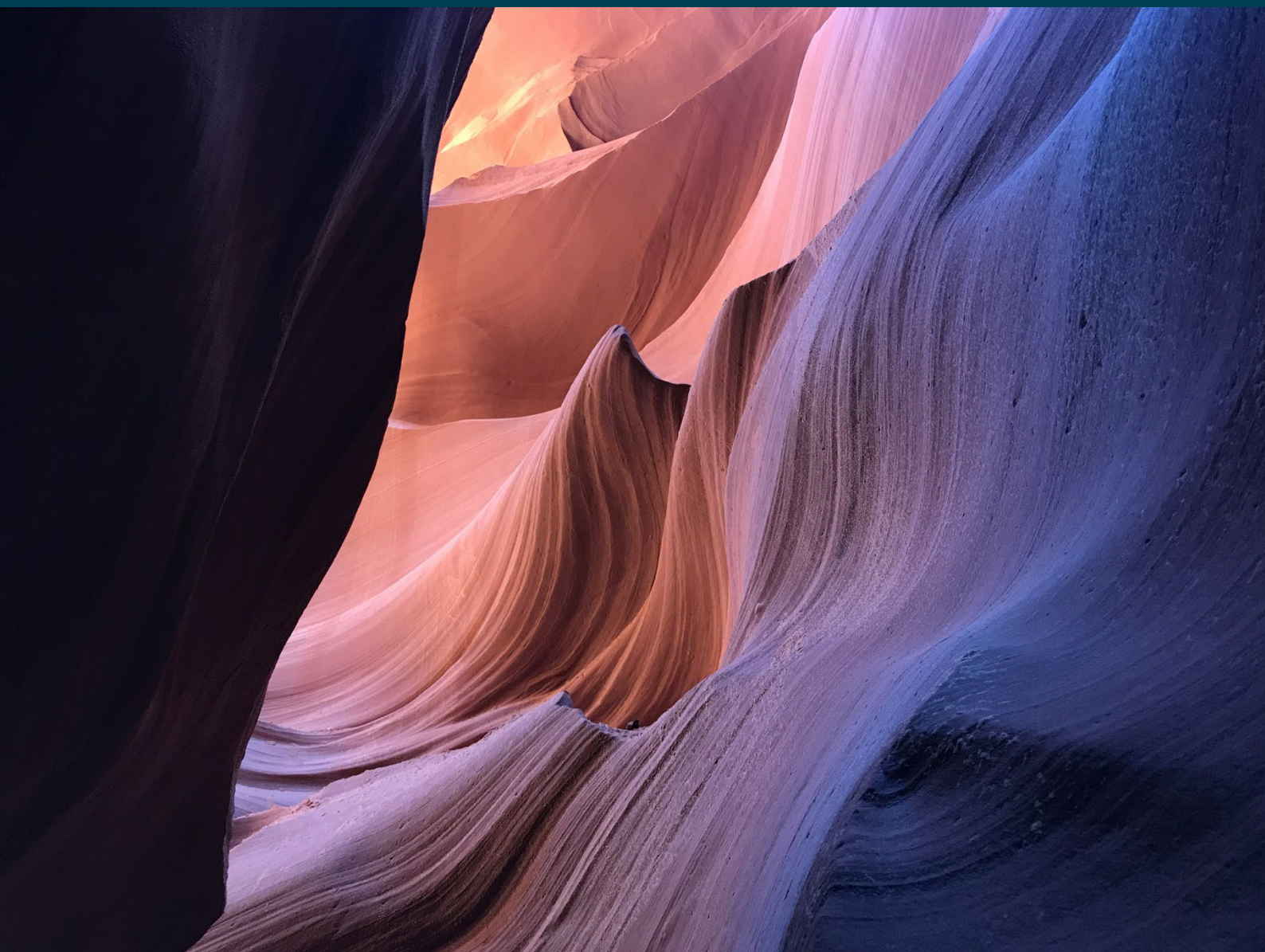
KAIROS
ECONOMICS

A review of Ofwat's Total Market Return at PR24

26 August 2024



A review of Ofwat's Total Market Return at PR24

1. Introduction

1) In July 2024, Ofwat published its Draft Determinations (DD) for the PR24 price review, which set out the price, service and incentive package for water companies for the period 2025-30.[1] In its DD, Ofwat proposes an allowed return on equity, which is intended to provide equity investors with a reasonable return that provides fair compensation for the risks associated with their investment. Under its primary approach to setting an allowed return on equity, Ofwat is required to estimate the Total Market Return (TMR), which is the expected return required by investors for investing in a diversified portfolio of assets.

2) We have been asked by Northumbrian Water Ltd to review Ofwat's estimate of the Total Market Return (TMR) in its DD, and to propose appropriate alternative estimates that resolve instances where we find or have concerns that material errors have been made or inconsistencies are present.

3) The remainder of this note is structured as follows: it outlines methodologies that have been used or recommended by UK regulators for estimating TMR, it summarises Ofwat's analysis and estimation of the TMR in the DD, and it identifies material concerns we have with Ofwat's analysis and estimation, before providing an updated analysis and range of estimates that resolve these concerns.

2. TMR methodologies used by UK regulators

4) As noted in the UK Regulators' Network (UKRN) guidance, there has historically been broad alignment amongst UK regulators on the overall approach to estimating the TMR. [2] Broadly speaking, this is the following:

   a. TMR is assumed to have greater stability than the equity risk premium (ERP)[3] and may be estimated directly; and

   b. TMR is typically estimated using:

[1] Ofwat, 'PR24 draft determinations: Our approach', July 2024.
[2] UKRN, 'UKRN guidance for regulators on the methodology for setting the cost of capital', March 2023 (UKRN cost of capital guidance), p.19.
[3] The ERP is the difference between the TMR and the risk-free rate (RFR).

i. historical UK equity market returns over the longest sample period of robust available data (the 'long-run ex post' approach);[4] and

ii. historical UK fundamental data to infer unconditional expectations of the return on equity over the longest sample period of robust available data (the 'long-run ex ante' approach).[5]

5) TMR estimates under the long-run ex post and ex ante approaches typically rely on historical data series that are presented in nominal terms. Estimation of the TMR in real terms therefore requires corresponding observations of relevant price indices to appropriately deflate nominal returns. To estimate a TMR in real CPIH terms, which is required in regulatory charge controls where regulatory asset bases are indexed to CPIH, requires the deflation of nominal returns using the CPIH price index. As the full CPIH price series is only currently available from 1988, composite price series are required. For the period from 1900-1947, regulators have considered the Consumption Expenditure Deflator (CED) and the Cost of Living Index (COLI). From 1947 and 1949 onwards respectively, regulators have considered the RPI series and the extended CPI and CPIH ONS back-cast series. There is some variation in regulatory precedent for the inflation series that should be used to deflate nominal returns, albeit recent decisions have coalesced around using a composite series of CED, and CPIH back-cast and official series.[6]

3. Ofwat's approach in the DD

6) Ofwat's approach to estimating the TMR in the PR24 DD is as follows: [7]

a. It estimates TMR directly, using long-run ex post and long-run ex ante methodologies;

b. Long-run ex post estimates rely upon historical UK equity market returns using data from the Dimson-Marsh-Staunton Global Returns 2024 (DMS) dataset, which are deflated using a composite historical series based on the CED, and the CPIH ONS back-cast and official series. Weight is placed on estimates that are calculated using an arithmetic average of overlapping 10- and 20-year real returns, with an adjusted geometric average of returns used as a cross check;[8]

[4] UKRN cost of capital guidance, page 20.
[5] UKRN cost of capital guidance, page 21.
[6] UKRN cost of capital guidance notes agreement on use of CPIH, as opposed to RPI. However, at PR19, the CMA placed some weight on RPI (less an estimate of the formula effect) for the period after 1947.
[7] Ofwat, 'PR24 draft determinations: Aligning risk and return – Allowed return appendix', July 2024 (Ofwat DD, Allowed Return on Capital Appendix), Section 2.2.
[8] More specifically, overlapping averages are used (see Table 3 and Table 6 of Ofwat DD, Allowed Return on Capital Appendix).

c. Long-run ex ante estimates of expected UK equity market returns are derived using two methods. First, an approach that is based on the long-run properties of average fundamental dividend yield and growth data to estimate the unconditional expected return is used ('The Fama French Method'). Ofwat relies on data from the Barclays Equity Gilt Study (the 'Barclays Study') when employing The Fama French Method. Second, the 'Decomposition Method' from the publication 'Global Investment Returns Yearbook 2024' by Dimson, Marsh and Staunton, which decomposes historical returns into average dividend yield, dividend growth and expansion in the ratio of price to earnings. The method supposes that the component of historical returns that is attributable to the expansion in the ratio of price to earnings is likely to be non-repeatable. The return implied by remaining components is then taken to be an estimate of investors' ex ante expectations of the TMR.

d. Under the long-run ex post approach, Ofwat deflates nominal historical UK equity market returns using a composite historical series based on the CED, and the CPIH ONS back-cast and official series. In contrast, under the long-run ex ante approach, Ofwat relies on the Barclays Study and DMS when applying the Fama French Method and Decomposition Method respectively, which incorporate inflation series that are based on the COLI, rather than the CED. To account for this inconsistency, Ofwat applies a downward adjustment of 35 basis points (the 'CED/COLI Adjustment').[9]

7) The results of Ofwat's analysis described above are set out in Table 1 below.

Table 1: Ofwat's TMR results in the DD (real-CPIH)

Method		Estimates	Midpoint
Long-run ex ante	Fama French Method	5.98%	6.29%
	Decomposition Method	6.60%	
Long-run ex post	Arithmetic (overlapping) 10-year	6.81%	6.87%
	Arithmetic (overlapping) 20-year	6.93%	

Source: Tables 3 to 6 of Ofwat's DD, Allowed Return on Capital Appendix

[9] Ofwat DD, Allowed Return on Capital Appendix, Table 4 and footnote 67.

8) Ofwat uses the midpoints from its long-run ex ante and long-run ex post approaches, which are shown above in Table 1, to form its estimated range for the TMR (i.e. 6.29% to 6.87%.). This range has a midpoint of 6.58%.

4. Comments on Ofwat's approach

9) Ofwat's decision to estimate the TMR by placing weight on arithmetic averages of historical UK equity market returns that are deflated using a composite CED/CPIH inflation series under a long-run ex post approach, and long-run ex ante approaches, is broadly consistent with recent regulatory precedent (which is outlined in Section 2).[10]

10) However, we have material concerns with Ofwat's long-run ex ante estimates for two main reasons:

    a. First, the data underlying the Barclays Study are unlikely to be robust. This is due to issues with the constituent firms underlying the historical data. Gregory (2024) describes these issues in detail.[11] The key point is that academic studies by Foreman-Peck and Hannah (2011) [12] and Campbell (2021)[13] provide details of the largest UK companies over the historical past, which bear 'little resemblance' to the companies in the Barclays Study. This is illustrated when examining Campbell's underlying data, which shows that the largest companies by value in the early years of the 20th century were railway companies, yet there is not a single railway company in the Barclays list.

    b. Second, Ofwat's use of the CED/COLI Adjustment is an unnecessary approximation, when robust data are available that may be used to address the inconsistency in the underlying inflation series directly.

11) The first of these points was put to Ofwat in response to its Final Methodology that was published at an earlier stage of the process, with an alternative, composite dataset provided instead. In response, Ofwat commented *"…we note that the [alternative, composite] returns series and associated findings have not been subject to peer review, and the returns series is*

[10] The level of relative response between estimated expected returns on relevant debt and equity instruments to the current elevated interest rate environment under long-run ex post and ex ante approaches to the TMR, has raised questions as to whether unconditional expectations of the return on equity over the longest sample period of robust available data (therefore maintaining a relatively stable estimate over time), remains appropriate. Whilst there may be merit in considering these novel arguments, our focus in this note is restricted to resolving errors or inconsistencies in Ofwat's approach.
[11] Gregory, 'The Expected Cost of Equity in the UK Revisited', 2024.
[12] Foreman-Peck, J. and Hannah, L, 'Extreme divorce: the managerial revolution in UK companies before 1914', Cardiff Economics Working Papers, 2011.
[13] Campbell, Gareth & Grossman, Richard & Turner, John. (2021). Before the cult of equity: the British stock market, 1829–1929. European Review of Economic History.

not a published dataset with a track record of use in prior regulatory determinations ***like the DMS*** *and BEGS annual data publications."* [14]

12) The issues set out at paragraph 10 can be addressed following the release of the DMS dataset for 2024. This dataset provides sufficient underlying data on historical nominal total returns and capital gains to apply the Fama French Method and the Decomposition Method to robust data on historical UK returns that have been deflated using the CED/CPIH inflation series directly. Combining the DMS dataset for 2024 with the CED/CPIH inflation series:

    a. Removes the requirement to rely on data from the Barclays Study, which has been shown is unlikely to be robust; and

    b. Establishes that the introduction of the CED/COLI adjustment is unnecessary and inaccurate.

13) Table 2 presents revised estimates for the Fama French Method and Decomposition Method using historical nominal total returns and capital gains from DMS[15] that have been deflated using the CED/CPIH inflation series. A revised estimation range for the TMR under Ofwat's approach of using the midpoints under the long-run ex post and long-run ex ante approaches is also presented in Table 2.

Table 2: Revised TMR range under Ofwat's approach using updated estimates for the Fama French and Decomposition methods (real-CPIH)

Method		Estimates	Midpoint
Long-run ex ante	Fama French Method	6.92%	6.89%
	Decomposition Method	6.85%	
Long-run ex post	Arithmetic (overlapping) 10-year	6.81%	6.87%
	Arithmetic (overlapping) 20-year	6.93%	

Source: Kairos Economics analysis of data provided by: DMS (2024), Bank of England 'A millennium of macroeconomic data for the UK' (version 3.1), ONS

14) As Table 2 demonstrates, correcting for our concerns with Ofwat's long-run ex ante methodology results in estimates for the TMR that coalesce around 6.9% (in real CPIH terms).

[14] Ofwat DD, Allowed Return on Capital Appendix, p29.
[15] Estimates have been calculated on the basis of annual data provided by the DMS dataset. The use of higher frequency data may affect estimates.

15) We note that a corollary of this finding is that there is little difference between realised average real equity returns and estimates based on fundamental data to infer unconditional expectations of the real return on equity, over the full run of robust UK data. Whilst the conventional position is that high realised real equity returns versus fundamental-based estimates of unconditional expectations represent unexpected gains in the second half of the 20th century[16], this finding shows that this position may not hold for all subsets of the period or in all jurisdictions.

5. Conclusion

16) Ofwat's long-run ex ante estimates are based on data that are unlikely to be robust, or contain adjustments that are unnecessary and inaccurate. These issues can be addressed following the release of the DMS dataset for 2024, by applying the Fama French Method and the Decomposition Method to historical UK returns and capital gains from the DMS data that have been deflated using the CED/CPIH inflation series directly.

17) Correcting Ofwat's long-run ex ante estimates for our concerns results in an updated estimate for the TMR of 6.9% in real CPIH terms, using Ofwat's approach of taking the midpoints of its long-run ex post estimates and the revised long-run ex ante estimates.

[16] Fama, French, 'The Equity Premium', 2002, p.1.