In other words, preference shares with a less stable dividend payment profile would be a better comparator. The cost of equity impact could therefore be underestimated by using the selected BW and NE shares.
- **Liquidity of preference shares:** if preference shares are less liquid than water companies' ordinary shares, then the yield spread includes an extra liquidity premium component, thereby overestimating the cost of equity impact.
- **Maturity of bond yield benchmark indices:** the maturity of the bonds used is 20 years, as the interpolation methodology does not provide reliable estimates for higher maturities. However, this value could be too low, given that preference shares are assumed to have indefinite maturity. If the bond benchmarking indices were built selecting maturities above 20 years, the resulting yields are likely to be higher, therefore the spread and cost of equity impact would be underestimated. However, it should be noted that the yield curve usually flattens for bond maturities over 20 years.

- **Estimation period:** it can be observed from Figure 12 that, for both BW and NE, daily spread pre-2010 is predominantly below the average spread calculated and above for recent years. A possibility of a structural break in the data after the 2007-2008 financial crisis should be considered, and if a shorter sample is selected, the average spread would increase. In other words, the cost of equity impact calculated in the previous section could be overestimated due to the impact of falling interest rates post financial crisis. Furthermore, the increase in spread post-2008 could be related to the reduction in the market interest rates, rather than the effective risk differential between preference shares and bonds.
- **iBoxx benchmark as proxy of bond yields:** this could either overestimate or underestimate the impact, depending on whether actual costs of companies' bonds are respectively higher or lower than the iBoxx benchmark.
- **Constant rating assumption:** if past credit ratings were higher than current ratings, for example if BW debt was A-rated, it would be more appropriate to use a benchmark index for higher-rated companies. This would reduce the estimated debt costs, increase the spread between the preference shares and bond yields and the cost of equity estimate of the proposed licence modifications. Conversely, if past ratings were lower than the current rating the opposite would be true.

## 5.4 Changes to duration of cash flows based on the Xia-Brennan model

### Overview

Duration of cash flow analysis, based on the Xia-Brennan model, considers how shifting dividends to future periods impacts on the equity payback period and equity value. Ofwat's proposals could restrict dividend distributions, resulting in a longer equity payback period. As a result duration of cash flow analysis may represent a good proxy for the impact of Ofwat's proposals on equity value.

### Estimated cost of capital impact

Analysis was performed on dividends paid by UU and SVT with different scenarios considered to approximate the impact of Ofwat's proposals. The analysis estimated an impact of 14-28bps on the cost of capital relating to the restriction of dividends and an increase in the equity payback period. The cost associated with Ofwat's proposals might be expected to be *higher* than is implied by analysis of the duration of cash flows for UU and SVT, as these two companies have a historically stable level of dividend payments.

Ofwat's proposals would result in a restriction of dividend payments, if a company's rating declines to the lock-up threshold or operational performance deteriorates. When dividend restrictions are put in place, companies would effectively shift capital distributions to future periods, resulting in a longer payback period on investments for equity holders (assuming that the cash is not invested and is retained for dividends).

For regulated UK water companies it is not necessarily the case that cash will be reinvested in the business and earn a return in line with the required return. As highlighted in the discussion of agency costs (section 5.2.1), it is assumed that dividends are only paid when all NPV-positive activities have been undertaken. The analysis set out in this section assumes that capital is not reinvested in the business and measures the impact of increasing the payback period to equity in isolation.

This section estimates the impact of cash flow duration and the impact on share price and required returns. The structure of the section is as follows. First, it summarises the impact of cash flow duration on share price with reference to academic literature. Second, it carries out a quantitative assessment of the potential impact of the changes in duration of cashflows implied by Ofwat's proposals on required returns using UU and SVT data.

### Evidence of the impact of cash flow duration on share price with reference to academic literature

A study by Brennan and Xia (2004 and 2006) found that the return required by investors is a function of the duration of cash flows, where shifting cash flows into the future increases the duration of cash flows. Brennan and Xia stated:

*"...the value per unit of expected payoff of the claim, is a function of the maturity,  $r$ , of the cash flow... Securities (cash flow claims) with different cash flow maturities typically have different risk exposures to the systematic state variables."*<sup>63</sup>

All else equal this implies that changes in the payback period, i.e. duration of cash flows, could impact on the cost of capital required by investors. This dynamic has been widely evidenced in the market. More risky securities, with longer duration of cash flows, tend to have lower actual returns and therefore a higher cost of capital than securities with a shorter duration of cash flows. Specifically, the Brennan and Xia found:

*"...It is also consistent with the well-documented finding that growth stocks, which have long-duration cash flows, tend to have lower returns than value stocks, which tend to have short-duration cash flows."*<sup>64</sup>

A study by Dechow et al. (2004) also found that equity duration is positively correlated to underlying share price volatility, which means that a *higher duration* of cash flows leads to *higher volatility* and therefore a higher cost of capital required by investors<sup>65</sup>.

Overall, academic literature suggests that extending duration of cash flows could lead to an increase in an asset's risk exposure resulting in a higher cost of capital required by investors.

### Quantitative assessment on the corresponding cost of capital impact in UK regulated water sector

Ofwat's proposals would result in non-payment or delayed payment of dividends under certain scenarios and, all else equal, increase the duration of cash flows. There are two drivers of the reduction in the cost of capital due to a longer duration of cash flows, which equity investors need to be compensated for:

- Inherent time value of money value (TVM) lost, resulting from a shift in cash flow to future periods. As the dividend growth is less than the discount rate, the net present value of dividend payments decreases when duration of cash flow increases.

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<sup>63</sup> Brennan, M. and Xia, Y. (2004), 'Estimation and Test of a Simple Model of Intertemporal Capital Asset Pricing', pg. 8

<sup>64</sup> Brennan, M. and Xia, Y. (2006), 'Risk and Valuation under an Intertemporal Capital Asset Pricing Model', pg. 19

<sup>65</sup> Dechow et al. (2004), 'Implied Equity Duration: A New Measure of Equity Risk'. Pg. 4

- Term premium effect, resulting from the increased risk exposure to systematic factors such as interest rate fluctuations.

### *Inherent time value of money lost*

Time value of money dictates that the *timing* of a cash flow has an impact on the *value* of the cash flow. This means that the same stream of cash flow is more valuable if it is received today, rather than in the future.

As investors price investments by discounting future cash flows, any delay in dividend payments, would be negative to investors as they would experience a loss due to time value of money. As a result, investors might require compensation for this loss in the form of higher returns.

### *Term premium*

The term premium is based on the market dynamic that a longer duration of cash flows is more sensitive to changes in macroeconomic factors. For example, any changes in market expectations of interest rates would have a greater impact on investments with a longer duration of cash flows, as there is a longer time period in which interest rates could impact the forecast cash flows.

These macroeconomic risk factors are systematic and apply to all asset classes. As a result, they could be classified as non-diversifiable and rational investors would require a term premium to compensate for the additional risk exposure faced. Dechow (2004) for example showed that *“the yield curve for fixed income securities is typically upward sloping, suggesting that investors require a premium for holding long duration securities.”*<sup>66</sup>

Term premium, therefore, is designed to price the implied interest rate risk that investors face, which, under the Capital Asset Pricing model (CAPM), has the following impacts:

- Increase in the Risk Free Rate (RfR), to compensate investors for interest rate risk exposure.
- Decrease in the Equity Risk Premium (ERP), defined as Total Market Return (TMR) less RfR given TMR would remain the same.

Brennan and Xia (2006) found that, when the duration of cash flows increased, the change in the cost of equity was driven by (1) sensitivity of the asset to interest rate risk, measured as term premium, and (2) sensitivity of the asset to market price of risk, measured as the Sharpe ratio and could be used to proxy equity beta<sup>67,68</sup>.

### *Quantification of time value of money and term premium*

Under Ofwat’s proposals, water companies may not be able to pay dividends under certain scenarios. To assess the impact of Ofwat’s proposals on the required return, the analysis has considered the following three scenarios:

<sup>66</sup> Dechow et al. (2004), ‘Implied Equity Duration: A New Measure of Equity Risk’. Pg. 30

<sup>67</sup> Brennan, M. and Xia, Y. (2006), ‘Risk and Valuation under an Intertemporal Capital Asset Pricing Model’, pg. 19

<sup>68</sup> Sharpe ratio is defined as excess return required by investors, relative to the overall market return, for an additional unit of risk.

- **Low case scenario:** No dividend payment once every 5-years as a result of Ofwat’s proposals with missed dividends not paid back in future years, which is based on one interpretation of the implementation of the operational performance prescribed in the licence condition. This is considered to be a reasonable scenario to proxy the lower end impact of Ofwat’s proposals on the cost of equity.
- **Medium case scenario:** 3-year dividend lock-up occurs once every 10-years as a result of Ofwat’s proposals with missed dividends not paid back in future years, which is based on cash lock-up given a change in rating threshold<sup>69</sup>. A three-year continuous lock-up is assumed as credit rating upgrades usually take time. This is considered to be a reasonable scenario, assuming sustained operational underperformance.
- **High case scenario:** No dividend payment twice every 5-years as a result of Ofwat’s proposals with missed dividends not paid back in future years, which is based on a different, more severe implementation of the operational performance guidance prescribed in the proposed licence condition. This is considered to be a reasonable scenario to proxy the upper end impact of Ofwat’s proposals on the cost of equity.

Based on the simulation, the table below quantifies the additional required return from equity investors due to term premium for UU and SVT as follows<sup>70</sup>:

### Step 1

The analysis calculates the difference in the duration of cash flows for each scenario relative to the counterfactual where there are no missed dividends. The duration of cash flows is estimated using Macaulay method, which is defined as the weighted average number of years that an investor must maintain a position in the bond until the present value of the bond's cash flows equals the amount paid for the bond<sup>71</sup>.

### Step 2

The analysis calculates the term premium as the difference between the implied RfR for each of the scenarios relative to counterfactual. The tenor of the RfR is derived to match the duration of cash flows derived in step 1. The ILG UK nominal spot curve with an averaging period of 5-year, backward looking from December 2020, is used as the index. The December 2020 estimation window cut-off date is consistent with the CMA’s approach during the PR19 redetermination<sup>72</sup>.

### Step 3

The analysis calculates the additional required return on equity for investors due to the term premium on each of the scenarios relative to counterfactual. This additional required return from equity investors is equivalent to the increase in the discount rate used to estimate the

<sup>69</sup> This scenario assumes rating downgrade such as Southern Water being moved from Baa2 to Baa3 in 2019, which represents a 3-years period to date, would trigger dividend lock-up under Ofwat’s proposals.

[https://www.moodys.com/research/Moodys-downgrades-Southern-Water-Finance-to-Baa3-stable--PR\\_411121](https://www.moodys.com/research/Moodys-downgrades-Southern-Water-Finance-to-Baa3-stable--PR_411121)

<sup>70</sup> The simulation is run 1000 times by varying the timing of missed dividend and paid back periods on the High and Low cases.

<sup>71</sup> <https://www.nasdaq.com/glossary/m/macaulay-duration>

<sup>72</sup> [https://assets.publishing.service.gov.uk/media/60702370e90e076f5589bb8f/Final\\_Report\\_---\\_web\\_version\\_-\\_CMA.pdf](https://assets.publishing.service.gov.uk/media/60702370e90e076f5589bb8f/Final_Report_---_web_version_-_CMA.pdf), para 9.243

NPV of dividend payments, which is analogous to how the equity value of the companies is calculated.

**Table 16: Additional required return from equity investors due to term premium for UU and SVT**

UU and SVT combined average	Low case	Medium case	High case
<b><u>Step 1:</u></b>			
Cash flow duration – Counterfactual with no missed dividend	9	9	9
Cash flow duration – Scenario	10	10	11
<b>Duration differential</b>	<b>1</b>	<b>1</b>	<b>2</b>
<b><u>Step 2:</u></b>			
Implied RfR yield – Counterfactual with no missed dividend	0.99%	0.99%	0.99%
Implied RfR yield – Scenario	1.07%	1.08%	1.15%
<b>Term premium</b>	<b>0.09%</b>	<b>0.09%</b>	<b>0.16%</b>
<b><u>Step 3:</u></b>			
Assumed equity beta based on CMA PR19	0.71	0.71	0.71
<b>Additional required return from equity investors due to term premium</b>	<b>0.03%</b>	<b>0.03%</b>	<b>0.05%</b>

Source: Bloomberg, KPMG analysis

The simulation indicates that non-payment of a dividend once every 5-years (low case scenario) and twice every 5-year (high case scenario) would increase cash flow duration by one year and two years respectively. This translates into (1) 9bps term premium, which is the differential between 9-year and 10-year tenor RfR under low case scenario and (2) 16bps term premium, which is the differential between 9-year and 11-year tenor RfR under high case scenario. The term premium is equivalent to an uplift of 3bps (low case scenario) and 5bps (high case scenario) on the required return for equity investors assuming 0.71 equity beta.

For the medium case scenario where UU and SVT experience a 3-year dividend lock-up period once every 10-years, the duration of cash flows increases by 1 year compared to counterfactual, which implies an uplift of 3bps on the required return for equity investors.

Table 17 summarises the combined impact of time value of money and term premium (calculated above) on equity valuation by comparing the net present value (NPV) derived from the base case and the downside scenario considered.

The NPV differential quantifies the impact on equity valuation, compared to base case, due to (1) NPV lost from shifting dividend payments to future periods based on time value of money theory, and (2) NPV lost from higher required return from equity investors, i.e. discount rate of the dividend payments, because of term premium required by investors to compensate for longer cash flow duration. The analysis continues as follows:



#### Step 4

The analysis calculates equity value, measured as the NPV of dividend payments under each scenario relative to the counterfactual to quantify:

- **Time value of money impact:** This is the amount of reduction in NPV from delaying dividend payments while holding everything else constant.
- **Term premium impact:** This is the amount of reduction in NPV due to an increase in discount rate, i.e. uplift on the additional required return from equity investors due to term premium, while holding everything else constant

The total NPV differential, under each scenario, is equivalent to the expected loss in equity value that investors need to be compensated because of impacts from time value of money and term premium described above.

#### Step 5

The analysis calculates the implied uplift on cost of equity allowance required to compensate equity investors for the NPV loss due to (1) time value money and (2) term premium derived from step 4.

#### Step 6

The analysis calculates the implied uplift on cost of capital allowance based on uplift on cost of equity allowance derived from step 5 assuming 60% gearing level.

**Table 17: Total uplift on cost of capital allowance for UU and SVT**

UU and SVT combined	Low case	Medium case	High case
<b>Step 4</b>			
<i>NPV loss due to time value of money (£m)</i> <sup>73</sup>	-65.37	-85.07	-130.83
<i>NPV loss due to term premium (£m)</i> <sup>74</sup>	-11.70	-12.59	-21.81
<b>Total NPV loss (£m)</b>	<b>-77.06</b>	<b>-97.66</b>	<b>-152.64</b>
<b>Step 5</b>			
<i>Uplift on cost of equity allowance due to time value of money</i>	0.298%	0.392%	0.613%
<i>Uplift on cost of equity allowance due to term premium</i>	0.050%	0.054%	0.097%
<b>Total uplift on cost of equity allowance</b>	<b>0.348%</b>	<b>0.446%</b>	<b>0.710%</b>
<b>Step 6</b>			
<i>Notional gearing</i>	60.00%	60.00%	60.00%
<i>Uplift on cost of capital allowance due to time value of money</i>	0.119%	0.157%	0.245%

<sup>73</sup> All missed dividends are assumed to be recovered at Terminal value in NPV calculation.

<sup>74</sup> Ibid.



<i>Uplift on cost of capital allowance due to term premium</i>	<i>0.020%</i>	<i>0.022%</i>	<i>0.039%</i>
<b>Total uplift on cost of capital allowance</b>	<b>0.139%</b>	<b>0.179%</b>	<b>0.284%</b>

Source: KPMG analysis

The simulation indicates that if Ofwat proposals were to be implemented, an uplift **on the cost of equity allowance in a range of 35-71bps**, or 14-28bps on the cost of capital allowance, would be needed to compensate for the impacts of time value of money and term premium results from a longer duration of cash flows.

It is important to note that the impact of the time value of money and term premium under the scenarios shown could be under-stated given the underlying assumption that missed dividend payments would retain full value and get wrapped into the terminal value calculation, which is analogous to distributing the missed dividend payments at the end of the investment horizon.

This assumption, however, might not hold for example due to agency cost as mentioned above (in section 5.2.1). There is a possibility that missed dividends would be allocated to value-destroying activities by the companies and reduce value further for equity investors. Under this scenario equity investors would only receive a portion of the missed dividends, which leads to (1) increased duration of cash flows (calculated in step 1) and subsequently higher term premium impact (calculated in step 2) and (2) increased NPV loss (calculated in step 4).

As a result, the 14-28bps uplift on cost of capital allowance could under-state the cost of the proposals as the simulation above measures the impact on dividends under relatively modest scenarios and do not capture in full the impact of the proposals on rights to shareholders or quantify changes in agency costs as a result of retention of cash within the regulated business in the event of non-payment of dividends.

## 5.5 Evidence from changes to capital structures in the banking sector and implications

### Overview

Following the financial crisis additional regulation was introduced in the banking sector to reduce the risk of bankruptcy to mitigate systemic risk for the economy and minimise associated costs to customers. The regulation required companies to recapitalise resulting in an increase in the cost of capital. The regulation introduced in the banking sector cannot be viewed as a direct proxy for Ofwat's proposals, however, it may serve as a useful reference point for the impact on the cost of capital of Ofwat's proposed regulation.

### Estimated cost of capital impact

The regulation resulted in an estimated increase of up to 0.15% in the cost of funding per one percentage point increase in capital ratios, equivalent to c. 1.5% increase in cost of capital for a 10% increase in leverage. Although the underlying risks in the banking and water sector differ, this case study indicates that *directionally* recapitalisation increases costs.

### Context, specification of the problem in banking and the proposed regulation

Regulatory developments in the banking sector provide a relevant case study to consider how introduction of new regulation to improve financial resilience could impact the cost of capital and benefit customers in the water sector.

Ofwat's proposals resemble higher capital requirements introduced in the banking sector post financial crisis, when new regulation toughened the requirements for the quantity and quality of capital needed to be held. Additional types of capital required to be maintained to ensure capital adequacy, such as convertible debt, to be able to recapitalise banks in times of distress.

However, in the water sector there has been no observed financial crisis or equivalent *systemic* event which has materially impacted on financial resilience. There is also no systemic benefit comparable to the banking sector because the risk is limited to a single entity rather than the system or the sector overall. To date there have been no bankruptcies in the water sector and the Special Administration regime has never been used. As a result, while Ofwat's proposals target recapitalisation, they are unlikely to bring *the benefits similar to the banking sector's recapitalisation*, while still leading to meaningful costs such as an *increase in cost of capital* (as observed in banking).

### Impact of banking regulations on the cost of capital

#### *Banking case study*

Changing the capital requirements in the banking sector had implications for a range of factors, including the cost of capital. MM theory suggests that *in perfect and efficient* capital markets, reducing leverage would reduce the risk and cost of their equity but leave the overall weighted average cost of capital unchanged.

However, in practice the banking sector does not operate in a perfect capital market and frictions are present which means that the above does not necessarily follow. Academic studies and reports have analysed the impact of increased regulation in the banking sector

on the cost of capital for banks. Dagher et al (2016)<sup>75</sup> also outline that “*Equity issuance is subject to nonnegligible underwriting fees, usually of 5–7 percent. Also, there are signalling costs: issuing equity may require substantial discounts when incumbent investors and managers have information about the firm that new equity investors do not have*”.

Introduction of capitalisation requirements can increase the cost of capital as banks have less flexibility over capital structure which may lead to the adoption of a sub optimal capital structure and increased tax costs associated with high capitalisation.

It has been observed in the sector that “lower risk banks”, defined as those with higher capitalisation ratios, have higher returns on a risk-adjusted or even on a raw basis. A study of historical data suggests that a ten percentage-point increase in Tier 1 capital to risk-weighted assets would have increased the weighted average cost of capital by between 60 and 90 basis points per year.<sup>76</sup>

A Basel Committee (2019) report explores the macroeconomic benefits and costs as a result of higher capital requirements, which include the impact on the cost of capital and lending rates. The Basel Committee report obtained estimates from a range of sources including academics and central banks. Surveys estimate that a one percentage point increase in capital ratios to increase the cost of funding up to 0.15%.<sup>77</sup> The study notes their analysis is based on the assumptions these costs would be reflected through lending rates, i.e., passed onto customers.

The study has collated estimates from similar sources which identified that a one percentage point increase in the capital ratio on bank lending rates is “*clustered within the 0 to 0.25 percentage point range*”.<sup>78</sup> This demonstrated that the lending rates reflected the higher cost of funding.

### *Comparison to the water sector*

The costs related to recapitalisation are comparable in principle to those observed in the banking sector, controlling for the relative risk of the industries and the scale of change implied by the regulation.

The impact on the cost of capital provides a useful benchmark for the water sector, where Ofwat’s proposals could have the effect of *increasing* the capital requirement of companies to avoid a cash lock up. All else equal new regulation would be expected to *increase* the cost of capital for water companies, as observed in banking.

In the water sector, recapitalisation will also have a direct impact on customer bills through the tax allowance component of allowed revenues. Taxable profit used to calculate the tax allowance takes the lower of notional and actual gearing to calculate interest costs. If actual gearing is higher than the notional level and is reduced, this will result in lower interest costs deducted to calculate taxable profit resulting in a higher tax allowance, which will increase customer bills.

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<sup>75</sup> Dagher, Dell’Ariccia, Laeven, Ratnovski, and Tong (2016), IMF staff discussion note, Benefits and costs of bank capital, page 9

<sup>76</sup> Baker and Wurgler (2013), Would Stricter Capital Requirements Raise the Cost of Capital? Bank Capital Regulation and the Low Risk Anomaly, page 1

<sup>77</sup> Basel Committee on Banking Supervision, The costs and benefits of bank capital – a review of the literature, June 2019, p. 16

<sup>78</sup> Ibid, p. 15

A 5% reduction in the level of actual gearing (assuming that actual gearing is 5% or more greater than notional gearing), will result in an increase in the tax allowance equivalent to 0.22%<sup>79</sup> of RCV.

## Conclusions

There was a clear problem in the banking sector which crystallised during the GFC resulting in bankruptcies in the sector with significant systemic risk and considerable costs to the taxpayer as a result of intervention necessary to stabilise financial institutions. In response, new regulation was introduced to increase the capital requirements for banks.

Ofwat's proposals resemble higher capital requirements introduced in the banking sector post financial crisis, when new regulation introducing stricter requirements for the quantity and quality of capital required to be held.

The impact of recapitalisation in the banking sector has been estimated at up to 0.15%<sup>80</sup> per percentage increase in capital ratios. A number of academic studies commissioned by regulators in financial services indicate that this additional cost was lower than benefits from reducing systemic risk in the sector. The introduction of the new regulation in the water sector could result in a similar dynamic with new regulation of capital structures increasing the cost of capital in the sector, without the benefits of a comparable scale.

## 5.6 Incentive properties of financial resilience proposals

This section considers the implications of Ofwat's proposed licence modifications on incentives for companies and investors, and whether the proposals could enhance regulatory incentives.

### Potential incentive: linking dividend payments to operational performance will improve customer service levels

The main argument set out by Ofwat is that financial fragility might affect customer service levels. Ofwat is concerned that if a company is in financial distress it is not able to invest to provide the required level of customer service and delivery. However, this does not necessarily follow as Ofwat does not evidence either correlation or a causal relationship between customer service levels and financial resilience.

Moreover it does not follow that an increase in cash held in the regulatory ringfence will result in *additional investment*. If Ofwat is concerned about the potential non delivery of customer service, the logical action is to monitor customer service levels now and in future price controls. There may be valid reasons why Ofwat might need to monitor financial resilience over and above monitoring and regulating customer service levels, but clear rationale for new regulation and monitoring in this area is required.

Ofwat sets target customer service levels and there are existing reporting requirements in place with companies providing information on both ODIs and totex. If Ofwat is concerned about service delivery and levels of service the regulation used to address this should be targeted at this issue specifically – through totex allowances and the calibration of ODIs. Duplicating existing regulation by linking dividends payments to customer service levels risks introducing distortions.

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<sup>79</sup> KPMG analysis of Ofwat PR19 Final Determination models

<sup>80</sup> Ibid, p. 15

It is not clear that linking dividend payments to operational performance will improve customer service levels and service delivery.

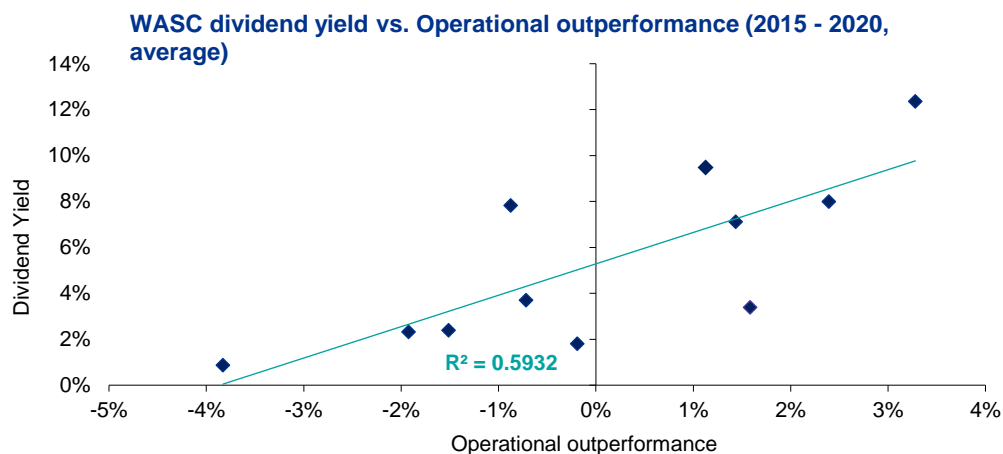
Ofwat may also have introduced new regulation of dividends to change management behaviour and incentives in relation to service delivery. It is not clear that changes to dividends would necessarily result in additional incentives around service delivery over and above incentives implied by existing regulation (for example) ODIs. However, if linking dividends to service delivery *does* have incentive properties this reinforces that Ofwat's proposals have a cost.

### Potential incentive: operational performance will improve if dividends are linked to operational performance

Ofwat may consider that linking dividend payments to operational performance will more closely simulate a competitive market outcome, such that a company pays a higher dividend when operational performance is better, and *vice versa*.

The relationship between operational performance and dividend yield in the water sector can be observed by studying the relationship between dividend yield and operational outperformance in AMP6. As shown in Figure 13 there is a positive relationship between the level of operational outperformance and dividend yield for WASCs over PR14.

**Figure 13: WASC adjusted dividend yield vs. operational outperformance (2015 - 2020, notional structure)**



Source: Ofwat APR tables 2019-20, KPMG analysis.

However, when setting dividends, companies take into account a range of factors including, *inter alia* allowed returns, financing policy, capital investment programme, totex performance and efficiency, macroeconomic variables, environmental performance and customer service levels.

Linking dividends to service delivery, as currently set out<sup>81</sup> in Ofwat's proposed dividend policy licence modification, does not recognise that there are multiple drivers of company performance and dividend payments.

**Potential incentive: improved financial resilience will increase the likelihood of equity funding a turn-around plan.**

Ofwat's rationale for a cash lock-up appears to be to prevent the use of cash for prohibited purposes (e.g. the payment of dividends) in circumstances of weakened financial resilience. However, financial resilience is not improved by restricting the uses of cash and may ultimately *reduce* financial resilience. In particular the introduction of a cash lock-up requirement may deter equity investors from committing capital within the regulatory ringfence, thereby reducing the pool of available equity capital.

Moreover a study in the high yield market found<sup>82</sup> that restrictive incurrence covenants, such as restrictions on dividends analogous to a lock-up, can have a negative impact on a firms' investment policy long before the firm is close to defaulting. The study finds that *'while not all restricted actions directly limit investment, they tend to be costly for equity holders, and as a result, they indirectly influence the firm's capital expenditures'*. The study further found that imposition of a restrictive covenant has sizeable impacts *'long before any defaults or bankruptcy'*, indicating that the restrictive actions were not taken with a default imminent but rather at a much earlier stage.

The proposals will restrict the payment of dividends out of the regulatory ringfence but will also have the effect of disincentivising injection of new equity capital. This would have the opposite impact to the likelihood of funding of a turnaround plan set out by Ofwat.

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<sup>81</sup> *"taking account of current and future investment needs and financial resilience over the longer term (...) that dividends declared or paid take account of service delivery for customers and the environment over time, including performance levels, and other obligations"*

<sup>82</sup> Brauning F, Ivashina V and Ozdagli A; *High-Yield Debt Covenants and Their Real Effects*, March 2022

## 6 Impact assessment – comparison of potential costs and benefits

Any new regulation in the water sector, which is already subject to extensive existing regulation, should be carefully considered against a high bar to ensure its expected benefits clearly exceed expected costs. Ofwat is required to have regard to the principles of best regulatory practice, meaning that any additional regulation should be targeted at addressing a specific problem. As there is an existing regulatory framework in place to support financial resilience, any additional regulation introduced by Ofwat should be supported by a robust impact assessment to demonstrate that potential benefits for customers are real and significant and are not exceeded by likely costs. Based on the information available to us, the proposals are not currently supported by an impact assessment to evidence that the proposals meet their objectives.

The primary basis for any regulatory intervention is the identification of a problem that needs to be addressed. This report considers the potential market or regulatory failure which Ofwat is seeking to address through its proposals.

In the water sector, the principal market failure would be due to potential negative externalities imposed on customers by companies with market power in the absence of regulation. There are two primary types of potential negative externalities relevant in this context – under-investment in customer service and costs of bankruptcy transferred to customers. There is also a potential for regulatory failure due to information asymmetry (and in particular regulatory failure to regulate properly to avoid these externalities). On this basis this section considers whether there is a clear market or regulatory failure, or clear avoided costs of a failure, which support a requirement for new regulation.

This section draws on the results of sections 4 and 5 to evaluate whether benefits of the proposals outweigh the costs and whether on balance there is empirical support for the introduction of new regulation. A summary of the analysis performed and the quantification (where applicable) of the potential costs and benefits of Ofwat’s proposals is set out below.

**Table 18: Summary of analysis performed and quantification of costs and benefits**

Area	Conclusions
<b>Benefits of Ofwat’s proposals</b>	
<b>Probability of default analysis</b>	<p>Lowering the risk of default does not necessarily represent an improvement in customer welfare. In order to conclude that, there has to be clear evidence that the risk of default is inefficiently high in the absence of new regulation. Additionally, reducing the risk of default does not necessarily equate to a significant customer benefit because externalities of such an event are not clear.</p> <p>A reduction in the probability of default could only lead to more efficient outcomes if there are significant deadweight costs and externalities associated with bankruptcy which are not borne by the capital providers but transferred to customers.</p> <p>While it is not possible to estimate deadweight costs with any degree of precision, an illustrative analysis has been undertaken to reflect a number of possible outcomes. The deadweight costs were calculated as the costs in excess of the value of assets at default. The outcome of this analysis is that,</p>



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depending on a specific default scenario, the annual benefit to customers from Ofwat's proposal to tighten the cash lock-up could be assessed at about 0-2 basis points.

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#### **Cost of debt allowance**

Any reduction in the cost of debt has to be considered together with corresponding increases in the cost of equity in line with Modigliani Miller theory as well as the likely increase in the overall cost of capital due to additional restrictions on control rights. As a result, any benefit identified in relation to cost of debt alone would not consider the wider impacts.

The analysis of the credit spreads in the UK water sector indicates that there is no consistent differential in the Baa1/BBB+ and Baa2/BBB spreads for 10Y tenor debt. As a result, it is not clear that there would be a material change to debt pricing as a result of Ofwat's proposals which in turn and in isolation might be passed through to customers.

Importantly there are limited instruments at the Baa2/BBB level meaning it is difficult to draw robust comparisons between pricing at each credit rating level, without compromising the likeness of instruments within samples. As a result of this limit on sample size, there is insufficient data to conclude whether a pricing differential exists in the sector.

Additionally, a change in the rating for a given company in the sector by one notch from Baa1 to Baa2 will have a minimal impact on the overall allowed cost of debt over the next five price controls due to the mechanics of the existing cost of debt allowance. Ofwat's proposed regulation, therefore, provides limited or no benefit to customers from the cost of debt perspective, because the cost of debt reflected in allowances would unlikely reduce substantively.

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#### **Costs of Ofwat's proposals**

##### **Increased cost of capital due to potential disruptions to stability of dividend flow**

#### **Agency costs**

The MM theory assumes a perfect capital market and that there is no conflict of interests between management (the agent) and shareholders (the principal). However, in practice principal and agent interests may not always align. For example, managers may not exert the effort required to cut costs or improve efficiency or may waste the firm's cash on negative-NPV projects to grow the firm. These agency costs are particularly severe for firms with high free cash flow, as this provides managers with more cash to waste, and more leeway to act inefficiently. Dividends mitigate these agency costs by reducing the free cash flow available to management.

The introduction of regulation to restrict dividend payments may increase agency costs as cash held in the business is used for negative-NPV projects. Ofwat's proposed dividend restrictions could increase the cash available to management and hence increase agency costs and the required cost of capital.

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#### **Dividend signalling**

The MM theory assumes symmetric information between managers and investors. In practice, managers have superior information about their firms' prospects. Managers with positive information will wish to signal this to the market to command a higher valuation. However, the signal must be *credible* – it must be something that managers with negative information will not wish to replicate. Dividends represent a credible signal, since managers with negative information will know that they are unable to maintain the dividend. They will need to subsequently cut it, leading to a significant stock price drop.

The uncertainty around future cash flows to equity and restriction of dividend payments implied by Ofwat's proposals will have an impact on value in the water sector and result in an increased return required by equity investors. As

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a result analysis of dividend signals and impacts on stock price can be used to approximate the impact of Ofwat's proposals on value.

This report considers analysis of historic United Utilities (UU) and Severn Trent (SVT) dividend announcements and dividends paid and evaluates the impact on equity value when lower than expected dividends are paid. The reduction in the equity value is equivalent to an estimated **18-22bps** on the cost of capital based on UU and SVT. In practice this could under-state the potential impact of Ofwat's proposals as dividends for UU and SVT are relatively stable over time.

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#### Pricing changes in equity claims (in addition to uncertainty of dividend flow)

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##### Preference shares

Investors in utilities receive a stable stream of dividend payments, which can be seen as analogous to the stability of interest payments on debt.

The difference between interest payments on debt (which are regular and certain) and payments on preference shares (where shareholders do not have control over timing of payments) can be used as a proxy to evaluate the impact of Ofwat's increased regulation of dividend payments, and the impact on the cost of equity.

The estimated difference between debt and preference share yields is **45-98bps** on the cost of capital, based on analysis of preference shares in the sector. This estimate acts as an upper bound for the estimated impact of Ofwat's proposals on the cost of equity as shareholder control of cashflows is not the sole differential between debt and preference shares.

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#### Pricing increases in equity payback period

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##### Duration of cash flows

Ofwat's proposals could result in the non-payment of dividends in certain years if the credit rating lock-up threshold is met or dividends are restricted by Ofwat.

Duration of cash flow analysis, based on the Xia-Brennan model, considers how shifting dividends to future periods *increases* the equity payback period, increases the duration of cashflows and estimates the impact on equity value. An analysis of different scenarios which could arise from Ofwat's proposals (for example, non-payment of dividends for three years) shows that the impact of restricting dividend payments and increasing the duration of cash flows could have a **14-28bps** on the cost of capital.

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#### Pricing increases due to recapitalisation

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##### Banking case study

Ofwat's proposals resemble higher capital requirements introduced in the banking sector post financial crisis, when new regulation introduced stricter requirements for the quantity and quality of capital required to be held.

The impact of recapitalisation in the banking sector has been estimated at up to 0.15%<sup>83</sup> per percentage increase in capital ratios. The introduction of the new regulation in the water sector could result in a similar dynamic with new regulation increasing the cost of capital in the sector.

However, in the water sector there has been no observed financial crisis or equivalent *systemic* event which has materially impacted on financial resilience. There is also no systemic benefit comparable to the banking sector because the insolvency risk is limited to a single entity rather than the system or the sector overall. To date there have been no bankruptcies in the water sector and the Special Administration regime has never been used. As a result, while Ofwat's proposals target recapitalisation, they are unlikely to bring *the benefits similar to the banking sector's recapitalisation*, while still

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leading to meaningful costs such as an *increase in cost of capital* (as observed in banking).

However, there has been no observed financial crisis or equivalent *systemic* event which has materially impacted on financial resilience in the water sector. In water there is no systemic risk or potential benefit which is comparable to the banking sector as in water the risk is reduced to a single entity rather than the system or the sector overall. To date there have been no bankruptcies in the water sector and the Special Administration regime has never been used. As a result Ofwat's proposals could result in recapitalisation and *increase cost of capital* (as observed in banking) but *without the corresponding benefits*.

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## Incentives properties of Ofwat's proposals

### Potential incentives

The introduction of new regulation could have implications for company and investor incentives. In this context the primary concern set out by Ofwat is that financial fragility might affect customer service levels and operational performance. Ofwat is concerned that if a company is in financial distress it might not be able to invest to maintain the levels of customer service and delivery. However, Ofwat does not set out evidence of either correlation or a causal relationship between customer service levels and financial resilience.

Ofwat's rationale for introduction of a cash lock-up appears to be to prevent the use of cash for prohibited purposes (e.g. the payment of dividends) in circumstances of weakened financial resilience. However, financial resilience is not improved by restricting the uses of cash and may ultimately *reduce* financial resilience. In particular the introduction of a cash lock-up requirement may deter equity investors from committing capital within the regulatory ringfence, thereby reducing the pool of available equity capital.

Ofwat may also have introduced new regulation of dividends to change management behaviour and incentives in relation to service delivery. It is not clear that changes to dividends would necessarily result in additional incentives around service delivery over and above incentives implied by existing regulation (for example) ODIs. However if linking dividends to service delivery does have incentive properties this reinforces that Ofwat's proposals have a cost.

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In summary, after considering the existing regulatory protections, there are three potential causes of market or regulatory failure which could support the introduction of new regulation in relation to financial resilience (1) asymmetric information; (2) externalities due to under investment in customer service; and (3) externalities as a result of bankruptcy. Overall, it is not clear that in relation to any of the above there is a clear inefficiency or market failure related to the level of financial resilience that justifies the introduction of new regulation.

This report assessed potential benefits arising from Ofwat's proposals. Based on the analysis performed there may be some small benefits of Ofwat's proposals relating specifically to a change in the probability of default and a reduction in the cost of debt due to higher credit ratings, although the latter must be considered against the corresponding increase in the cost of equity and the cost of capital overall.

It is not clear if the potential benefits mentioned above would be actually passed to customers. First, for a change in the probability of default to ultimately benefit customers, there have to be clear deadweight costs of bankruptcy which are not identified or evidenced. Second, potential impact of Ofwat's proposals on default rates in utilities is marginal. Third, a potential reduction in the cost of debt as a result of Ofwat's proposals is unlikely to be

passed through to the customer bills. This partial effect would be also *at a minimum* offset by a corresponding increase in cost of equity and in addition to that a likely increase in the cost of capital overall. Therefore, based on the analysis presented in this report, no clear, quantifiable benefits to customers from Ofwat’s proposals can be identified.

This report also assessed potential costs of Ofwat’s proposals due to a change in equity value arising from agency costs, reduced ability to respond to clientele effects, impact of delays in cash flows on equity value and restricted ability to adopt the optimal capital structure. These effects – which conceptually are similar to the effects arising from regulatory intervention on capital structures in banking – would all else equal increase costs and the returns required by equity investors in the sector which would have to be funded by customers.

On balance, the proposals are therefore likely to result in costs to customers which materially outweigh the potential benefits. A summary of the potential costs is set out in the table below.

**Table 19: Summary of potential costs relating to Ofwat’s proposals**

Potential cost of Ofwat’s proposals	Cost of capital impact
<b>Increased cost of capital due to potential disruptions to stability of dividend flow</b>	
Dividend signalling	18-22bps
<b>Pricing changes in equity claims (in addition to uncertainty of dividend flow)</b>	
Preference shares	45-98bps
<b>Pricing increases in equity payback period</b>	
Duration of cash flows	14-28bps
<b>Total estimated range of costs associated with Ofwat’s proposals</b>	<b>14-98bps</b>

## 7 Appendix 1: Investor universe in UK water

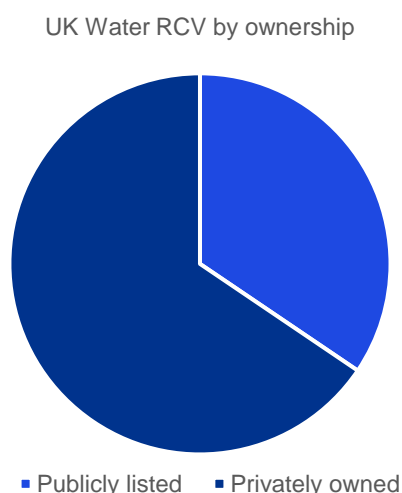
The presence of dividends within an investment will carry varying levels of importance for different investor types. Broadly, investors can be classed into three categories:

- Focused on capital growth;
- Seeking primarily a cash yield and requiring cash dividends on a regular basis; and
- Investors with mixed strategies, requiring at least a proportion of their return in the form of cash distributions.

This section considers the composition of investors in the UK water sector and whether they are likely to require regular dividend payments or are indifferent to the form of return.

The UK Water sector has a diverse pool of investors, which covers many geographies and investor types. Institutional investors make up the majority of the shareholder base. While some water companies are publicly listed, the vast majority of RCV Value is ultimately privately owned, per Figure 14.<sup>84</sup>

**Figure 14: UK water RCV by ownership<sup>85</sup>**



Source: Company websites and reports

KPMG analysis of investors' strategy requirements indicates that nearly all investors in the UK water sector require dividends to some degree – in other words, they either employ a 'mixed' or a 'cash yield' strategy as defined above and do not focus exclusively on capital growth. The following table shows the ten largest shareholders by share of total RCV, as

<sup>84</sup> RCV value as of 31 March 2022. Analysis does not consider gearing levels and hence bondholders; RCV Value used purely as a point-in-time quantification metric. WSH has been excluded as it does not have shareholders,

<sup>85</sup> Sources: Company websites and reports.

reported at March 2022, classified by whether they require some level of dividend, are indifferent, or their strategy is exclusively growth focused:

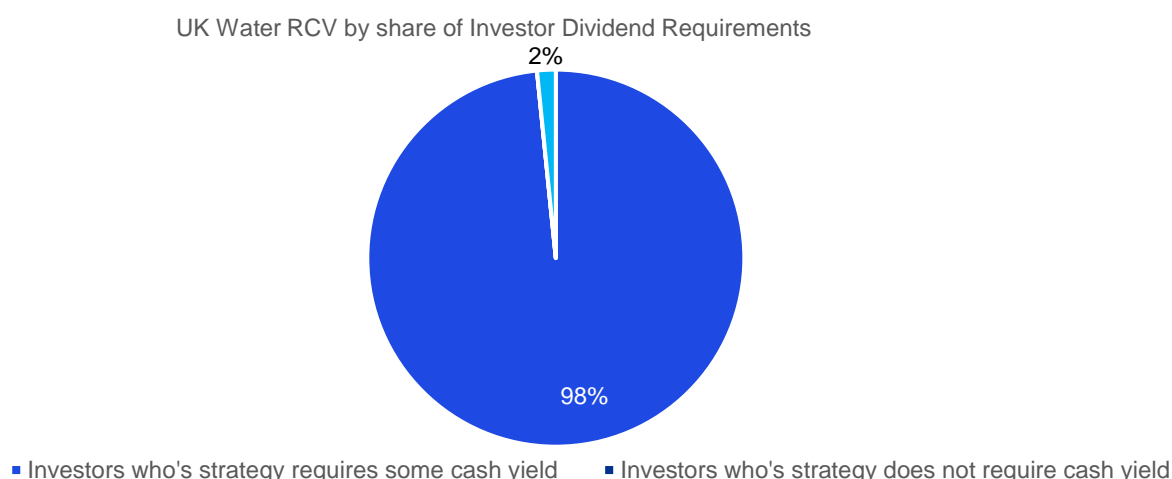
**Table 20: Largest Equity Investors in UK Water by RCV share**

Investor Name	Investor Type	Company	Likely Strategy Requirements	Proportion of total RCV held <sup>86</sup>
<b>OMERS</b>	Pension Fund	Thames	Mixed; some dividend requirement	6.82%
<b>YTL Power</b>	Infrastructure Conglomerate	Wessex	Cash yield	4.66%
<b>Macquarie Asset Mgmt.</b>	Infrastructure Fund	Southern	Mixed; some dividend requirement	4.50%
<b>USS</b>	Pension Fund	Thames	Mixed; some dividend requirement	4.23%
<b>CK Holdings</b>	Infrastructure Investment Holding	Northumbrian	Mixed; some dividend requirement	4.12%
<b>Abu Dhabi Investment Authority</b>	Sovereign Wealth Fund	Multiple	Mixed; some dividend requirement	4.01%
<b>GIC</b>	Sovereign Wealth Fund	Yorkshire	Mixed; some dividend requirement	3.35%
<b>Blackrock</b>	Asset Manager	Multiple	Mixed; some dividend requirement	3.26%
<b>Gateway Infrastructure (Managed by Corsair Investment Mgmt.)</b>	Infrastructure Fund	Yorkshire	Mixed; some dividend requirement	3.03%
<b>Wharfedale HK (Managed by DWS)</b>	Infrastructure Fund	Yorkshire	Mixed; some dividend requirement	2.33%

Source: Company websites and reports

Allocating the outstanding RCV share by investor stake in their respective companies, much of the investor universe can be classified as following an investment strategy which requires some cash yield:

**Figure 15: UK Water RCV by share of Investor Dividend Requirements**



Source: KPMG Internal analysis of UK Water Investors

As the vast majority of equity investors in the UK water follow strategies which require some dividend yield, lack of visibility and control over the dividend distributions stemming from Ofwat's proposal would pose an issue for them. Inability to predict and generate the cash yield would make investment managers less competitive in the market and would likely require a re-consideration of capital allocation across asset classes by them. Potential strategies could include:

- Offsetting lack of cash yield with higher overall return (a switch to a growth strategy). A very significant step-up in the overall return would be required as capital growth strategies produce returns in mid to high teens.
- Rebalancing the portfolio by reducing capital allocation to the UK water sector and increasing capital allocation to dividend paying sectors
- Exiting the UK water sector as there is no suitable pricing or return hurdle which would remunerate the risk of dividend non-payment, and other sectors with more predictable dividend flows may be more suitable.

In most instances, investor response strategies would likely drive the capital away from the sector, as opposed to attracting it. While Ofwat's proposals seek to secure greater equity in the sector, their impact may be just the opposite. A rationale investor commits capital when an investment opportunity meets an acceptable combination of risk and return and withdraws capital when such combination ceases to be acceptable. At a time when the water sector faces unprecedented spike in investments associated with improving environmental performance and asset resilience, tackling the problems of future population growth and scarce water resources, reducing the pool of investible capital available to UK water companies may be counterproductive.

An illustration of this point is the cessation of all private transactions activity in the sector after the introduction by Ofwat of the gearing outperformance sharing mechanism (GOSM) in 2019. The transactions activity restarted only after the CMA has ruled against such mechanism in the PR19 appeals.



## 8 Appendix 2: Dividend signalling – Detailed calculation

### Probability distribution of negative announcements

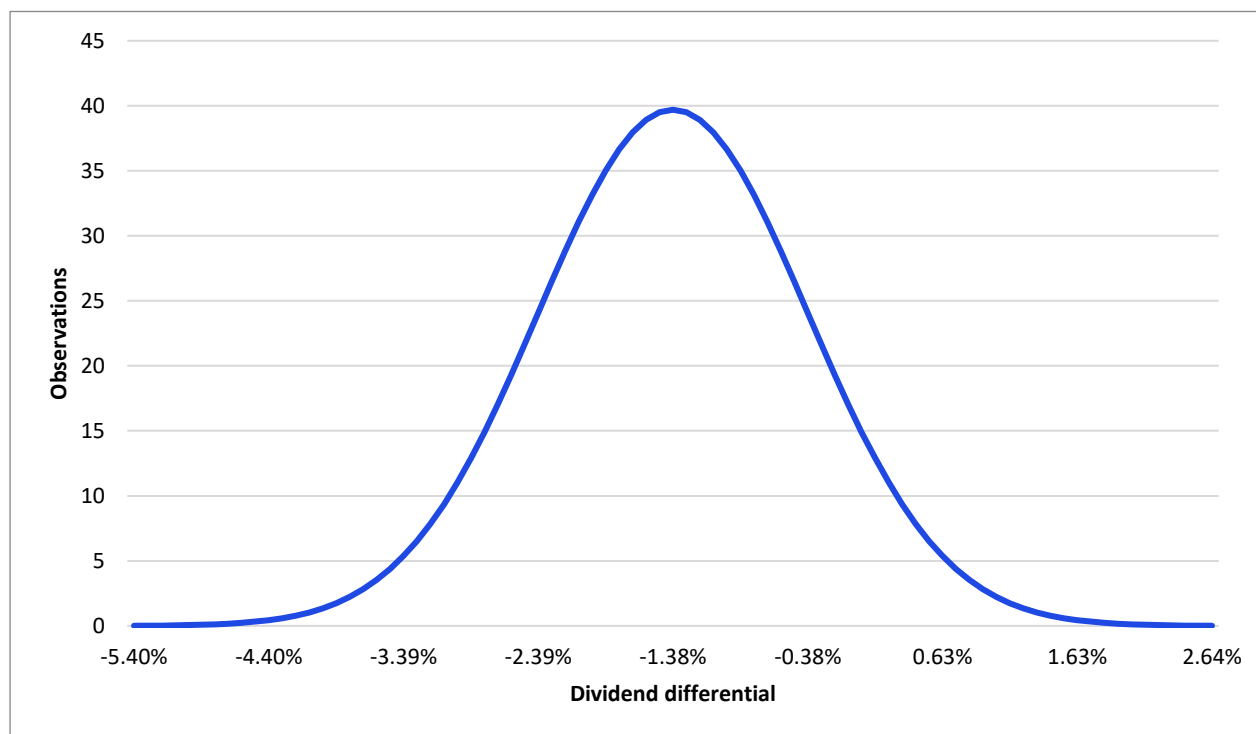
The analysis considers all negative UU and SVT's dividend announcements with corresponding dividend differentials. A normal distribution is drawn from the implied Mean and Standard deviation of this dataset to quantify the risk exposure, which is the range of Min to 20<sup>th</sup> percentile or left-tail of the distribution.

The table below presents normalised statistical distribution of negative dividend differentials derived from UU and SVT's announcements data.

**Table 21: Statistical percentiles of normalised negative dividend differentials**

<b>Percentile</b>	<b>Normalised distribution of negative dividend differentials</b>
<b>Mean</b>	<b>-1.38%</b>
<b>Standard deviation</b>	<b>1.00%</b>
<b>Implied Min</b>	<b>-9.77%</b>
<b>Implied Max</b>	<b>7.01%</b>
<b>1% (Value at Risk "VAR" threshold)</b>	<b>-3.72%</b>
<b>5% (Value at Risk "VAR" threshold)</b>	<b>-3.00%</b>
10%	-2.67%
15.00%	-2.42%
20.00%	-2.23%
25.00%	-2.06%
30.00%	-1.91%
35.00%	-1.77%
40.00%	-1.63%
45.00%	-1.51%
50.00%	-1.38%
55.00%	-1.25%
60.00%	-1.13%
65.00%	-0.99%
70.00%	-0.85%
75.00%	-0.70%
80.00%	-0.53%
85.00%	-0.34%
90.00%	-0.09%
95.00%	0.27%

Source: Bloomberg, Eikon, KPMG analysis

**Figure 16: Probabilistic distribution of normalised negative dividend differentials**

Source: Bloomberg, Eikon, KPMG analysis

**Regression results on all available dividend announcement data for UU and SVT from 2014**

The table below presents (1) Differential between declared and expected dividend, (2) 'Excess return' and (3) Dividend yield on all of UU and SVT's announcement dates from 2014 for regression analysis.

**Table 22: Regression inputs on all available data for UU and SVT**

Company	Announcement event	Excess return	Differential between declared and expected dividend	Dividend yield
UU	1	-1.140%	0.042%	5.051%
UU	2	-0.974%	0.080%	4.179%
UU	3	-0.324%	0.040%	3.964%
UU	4	-1.416%	0.000%	3.982%
UU	5	-1.048%	0.000%	4.026%
UU	6	0.807%	0.077%	4.278%
UU	7	-0.257%	0.077%	3.688%
UU	8	0.543%	0.076%	5.005%

UU	9	-0.368%	0.000%	5.003%
UU	10	1.273%	0.146%	5.174%
UU	11	-0.091%	0.042%	5.051%
UU	12	-0.156%	0.042%	5.051%
UU	13	-4.324%	0.035%	4.829%
UU	14	2.906%	-0.483%	4.662%
UU	15	-1.181%	0.035%	4.367%
UU	16	1.105%	-1.226%	4.005%
UU	17	-7.216%	-3.333%	4.187%
SVT	1	1.154%	0.000%	4.537%
SVT	2	-0.559%	0.029%	4.000%
SVT	3	0.610%	0.000%	3.912%
SVT	4	0.232%	0.000%	3.778%
SVT	5	1.584%	0.000%	3.561%
SVT	6	-1.195%	0.000%	3.667%
SVT	7	1.759%	0.000%	3.272%
SVT	8	0.661%	0.029%	3.911%
SVT	9	1.851%	0.000%	4.165%
SVT	10	-0.389%	1.274%	4.705%
SVT	11	-0.343%	0.000%	4.537%
SVT	12	-0.139%	0.000%	4.537%
SVT	13	1.073%	0.000%	4.092%
SVT	14	0.022%	0.000%	4.109%
SVT	15	0.183%	0.000%	4.076%
SVT	16	0.590%	-0.921%	3.617%
SVT	17	-2.775%	-0.938%	3.326%

Source: Bloomberg, Eikon, KPMG analysis

Regression analysis is performed on the 'excess return' using two scenarios: (1) the dividend differential and dividend yield as variables, and (2) dividend differential as the only variable.

The result of regression is presented as follows:

**Table 23: Regression results using two variables**

Using 2 variables	Coefficients	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.021	<b>0.364</b>	-0.026	0.069	-0.026	0.069
<b>Differential between declared and expected dividend</b>	<b>1.478</b>	<b>0.001</b>	<b>0.636</b>	<b>2.320</b>	<b>0.636</b>	<b>2.320</b>
Dividend yield	-0.506	<b>0.356</b>	-1.607	0.595	-1.607	0.595

Source: KPMG analysis

**Table 24: Regression results using one variable**

Using 1 variable	Coefficients	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.000	<b>0.938</b>	-0.006	0.005	-0.006	0.005
<b>Differential between declared and expected dividend</b>	<b>1.395</b>	<b>0.002</b>	<b>0.576</b>	<b>2.215</b>	<b>0.576</b>	<b>2.215</b>

Source: KPMG analysis

The regression suggests a coefficient of 1.478 (P-value 0.001) and 1.395 (P-value 0.002) under 2 variables and 1 variable scenario respectively. The coefficients are all statistically significant at 95% confidence interval, evidenced by P-values smaller than 5%.

**Regression results on all available dividend announcement data for UU and SVT from 2014 excluding events where there is 0% differential**

Additional regression analysis was performed to exclude announcement dates where the dividend differential is 0%. This is performed to ensure the robustness of the coefficient calibration such that events where there is 0% dividend differential do not distort the coefficient calculation.

The table below presents (1) differential between declared and expected dividend, (2) 'excess return' and (3) dividend yield on UU and SVT's announcement dates from 2014 excluding 0% differential for regression analysis.

**Table 25: Regression inputs on UU and SVT excluding 0% differential**

Company	Announcement event	Excess return	Differential between declared and expected dividend	Dividend yield
UU	1	-1.140%	0.042%	5.051%
UU	2	-0.974%	0.080%	4.179%
UU	3	-0.324%	0.040%	3.964%
UU	6	0.807%	0.077%	4.278%
UU	7	-0.257%	0.077%	3.688%
UU	8	0.543%	0.076%	5.005%
UU	10	1.273%	0.146%	5.174%
UU	11	-0.091%	0.042%	5.051%
UU	12	-0.156%	0.042%	5.051%
UU	13	-4.324%	0.035%	4.829%
UU	14	2.906%	-0.483%	4.662%
UU	15	-1.181%	0.035%	4.367%
UU	16	1.105%	-1.226%	4.005%
UU	17	-7.216%	-3.333%	4.187%
SVT	2	-0.559%	0.029%	4.000%

SVT	8	0.661%	0.029%	3.911%
SVT	10	-0.389%	1.274%	4.705%
SVT	16	0.590%	-0.921%	3.617%
SVT	17	-2.775%	-0.938%	3.326%

Source: Bloomberg, Eikon, KPMG analysis

Regression analysis is performed on the 'excess return' using two scenarios including: (1) dividend differential and dividend yield as variables, and (2) dividend differential as the only variable.

The result of regression is presented as follows:

**Table 26: Regression results using 2 variables excluding 0% differential**

Using 2 variables	Coefficients	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.009	<b>0.821</b>	-0.074	0.092	-0.074	0.092
Differential between declared and expected dividend	<b>1.378</b>	<b>0.022</b>	<b>0.228</b>	<b>2.527</b>	<b>0.228</b>	<b>2.527</b>
Dividend yield	-0.264	<b>0.768</b>	-2.130	1.602	-2.130	1.602

Source: KPMG analysis

**Table 27: Regression results using 1 variable excluding 0% differential**

Using 1 variable	Coefficients	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-0.003	<b>0.569</b>	-0.012	0.007	-0.012	0.007
Differential between declared and expected dividend	<b>1.322</b>	<b>0.016</b>	<b>0.277</b>	<b>2.367</b>	<b>0.277</b>	<b>2.367</b>

Source: KPMG analysis

The regression suggests a coefficient of 1.378 (P-value 0.022) and 1.322 (P-value 0.016) under 2 variables and 1 variable scenario respectively. The coefficients are all statistically significant at 95% confidence interval, evidenced by P-values smaller than 5%.

### Regression results summary

The table below summaries calibrated coefficient between dividend differential and 'excess return' from the regression analysis:

**Table 28: Regression results summary**

Data	Regression	Coefficient	P-value
All available data	1-variable	<b>1.395</b>	0.0015
All available data	2-variable	<b>1.478</b>	0.0012
All available data	Average	<b>1.437</b>	0.0015
Excluding 0% differential	1-variable	<b>1.322</b>	0.0162
Excluding 0% differential	2-variable	<b>1.378</b>	0.0218

<b>Excluding 0% differential</b>	Average	<b>1.350</b>	0.0218
<b>Average</b>		<b>1.393</b>	<b>0.0218</b>

Source: KPMG analysis

The 1.393 mid-point average of the regression is used in the main analysis.

## CoE uplift calculation

The table below presents the detailed calculation of CoE uplift

**Table 29: CoE uplift calculation**

The analysis is performed under 20-year investment horizon	-3% differential	-3.72% differential
<b>UU and SVT combined average</b>		
Dividend differential	-3.00%	-3.72%
<b>Coefficient</b>	<b>1.393</b>	<b>1.393</b>
<b>Change in equity value</b>	<b>-4.18%</b>	<b>-5.183%</b>
<b>Required uplift on CoE</b>	<b>0.45%</b>	<b>0.56%</b>
<b>Gearing</b>	<b>60%</b>	<b>60%</b>
<b>Required uplift on WACC</b>	<b>0.18%</b>	<b>0.22%</b>
<b>UU</b>		
Average dividend	20.619	20.619
Dividend growth	2.24%	2.24%
<b>Implied equity value</b>	<b>367.586</b>	<b>367.586</b>
Dividend differential	-3.00%	-3.72%
Coefficient	1.393	1.393
<b>Change in equity value</b>	<b>-4.180%</b>	<b>-5.181%</b>
<b>Implied equity value post adjustment</b>	<b>352.220</b>	<b>348.542</b>
Dividend payment for next period	20.001	19.853
Average dividend onwards	20.619	20.619
<b>Implied discount</b>	<b>4.44%</b>	<b>4.56%</b>
<b>Required uplift on CoE</b>	<b>0.46%</b>	<b>0.57%</b>
<b>Gearing</b>	<b>60%</b>	<b>60%</b>
<b>Required uplift on WACC</b>	<b>0.18%</b>	<b>0.23%</b>
<b>SVT</b>		
Average dividend	51.170	51.170
Dividend growth	2.95%	2.95%
<b>Implied equity value</b>	<b>1013.632</b>	<b>1013.632</b>
Dividend differential	-3.00%	-3.72%
Coefficient	1.393	1.393
<b>Change in equity value</b>	<b>-4.180%</b>	<b>-5.181%</b>
<b>Implied equity value post adjustment</b>	<b>971.261</b>	<b>961.118</b>
Dividend payment for next period	49.635	49.267
Average dividend onwards	51.170	51.170
<b>Implied discount</b>	<b>4.00%</b>	<b>4.11%</b>
<b>Required uplift on CoE</b>	<b>0.44%</b>	<b>0.55%</b>
<b>Gearing</b>	<b>60%</b>	<b>60%</b>
<b>Required uplift on WACC</b>	<b>0.18%</b>	<b>0.22%</b>

Source: KPMG analysis



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