

A 2020 VISION FOR WATER

The future of economic regulation in the water industry

PR24 AND BEYOND

After two price controls with the same fundamental methodology, it is now time to think further ahead to address the longer-term challenges faced by the water sector.

In our view, tweaks to the PR19 approach are not going to be sufficient to address these challenges. Instead, as discussed in our Water Report article , we have thought about how economic regulation in the sector should evolve over the next decade. We need to make progress on:

- Integrated approach to service, costs and risk & reward
- Using more and better data to transform economic regulation
- Better long-term incentives
- Reducing the regulatory burden

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THE WATER REPORT

OUR INTENTION IS TO STIMULATE A DISCUSSION ON THESE TOPICS. WE WOULD LOVE TO HEAR YOUR VIEWS. PLEASE COMPLETE THE POLLS THROUGHOUT THIS DOCUMENT AND FEEL FREE TO GET IN TOUCH:

We use these longer-term priorities to identify short-term goals for PR24. But what does such an agenda mean for outcomes, costs and risk and reward? We have developed a series of papers that point to possible answers. Our thinking covers:

- **Chapter 2:** The future of outcomes, PCs and ODIs in the water sector
- **Chapter 3:** Efficiency assessment and benchmarking - How more and better data...
- **Chapter 4:** Risk and reward - Options for improving measurement of risk
- **Chapter 5:** Risk and reward - Cross checks on the cost of capital

ANNABELLE ONG

ROB FRANCIS

MEET THE TEAM



**ANNABELLE ONG, CO-
HEAD OF THE WATER
PRACTICE**



**PHIL WICKENS,
ASSOCIATE**



**ANNA NORTHALL,
MANAGER**



**MICHAEL YANG,
MANAGER**



**CHRIS CUTTLE,
MANAGER**



**ROB FRANCIS, CO-
HEAD OF THE WATER
PRACTICE**



**STEPHANIE PACAK,
CONSULTANT**



**FULVIO BONDILOTTI,
CONSULTANT**



**EMILY NIELSEN,
CONSULTANT**



**KATHARINE
LAUDERDALE,
CONSULTANT**

FUTURE OF OUTCOME INCENTIVES IN THE WATER SECTOR

How we can move to a better approach



Key issues for the future outcomes framework

The Outcome Delivery Incentive (ODI) framework was introduced for the 2015-2020 price control period and remains in place, albeit with some alterations, for the current one (2020-2025).

The key question now is whether the framework should evolve for the next price control or be replaced by an alternative mechanism.

Ofwat has indicated that it wants to retain the framework for the next price control rather than replace it, so the principal question is how to improve the design. Against that background, in the figure below we identify the main issues that need to be addressed.

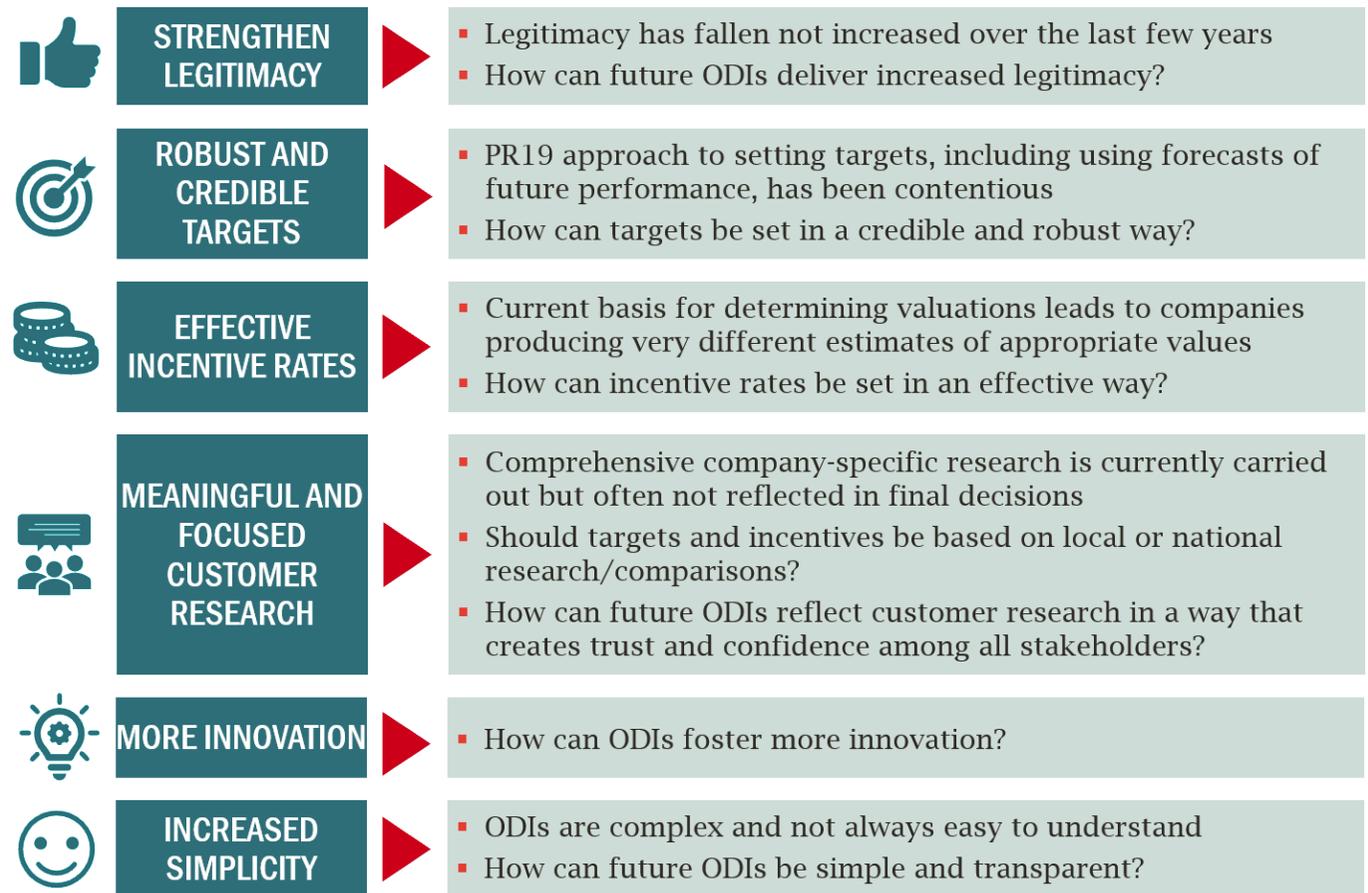


Figure 1: Issues to be addressed in the future framework *Source: Frontier Economics*

WHAT SHOULD WE DO NOW TO CREATE A BETTER APPROACH FOR SETTING PCS AND ODI IN THE FUTURE?

IDENTIFY CLEAR OBJECTIVES FOR THE OUTCOMES FRAMEWORK

To assess how the ODI approach can be made more effective, we first review the overall objectives of the framework. There are some clear trade-offs across the objectives (shown in Figure 2), and it is important for the industry to agree on what weight to give them in order to inform the design of the future framework. In our view, legitimacy is fundamental, and the ODIs provide an opportunity to increase trust in the sector.



Figure 2: Objectives of outcomes framework *Source: Frontier Economics*

MEASURES NEED URGENT WORK

A number of questions need to be answered about the design of effective measures, including: how broad should the scope be; how can we design higher-level measures that are closer to the ultimate customer outcome; and how can we factor in long-term outcomes. To address these and to be ready with a more meaningful set of measures at PR24, we need to carry out the following steps now.

STEPS TO DEVELOPING NEW MEASURES

1. Start work on measures as soon as possible
2. Recognise that measuring the right things requires some investment
3. Use a collaborative approach - companies share results from trials

In our view, the industry needs to make an early decision on the direction of travel to allow sufficient time to develop a detailed approach, and in doing so strike the right balance between achieving efficiency and delivering legitimacy.

Similarly, a number of questions need to be explored when assessing how incentives should be set in future, including:

- who should receive underperformance payments;
- how long-term incentives should work;
- what the role is for the customer voice in the process and what issues should they have a direct view on; and
- who should make the final decision on how incentives are set.

TARGETS AND INCENTIVES NEED TO BE INTEGRATED WITH THE COST ASSESSMENT AND THE ROLE OF CUSTOMER ENGAGEMENT NEEDS TO BE CLEARER

How targets are set in future raises a number of points, including how they should be aligned with the cost assessment framework and how robust, longer-term targets can be introduced. One option would be to set dynamic targets for customer-facing measures and to introduce a risk assessment framework for resilience measures.



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STEPS FOR DEVELOPING TARGET-SETTING METHODOLOGY

1. Decide on how to balance overall objectives (efficiency, legitimacy, etc) and explore standardised and dynamic targets
2. Develop options for how target-setting can be integrated with cost benchmarking
3. Identify which long-term targets can be trialled at PR24

STEPS FOR DEVELOPING INCENTIVES

1. Build a better understanding of how current ODIs affect behaviour
2. Identify how customer views should be reflected in incentives
3. Integrate the methodology for incentives with the approach to risk and reward

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HARNESSING MORE AND BETTER DATA TO IMPROVE WATER REGULATION

How companies and Ofwat need to adapt their approach



WHAT COULD THE WORLD OF WATER LOOK LIKE WITH MORE AND BETTER DATA?

Technological progress has created new, exciting opportunities to gather and analyse data on a scale that was unthinkable a few years ago.

Over the next decade we expect data collection and analysis to evolve further to provide faster and better insights to manage businesses. In the water sector, we can envisage a world where companies have the data capabilities shown in Figure 1.

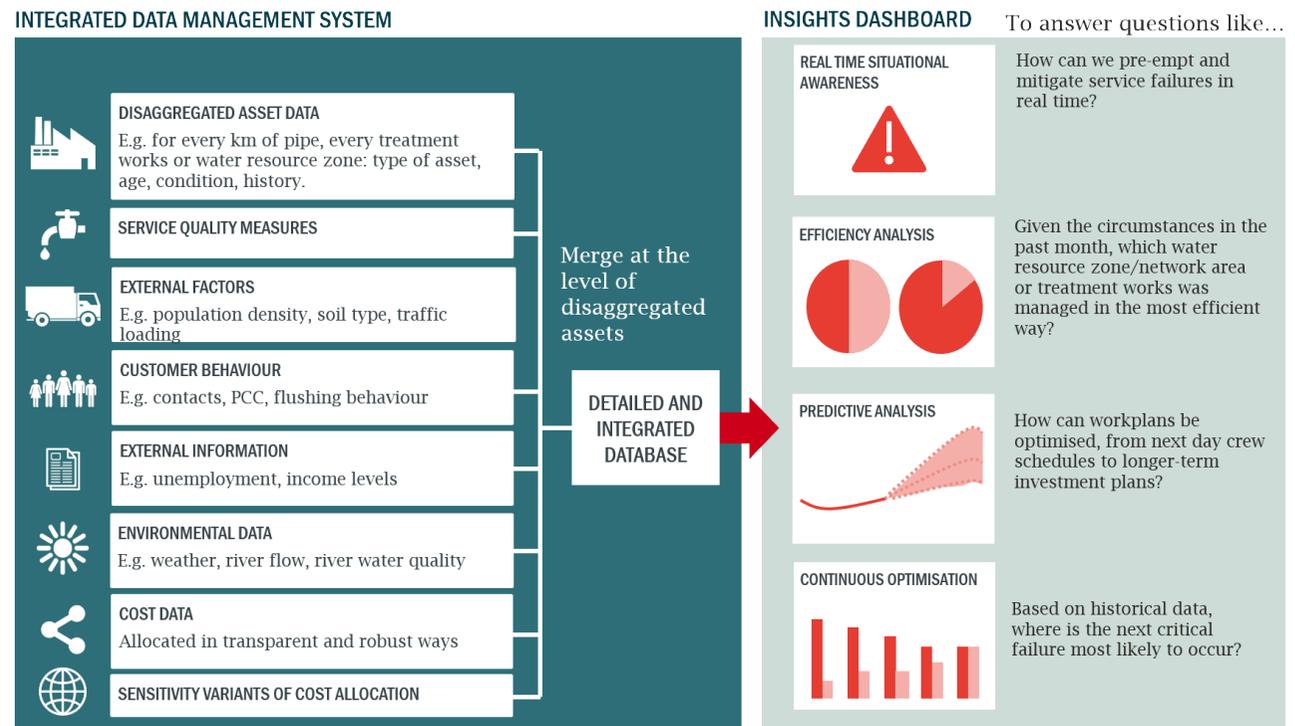


Figure 1: Future water company data capabilities *Source: Frontier Economics*

The opportunities created by the “data revolution” raise two key questions:

- How can companies and Ofwat use more and better data to improve economic regulation in the future?
- Is the current regulatory approach incentivising the right amount and type of investment in more and better data?

HOW CAN COMPANIES AND OFWAT USE MORE AND BETTER DATA TO IMPROVE ECONOMIC REGULATION IN THE FUTURE?

We have identified three areas where data can transform the current approach (for more detail see the full paper):

- Companies can draw on more and better data to improve the quality of their business plans. There are great opportunities to develop better evidence on customer behaviour and views, efficient opex, cost and service special factors, enhancement projects and service quality targets. To achieve companies' objectives at each price control, the evidence needs to be supported by a clear regulatory data strategy (see Figure 2). We have identified a series of simple steps to develop such a strategy (see Figure 3).
- The sector needs to develop a clear, high-level vision of how costs and service should be benchmarked at the next price controls review. If it does not, there is a risk that data is not comparable, that the incentives to collect relevant data are not sufficient and that it will be too difficult at PR24 and subsequent reviews to adopt a new approach. A longer-term vision for benchmarking costs and service would create a clear way forward and PR24 could be approached in this context. A joint vision can also ensure that high-level incentives provided by the totex
- Companies need to apply the latest techniques and insights developed from economic regulation to new operational data to generate regulatory and operational insights (e.g. efficiency benchmarking).



Figure 2: Why companies need a regulatory data strategy *Source: Frontier Economics*

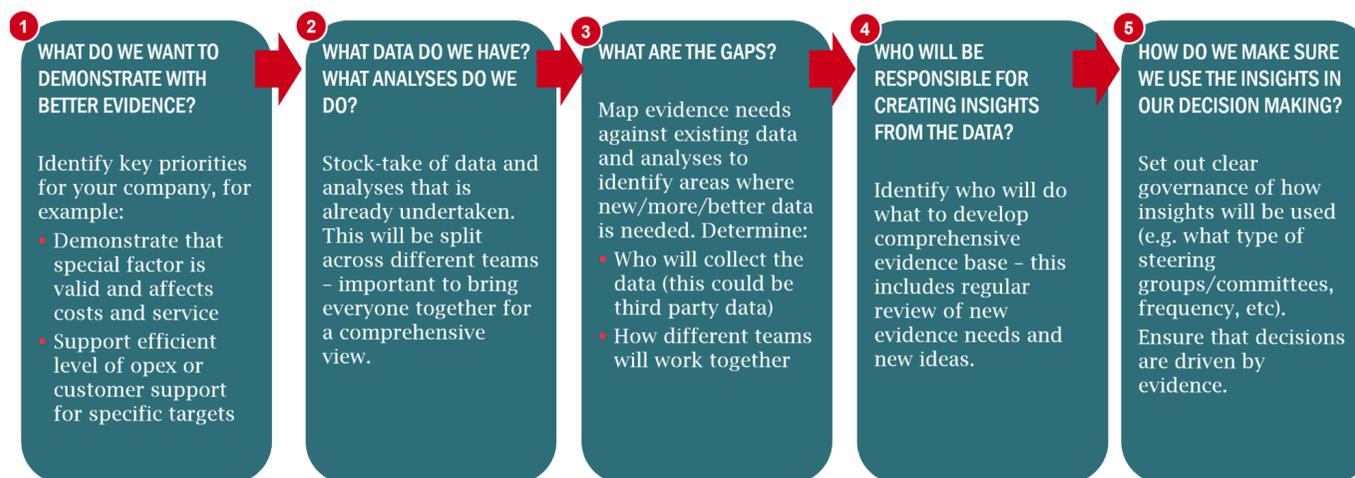
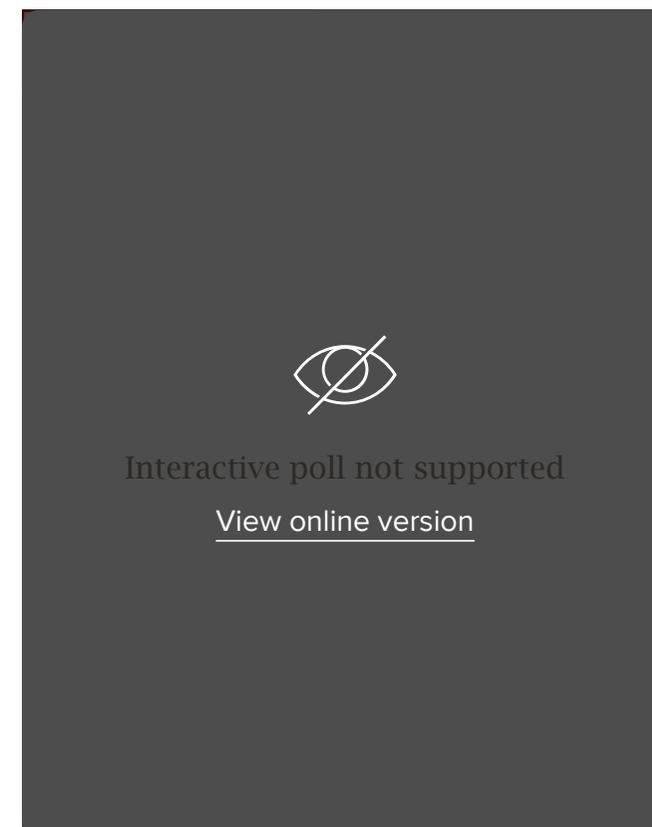


Figure 3: Steps to develop a regulatory data strategy *Source: Frontier Economics*

ARE REGULATORS INCENTIVISING THE RIGHT INVESTMENT IN MORE AND BETTER DATA?

Investment in more and better data collection and analysis requires substantial costs and effort over multiple AMPs. Similarly, the efficiency gains from better insights will be realised over the course of several AMPs. With a challenging PR19 Final Determination and the significant problems created by the COVID-19 pandemic, investment in data will be difficult to

justify. The current regulatory approach creates short-term incentives that may not be compatible with investments and benefits that stretch over several AMPs. However, in our view more and better data is essential to drive long-term efficiency, which in turn is critical to the legitimacy of the water sector. Companies therefore should not be discouraged from commercially attractive options to invest in data. This means we need to examine more closely to what extent:



- Ofwat’s £200m innovation fund could play a role in spurring investment in more and better data;
- Consistency of regulatory approach and commitment to future methods can provide sufficient certainty for

companies to make investment decisions regardless of specific allowances;

- Existing regulatory incentives could be modified, or new incentives created outside the price control to facilitate more investment in data; and
- The methodology for PR24 could be more explicit in rewarding companies for efforts in this area.

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**MORE AND BETTER
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RISKY BUSINESS

Options to improve the robustness and consistency of risk measures for regulated infrastructure

UNDERSTANDING THE LEVEL OF FINANCIAL RISK FACED BY UTILITIES CAN HELP REGULATORS TO DESIGN INCENTIVE MECHANISMS AND CALIBRATE THE RATE OF RETURN.

It can assist companies and investors to gauge their risk exposure and ensure financial resilience.

UK regulators have focused on the Return on Regulatory Equity (RoRE) as a central yardstick of risk. RoRE measures the return that equity investors will earn in

specific upside and downside scenarios and is assessed against the cost of equity component of the Weighted Average Cost of Capital (WACC).

But RoRE is not without its drawbacks. We consider how to improve RoRE and other options for measuring risk.

HOW RORE HAS BEEN CALCULATED

RoRE represents a measure of risk for equity investors. As applied in the water sector, it has the following features:

FOCUS ON BUSINESS-AS-USUAL RISKS

Includes cost risk; service performance payments; revenue risk and financing cost risk. But not wider political or regulatory risks.

ONE UPSIDE AND ONE DOWNSIDE SCENARIO

Downside is assessed at P10 probability level and upside is assessed at P90 probability level. Current lack of consistency on input data and modelling approaches used to assess scenarios.

MEASURES IMPACT OVER 5-YEAR PERIOD

Total impact over the price control period, including effect of sharing mechanisms that apply after the price control. Considers NPV impact of risk not cashflow impact.

CAPTURES LINKAGES BETWEEN RISKS

In principle it reflects the correlations between risks, and not simply the sum of individual risks. Lack of consistency in simulation techniques used to aggregate risk impacts.

Figure 1: Key features of RoRE *Source: Frontier Economics*

The RoRE ranges published by Ofwat in the PR19 final determinations showed that the downside return on equity by company ranges from -4% to 0%, while the upside return ranges from 7% to 11%. So some companies are exposed to materially more risk than others. However, in Ofwat's final determination this does not appear to affect the other elements of the regulatory settlement. This raises questions about the role of RoRE and whether there is a case for other measures of risk.

WHAT IS THE RISK MEASURE TRYING TO ACHIEVE?

While there are a lot of practical ways of improving RoRE, it is important to step back and think about the overall objectives of a risk measure, see Figure 2 .



Figure 2: Objectives of risk measures *Source: Frontier Economics*

Given the different objectives, a single risk measure will not perform well against all of them. The current measure of RoRE is best designed as a measure of relative risk that aids the calibration of incentives and risk-sharing mechanisms. As a measure to estimate WACC it is limited as it does not encompass the full set of risks (e.g. political or regulatory risks) and it does not take account of diversifiable risk. Further, it is a poor measure of financial viability because it reflects changes in value rather than cashflow.



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WAY FORWARD

In this light, we have considered two broad areas for further development:

- First, options for improving the existing RoRE to provide a more robust way to support the design of incentives.
- Second, options for cashflow measures to assess financial resilience, combining features of RoRE and existing credit metrics.

These options are summarised in the next columns.

Options for improving current RoRE

Improved input data and risk- modelling	More robust risk distributions and aggregation methods. Initially comparisons will be hampered by different approaches.	Better measurement of relative impact of risks in regulatory method.
More prescriptive Ofwat guidance on RoRE calculations.	More comparable results across companies. Could stifle innovation in risk- modelling.	Better measurement of relative impact of risks in regulatory method.
Better assessment of risk distribution - going beyond P10 and P90 (i.e. P1, P2 ...).	Would provide a better understanding of skewness and long-tail risk. Additional complexity in analysis and modelling.	Would provide some evidence to understand WACC/rate of return differentials between companies or sectors.

New measure of risk based on cashflows. Would use same risk distributions as RoRE but consider annual cashflow risks. Could include a wider range of risks that are captured in RoRE.

Cashflow risk distributions - notional gearing	Can capture a broader range of risks and assess short-term cashflow impacts.	Better measurement of financial resilience and viability.
Cashflow risk distributions - actual gearing	As above.	Better measurement of financial resilience and viability. Based on actual gearing and can help inform companies' and investors' assessment of viability.



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GETTING REAL ABOUT RETURNS

A reality check for setting the allowed
return

AN ALTERNATIVE CROSS-CHECK TO THE COST OF CAPITAL

The Weighted Average Cost of Capital (WACC) is the tool of choice to set a reasonable level of return on the capital invested in utilities.

ALLOWED RETURNS HAVE FALLEN SINCE THE GFC

Since the Global Financial Crisis (GFC), expansionary monetary policies have driven down interest rates. This has led to significant reductions in the cost of debt for regulated utilities, which has fed directly into a lower allowed WACC.

Furthermore, UK regulators have substantially reduced their estimates of the cost of equity. However, the impact of lower interest rates on the cost of equity is

not clear-cut. The problem is that the cost of equity is unobservable, and there is a range of estimation methods, all with high margins of error. Unlike the cost of debt, the cost of equity cannot be observed because future equity cashflows are unknowable.

A fall in interest rates caused by quantitative easing could be consistent with a lower expected return on equity (ROE). However, investor switching from equities to bonds due to heightened risk aversion could be consistent with a higher expected ROE. Both forces could have been at play, making direct inference of the cost of equity uncertain.

This uncertainty leads to indirect estimation, using methods such as the Capital Asset Pricing Model (CAPM). The CAPM method is endorsed by academics and practitioners alike. However, although the risk-free rate is based on government bond yields and is straightforward to calculate, the total market return (TMR)

cannot be observed and requires indirect estimation.

It seems that the most honest answer to the question whether a lower RFR automatically leads to a lower cost of equity is: 'we do not know for sure because we cannot observe the cost of equity.'

This brings us to cross-checks, which regulators often carry out to test that their cost of equity estimates are within a reasonable range. There are various cross-checks available and we do not attempt to cover them here. Instead we propose a different approach, to cross-check if the allowed rate of return is in line with business fundamentals.

AN ALTERNATIVE CROSS-CHECK – PROFITABILITY METRICS OF BENCHMARKS

Although the cost of equity (expected ROE) cannot be observed, we can observe the realised profitability of the underlying business. This can provide a reasonable cross-check, because it is directly comparable to what the regulator sets – an allowed level of profitability for the business.

The Figures show the profitability of the entire UK and US equity markets using Bloomberg data. The accounting measure we use is return on common equity (net income after tax divided by the book value of the equity).

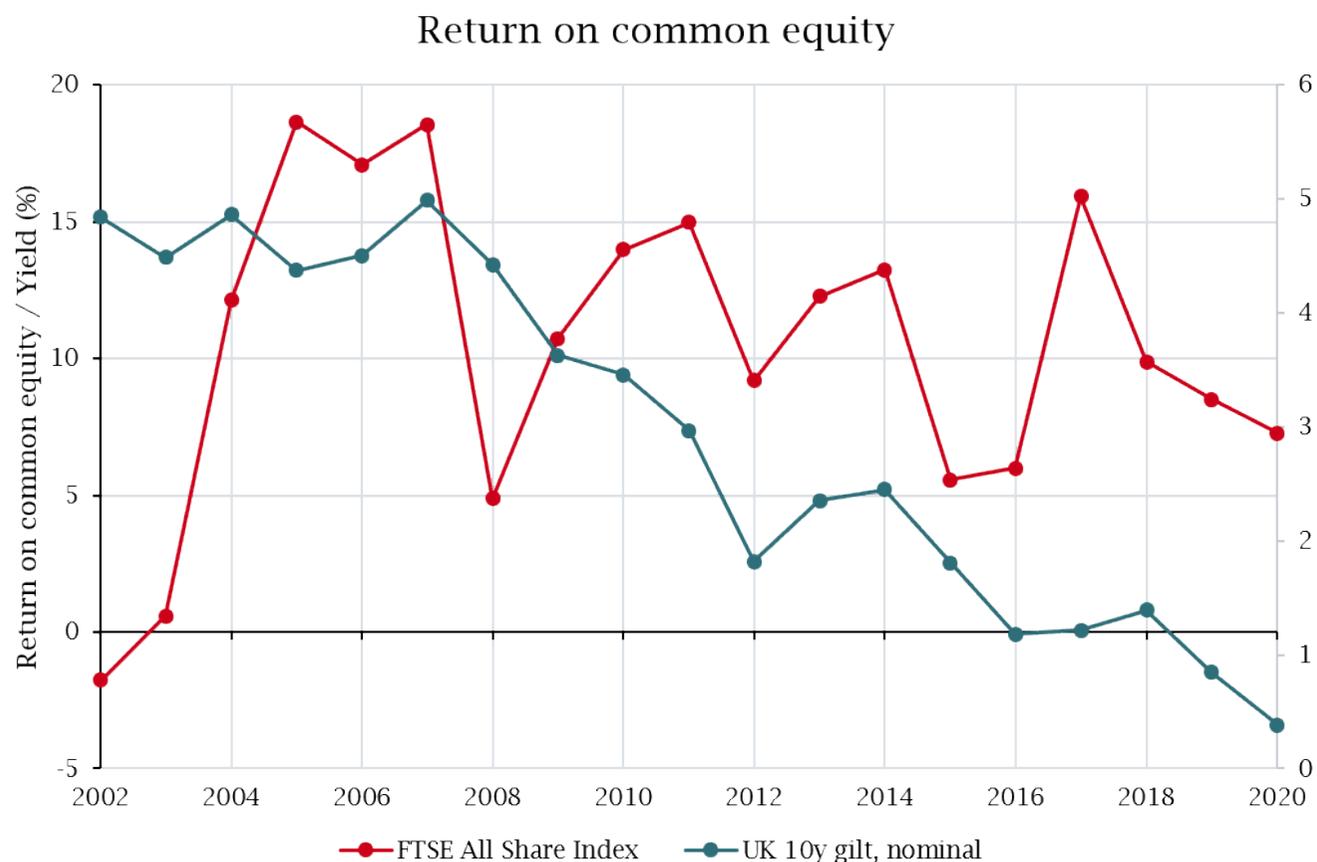


Figure 1: ROE of FTSE All Share companies compared with the risk-free rate *Source: Frontier Economics*

Return on common equity

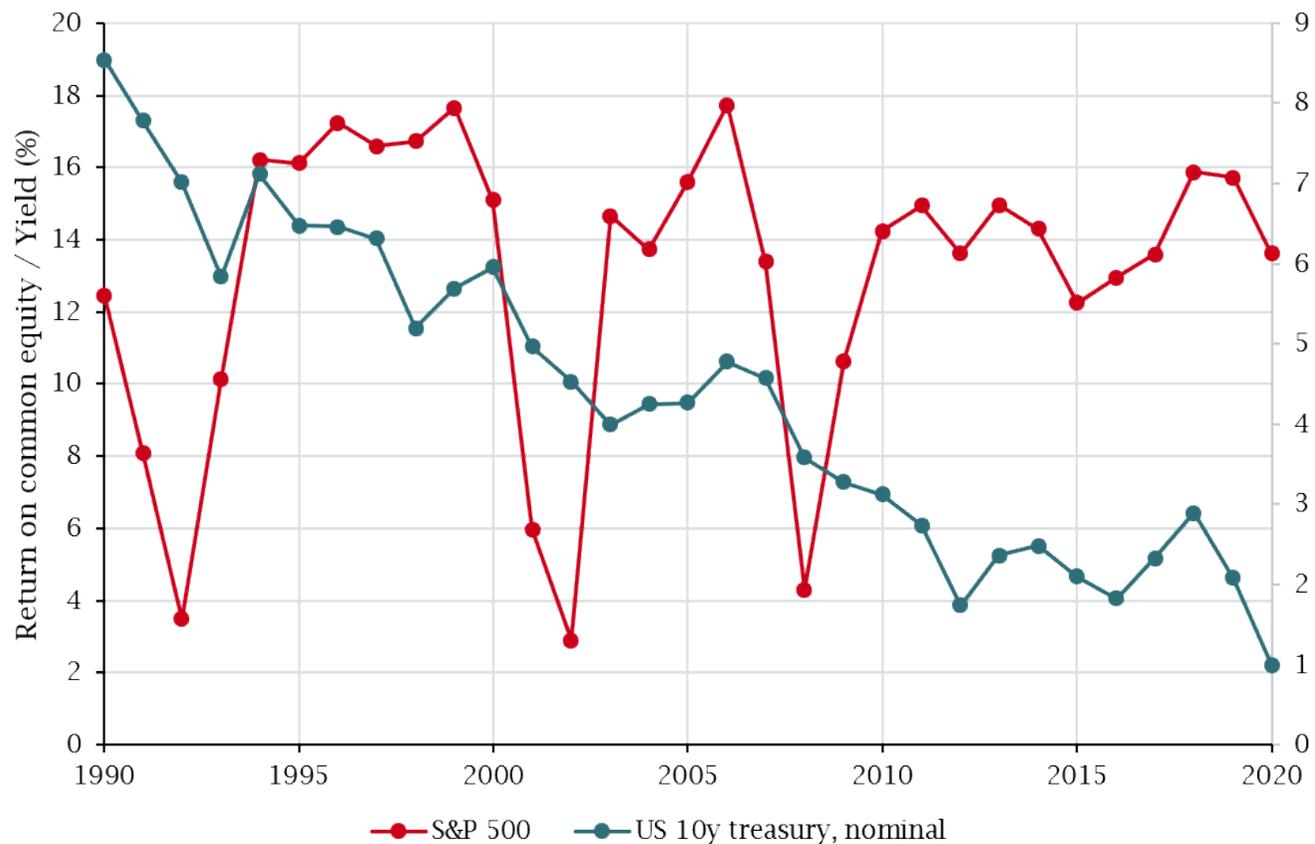


Figure 2: ROE of US S&P 500 versus 10-year Treasury bond yield *Source: Frontier Economics*

The charts show fluctuating levels of profitability over the period, but without any discernible falling trend, even though government bond yields have declined significantly over the period.

What could explain this apparently surprising result? There are two, not mutually exclusive, hypotheses:

- First, the cost of equity has been relatively stable, regardless of the trend in interest rates.
- Second, the cost of equity has decreased with interest rates, but there has been no corresponding reduction in profitability levels.

Hypothesis 1 has been discussed above, and we conclude that it may or may not be true. Hypothesis 2 would be an interesting finding but runs counter to the simple economic proposition that profitability converges to the cost of capital over time. The potential reasons that could support this hypothesis are set out in Figure 3.

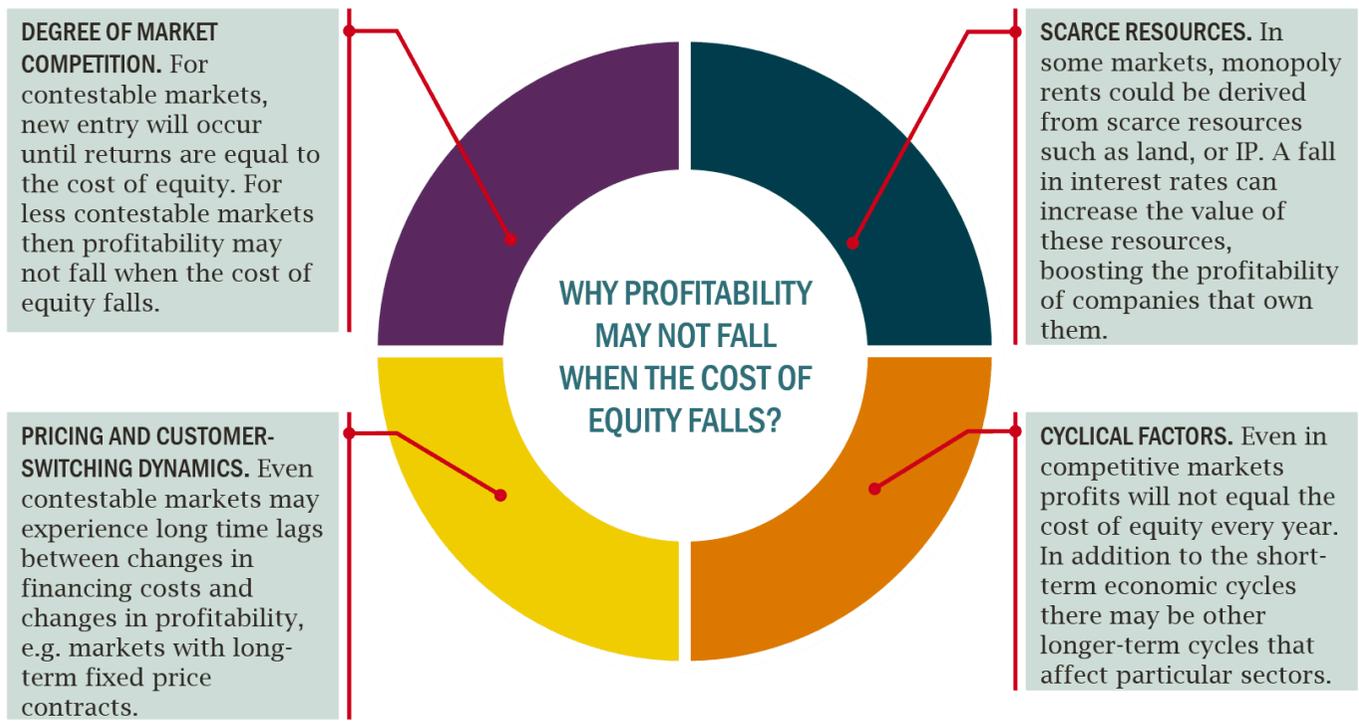


Figure 3: Profitability and financing costs *Source: Frontier Economics*

What should a regulator make of this evidence?

- If hypothesis 1 is true, regulators need to reconsider the validity of finance models that link falling interest rates to a lower

cost of equity.

- If hypothesis 2 is true, regulators should study the reasons why profitability can diverge from the cost of equity and consider how these reasons apply to regulated utilities.

This paper suggests that regulators should consider whether the disconnection between profitability in the wider market and lower interest rates has lessons for setting the allowed WACC.


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