



EDHEC Europe
10 Fleet Place
London EC4M 7RB
United Kingdom

Iain Coucher, Chairman
David Black, Chief Executive Officer

Ofwat

Centre City Tower, 7 Hill Street
Birmingham B5 4UA
United Kingdom

December 20, 2023

Dear Sirs,

We are writing to you to express our concern about the role played by Ofwat in the Thames Water fiasco after years of mispricing of the cost of capital of the firm by the regulator.

The failure to use the right approach and the right data to estimate the cost of capital of regulated utilities has played a significant role over the years in distorting incentives and ultimately led to the ongoing disaster for both the end users of infrastructure services and for private investors in the infrastructure.

End-users, having suffered years of sub-par service, will now end up paying a lot more. Meanwhile investors in UK infrastructure, including high-profile pension plans from the UK, Canada, Japan and beyond, have had to book large losses. A loss of confidence in the UK infrastructure market amongst these investors, at a time when securing their involvement is an objective of the government, is now unavoidable.

Mispricing the cost of capital turns incentive regulation on its head

The sector is regulated by creating incentives for firms to be efficient producers of water and wastewater services. This is primarily done by setting a revenue cap, which is itself driven by an assumed cost of capital. It is therefore not surprising that firms and the regulator should disagree about their cost of capital. However, in this case Ofwat set the companies' allowed return so far from the reality of the market (by a factor of 5 to 6 in the case of Thames Water) that, far from creating positive incentives to be an efficient company, the regulator created *perverse* incentives for the management to run the company into the ground to maximise short term returns and leave it, bloodless, to the next set of owners.

Indeed, by setting the weighted average cost of capital (WACC) of the firm at 2-3%, very far below the firm's actual costs of capital in the market, the regulator sent the message early on to investors that their investments would be hard to recoup and future return would be low. While it is the mandate of the regulator to incentivise efficiency to minimise tariff increases and private profits, completely disregarding the market cost of capital of the firm by such a wide margin incentivised owners *not* to invest in the asset, and instead to extract cash as quickly as possible, including by increasing leverage and other forms of financial engineering. This is exactly what happened. As Ofwat itself has observed, there is significant underinvestment in the water networks over the PR19 period.¹

Thames Water's market cost of capital, when properly measured and compared to its peers, is in fact the highest of the entire UK water sector (11-12% today). Therefore, Thames Water was a likely candidate to choose this path of lower capex and high leverage, thus changing the risk profile of the firm over time. The consequences were not difficult to predict. Unhealthy incentives for the firm eventually led to excessive risk taking and to the destruction of shareholder value.

The wrong model and the wrong data

While investors can of course be considered responsible for these decisions taken in terms of financial structuring and dividend pay-outs, the regulatory context frames their decisions.

Well-established academic research gives plenty of reasons to have concerns with how the cost of capital is estimated for regulated utilities by Ofwat.

In particular, the cost of equity capital is not representative of the market since it employs methodologies that have low explanatory power for returns and rely on a sample of firms that is too small to estimate systematic risk. The choice of methodology is not realistic and results in a lower estimate in beta.

Firstly, when setting the rate of return for equity, Ofwat relies on an asset pricing methodology that is ineffective in explaining returns. This is despite multiple researchers all demonstrating that, as in Fama and French (1993) and Fama and French (1996), the CAPM is unable to explain historic returns.^{2 3 4} This indicates that there are other, unaccounted for, factors that explain the returns of companies. If these unaccounted-for factors are not included, Ofwat's continued use of such methodologies despite this evidence effectively underestimates the risk inherent in the management and operation of water utilities.

¹ <https://www.ofwat.gov.uk/pn-38-22-some-water-companies-investing-less-than-half-of-their-allowances-to-improve-water-network/>

² Fama, Eugene F., and Kenneth R. French. "Size and Book-To-Market Factors in Earnings and Returns." *The Journal of Finance* 50.1 (1995): 131-155.

³ Fama, Eugene F., and Kenneth R. French. "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics* 33.1 (1993): 3-56.

⁴ Fama, Eugene F., and Kenneth R. French. "Multifactor Explanations of Asset Pricing Anomalies." *The Journal of Finance* 51.1 (1996): 55-84.

Second, Ofwat employs a peer group of listed utilities companies to estimate beta. This is problematic as, since most UK water utilities are privately held, estimating the CAPM in the UK market relies on the three listed water companies, one of which is not a pure-play water company. As a result, in PR19, Ofwat employed a portfolio of **two** listed firms to estimate beta. If the goal is to estimate systematic risk, then a portfolio of two companies is insufficient, with studies showing that a portfolio requires at least 30-40 stocks to be diversified so that there is no idiosyncratic risk.⁵ This results in a beta estimate that includes a significant portion of idiosyncratic risk.

Ofwat's methodology assumes that beta estimates remain constant over time. However, this is not the case. The method assumes that the beta measured during the study period, typically over a historical timeframe, will remain constant throughout the price regulation period. This ignores significant market shocks, such as the impact of COVID-19, which had a substantial impact on asset covariances. Additionally, the models used to measure beta, traditional Ordinary Least Squares (OLS) models, do not account for time-varying changes in beta. This approach is not due to a lack of alternative econometric techniques that allow for time-varying beta, such as Kalman Filtering.

Finally, Ofwat uses a notional capital structure which underestimates the current level of leverage in Thames and other UK water companies. This leads to a greater misrepresentation of the reality of the firm and, *in fine*, to less economically credible tariffs.

Incentive regulation should be based on market data

The alternative, best practice approach would be to adopt market-based estimates of the cost of equity and debt. Methods to estimate a cost of equity that reflects the actual cost of capital do exist.⁶ Adopting a multi-factor approach, commonly employed in modern asset pricing theory, allows the identification of a number of firm characteristics to condition an asset pricing model to derive expected asset returns. These factors allow for the derivation of returns that are grounded in investor beliefs, not based on a discredited asset pricing model, and the derivation of both expected debt and equity returns, allowing for a unification of approaches, rather than the piecemeal approach currently applied by Ofwat.

The regulation of privatised utilities should reflect the financial and economic decisions made by the firm in order to create explicit and transparent incentives. Instead, setting tariffs on the basis of an imaginary capital structure and cost of capital has created a misalignment of incentives.

The proper integration of the cost of capital into the regulation of infrastructure companies that are not subject to real competition, as is the case for water and wastewater services, is


⁵ Statman, Meir. "How Many Stocks Make a Diversified Portfolio?" *Journal of Financial and Quantitative Analysis* 22.3 (1987): 353-363.

⁶ Amenc, N., et al. "An Infrastructure Investment Primer: From Valuation to Allocation and Manager Selection." *The Journal of Portfolio Management* (2022).

an important subject both for the sustainability of the service and for the protection not only of consumers but also of investors who wish to access the UK market with confidence that the regulatory framework will treat them fairly. Ultimately, your agency, by trying to limit water service price increases in the short term by avoiding rigorous observation, based on real economic conditions, of the cost of capital required for the implementation of this service, has failed in its mission. On the occasion of the Thames Water fiasco, we recommend that the practices and methodologies used by Ofwat be reconsidered.

As a complement to, and in support of, this letter, we refer you to our latest research paper on the analysis of the Thames Water fiasco, which can be accessed [here](#).

Best regards,



Noël Amenc, PhD, Associate Professor of Finance, EDHEC Business School; Director, Scientific Infra & Private Assets.

Frederic Blanc-Brude, PhD, Director of the EDHEC Infrastructure & Private Assets Research Institute; CEO, Scientific Infra & Private Assets.

Tim Whittaker, PhD, Research Director at the EDHEC Infrastructure & Private Assets Research Institute.