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An Estimate of NIE's RP7 Cost of Capital

Prepared for the Utility Regulator

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1. Introduction

This report contains First Economics' estimate of the cost of capital for NIE Networks' transmission and distribution (T&D) networks. It is intended to inform the Utility Regulator's calculation of allowed returns for the new RP7 price control, covering the 6-year period starting April 2025.

The paper is structured into six main parts:

- section 2 outlines the methodology that we have used in our work;
- section 3 assesses the risk that an investor in the T&D networks carries and puts forward an estimate of beta;
- section 4 proposes a figure for gearing;
- section 5 provides a calculation of the cost of debt;
- section 6 contains estimates of the two generic parameters in the cost of equity calculation – the risk-free rate and the expected return on the market portfolio; and
- section 7 brings all of the preceding inputs together into an overall estimate of the cost of capital.

2. Approach

The cost of capital that we consider in this paper is a forward-looking estimate of the real, CPIH-stripped rate of return that NIE needs to provide to investors in order to attract and retain capital within the T&D business. In line with the terms of reference that were given to us by the Utility Regulator, and consistent with regulatory practice more generally, we have deliberately sought to estimate this cost of capital independently from NIE's current ownership arrangements so that the return on offer through the price control is capable of supporting any reasonable and efficient investor set.

The cost of capital is a weighted average of two components: the cost of equity (K_e); and the cost of debt (K_d), where the weightings (gearing or g) reflect the relative importance of each type of financing in a firm's capital structure.

$$vanilla\ WACC = g\ .\ K_d + (\ 1 - g\ )\ .\ K_e$$

The interest costs paid by NIE and other comparable firms are directly measurable and in the analysis that follows we explain how the Utility Regulator can use empirical evidence to set an appropriate value for K_d. The cost of equity, by contrast, cannot be directly observed and we have instead modelled the returns that we would expect a shareholder to demand in exchange for holding shares in the T&D business. The primary tool that we have used in our analysis is the CAPM, which relates the cost of equity to the risk-free rate (R_f), the expected return on the market portfolio (R_m), and a business-specific measure of investors' exposure to systematic risk (beta or β_e):

$$K_e = R_f + \beta_e\ .\ (R_m - R_f)$$

The two equations together show that our cost of capital calculation is based on estimates of five parameters: g, K_d, R_f, R_m and beta. In putting specific figures against each of these inputs we have sought to draw as far as possible on primary market data. We have also taken account of recent regulatory precedent, giving particular attention to the UKRN guidance on the methodology for setting the cost of capital, the figures that Ofgem used in its RIIO-2 price control determinations for the GB energy networks, and the views expressed by the Competition & Markets Authority (CMA) in recent regulatory decisions. Inevitably, in many areas we have had ultimately to exercise a degree of judgment in order to be able to select precise numbers from the evidence we have collected, but we have tried in the analysis that follows to give a clear explanation for these judgments and to make our thinking as transparent as possible in order to assist the parties to the RP7 process.

3. Riskiness and Beta

We start deliberately with an assessment of NIE's risk profile and beta.

3.1 Preliminaries

Methodology

A firm's equity beta is a measure of the riskiness of a firm – or more specifically, a measure of the systematic risk that a firm presents – relative to the market portfolio. Firms that exhibit a beta of more than 1 can be considered more risky than the average firm in the portfolio and need to pay their investors a higher-than-average return; firms with a beta of less than 1 are less risky and warrant lower returns; and firms with a beta of exactly 1 are seen by investors as being of equal risk to the market portfolio and are expected to generate a return in line with R_m.

Empirical estimates of beta are usually obtained by measuring the covariance between movements in a company's share price and movements in the value of the stock market as a whole. However, in this report we are interested in obtaining beta estimates for an unlisted business and cannot use market data directly. The next best alternative that we have is to collect beta estimates for companies that look to be in some sense similar and to make a judgment about the value of NIE's beta on the basis of this comparator evidence. This is an approach that has been deployed in an increasing number of periodic reviews, including several CMA inquiries, during recent years as the number of regulated companies with a stock market listing has declined, and is regarded as a robust and reliable way of assessing beta in the absence of direct stock market data.

Asset beta

When comparing the betas of different firms, one has to be careful to take account of the different gearing levels that firms choose since, all other things being equal, a firm with higher gearing will exhibit a higher equity beta. Unless one controls for this effect, there is a danger of confusing the risk that comes from high leverage with the underlying business risk that a firm faces by virtue of the nature of the activities it is carrying out.

This is where the concept of an asset beta proves useful. An asset beta is a hypothetical measure of the beta that a firm would have if it had no debt and were financed entirely by equity. By comparing different firms' asset betas it becomes possible to isolate the underlying systematic risk that a company has and carry out an assessment of the relative riskiness of different businesses.

The asset beta is calculated using the following formula:

$$\beta_a = (1 - g) \cdot \beta_e + g \cdot \beta_d$$

where β_a is a firm's asset beta, g is gearing and β_d is the firm's debt beta.[1]

A firm's actual gearing is something that is easily calculated using reported debt figures and the firm's market capitalisation, but a firm's debt beta is not something that is directly observable. We have assumed in our work that β_d is a constant of 0.075 (a value that Ofgem and the CMA have used in reviews of companies with approximately the same gearing as we identify in section 4).

Confidence intervals

This provides a complete description of our methodology for estimating asset betas. The only other point we must make is that beta estimates are exactly that: estimates. Every estimate that we identify comes with a standard error and the figures that follow must be regarded as mid-points within wider confidence intervals.

3.2 Comparator analysis

Our comparator set comprises two types of data:

- calculated betas for comparator firms with a stock market listing; and
- the beta estimates that regulators have made in recent periodic reviews.

In the first of these groups we have collected beta estimates[2] for the last remaining network-dominated companies with a UK stock market listing – National Grid, Pennon Group, Severn Trent and United Utilities – which we have averaged over the last five years.[3] The second group comprises the most recent assessments by the Ofgem, the CMA and the Utility Regulator of betas for conventional regulated networks

The comparator data is presented in tables 1 and 2.

Table 1: Calculated asset betas

	Average asset beta
National Grid	0.35
Pennon Group	0.33
Severn Trent	0.30
United Utilities	0.29

Source: Bloomberg and First Economics' calculations using data up to July 2023.

[1] For those that have not come across this concept before, a debt beta is similar to the equity beta, but rather than measuring the systematic risk taken by the company's shareholders, it represents such risk presented to the company's lenders.
[2] Our calculations use two years of daily share price data.
[3] This approach ensures that estimates of beta are not overly swayed by short-term movements in share price data.

Table 2: Beta estimates used in recent periodic reviews

	Year	Regulator's estimate of asset beta
Ofgem, RIIO-GD&T2	2020	0.35
CMA, water and sewerage companies	2021	0.33
Utility Regulator, NI Water	2021	0.36
Utility Regulator, GD23 – PNGL and FE	2022	0.35
Ofgem, RIIO-ED2	2022	0.35

References: Ofgem (2020), RIIO-2 final determinations – finance annex; CMA (2021), Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations: final report; Utility Regulator (2021), PC21 final determination – main report; Utility Regulator (2022), GD23 gas distribution price control 2023-28 – final determination; Ofgem (2022), RIIO-ED2 final determinations.

The tables show that the comparator betas sit in a relatively narrow range of 0.29 to 0.36. The task that we face is to position NIE's beta at an appropriate point relative to these comparators based on an assessment of the networks' relative riskiness.

3.3 Benchmarking of the NIE beta

Approach to comparisons of riskiness

In working through this task it is useful to highlight four main determinants of the (systematic) risk that shareholders bear through their ownership of the NIE T&D network and the above-mentioned networks.

- Demand variability – the networks operate in markets where demand for network access is very closely correlated to the overall demand for energy or the overall demand for water. This demand will in turn be sensitive to macroeconomic conditions, insofar as a downturn in the economy will cause both households and businesses to use less while strong growth will bring about increases in volumes.
- Cost variability – networks rely heavily on direct and indirect staff to carry out their functions. As labour becomes more expensive costs will go up, and as labour becomes less expensive costs will go down. Similarly, the networks are exposed to changes in the costs of other inputs like materials and business rates.
- Regulation – the two previous risk factors cannot be looked at in isolation from the important role that regulation plays in determining the way in which changes in volumes or costs translate into changes in profit. Through its design of the price control and associated incentive mechanisms, a regulator has a significant degree of control over the degree to which shareholders are exposed to risk – a situation that distinguishes regulated companies from unregulated companies. In particular, revenue caps may offer investors quite significant protection against changes in demand, while a regulator's design of opex and capex incentives are a key determinant of exposure to cost risk.
- Cost/revenue structure – a final consideration is the sensitivity of profit to out-/under-performance against the networks' price control assumptions. In particular, it is now widely acknowledged in regulation that companies which have small regulatory asset bases (RABs)

in comparison to ongoing revenues present shareholders with greater risk than companies which have large RABs in comparison to ongoing revenues.

The first three items on this list are fairly straightforward to understand, but the fourth merits a slightly more detailed explanation. In the worked example below, we depict two companies with identical ongoing expenditures. They differ only insofar as company A has a small investor capital base and company B has a large investor capital base, as measured by their RABs. Both companies set charges so as to be able to cover their expenditure plus a return on the RAB. For the purposes of this illustration, let us assume initially that both companies seek a return of 10% per annum.

Table 3: Illustrative worked example

	Company A	Company B
RAB	£100m	£1,000m
Expenditure	£200m	£200m
Return on RAB @ 10%	£10m	£100m
Revenues	£210m	£300m

Now consider what happens to these companies when they experience the same percentage cost overrun or the same percentage revenue loss. Although the absolute £m loss of profit is similar in both companies, the percentage loss is far greater for company A with the small RAB than it is for the company B with the larger RAB.

Table 4: Revenues, costs and profits after a 2% cost shock

	Company A	Company B
RAB	£100m	£1,000m
Revenue	£210m	£300m
Expenditure	£204m	£204m
Profit	£6m	£96m
Profit as % of RAB	6%	9.6%

Table 5: Revenues, costs and profits after a 2% revenue shock

	Company A	Company B
RAB	£100m	£1,000m
Revenue	£205.8m	£294m
Expenditure	£200m	£200m
Profit	£5.8m	£90m
Profit as % of RAB	5.8%	9.4%

An exactly analogous story can be told of the effects of unexpected cost reductions and about revenue gains, insofar as a given cost or revenue shock causes a greater percentage change in returns for companies with small RABs.

This provides important insights into the riskiness of different firms because it shows that the variability in out-turn profits is not just a function of the likelihood and scale of cost and demand

shocks, but also the size of the capital base. Holding all other things equal, shareholders in a regulated company with a small RAB relative to ongoing costs are likely to suffer proportionately more when downside shocks occur (and gain more following upside events) in comparison to shareholders in firms whose RABs are large relative to ongoing costs.

This higher potential volatility in profits makes companies with high 'operational gearing' more risky in the eyes of shareholders. Consequently, a firm with a small RAB would not have the same cost of capital and would not seek the same return as a company with a large RAB. It would instead need to factor a higher cost of capital upfront into its charges.

Comparison of risk profiles

It follows that in order to understand how much risk the different shareholders in our sample of firms are exposed to one has to look holistically at the potential volatility in demand and costs, take the range of outcomes that one can envisage through the sector's regulatory rules and then examine the impact on each comparator's profits. It is not possible to evaluate riskiness without taking the full chain of events into account – in particular, we would caution anyone from making judgments about a business's risk profile on the basis of perceptions of pure demand and cost variability alone.

The characteristics of the UK's network companies are set out in table 6.

Table 6: Characteristics of regulated companies

	Exposure to demand risk	**Exposure to cost risk**	**Operational gearing – average annual controllable totex-to-RAB ratio**
GB gas transmission	Low – company has a revenue cap	Low – costs are mainly repeated opex and capital works. Costs have high labour content, with some exposure to commodity prices and the construction cycle. Price control design incorporates an incentive rate of 39%.	Low – around 5%
GB electricity transmission	Low – companies have revenue caps	Low to moderate – costs are mainly repeated opex and capital works, with some major enhancement projects. Costs have high labour content, with some exposure to commodity prices and the construction cycle. Price control design incorporates incentive rates of between 33% and 50%.	Low – around 10-20%
GB gas distribution	Low – companies have revenue caps	Low – costs are mainly repeated opex and capital works. Costs have high labour content, with some exposure to commodity prices and the construction cycle. Price control design incorporates incentive rates of around 50%.	Low – around 10%

GB electricity distribution	Low – companies have revenue caps	Low to moderate – costs are mainly repeated opex and capital works, with some major enhancement projects. Costs have high labour content, with some exposure to commodity prices and the construction cycle. Price control design incorporates incentive rates of around 50%.	Low – around 15%
England & Wales water and sewerage	Low – companies have revenue caps	Low to moderate – costs are mainly repeated opex and capital works. Costs have high labour content, with some exposure to commodity prices and the construction cycle. Price control design incorporates incentive rates of around 50%.	Low – around 10-15%
NI Water	Low – the end-of-period adjustment mechanism means that NI Water ultimately has a fixed entitlement to revenues irrespective of demand.	Low to moderate – costs are mainly repeated opex and capital works. Costs have high labour content, with some exposure to commodity prices and the construction cycle. Price control design exposes the company to variations in most of these costs for a period of up to six years.	Low to moderate – around 25%
GD23 – PNGL and FE	Low – companies have revenue caps	Low – costs are mainly repeated opex and capital works. Costs have high labour content, with some exposure to commodity prices and the construction cycle. Price control design incorporates a sharing of capex risks.	Very low – around 5%

Source: First Economics' analysis.
Note: the totex-to-RAB metric is intended to capture the observations we made earlier about the higher riskiness of firms with small RABs/profits. A low totex-to-RAB ratio implies that profits are fairly resilient in the face of shocks and a high totex-to-RAB ratio implies that returns can be affected quite significantly by even small variations in costs and revenues.

We make the following observations about the entries in this table:

- the network businesses all face negligible revenue risk;
- there is a good degree of similarity in companies' exposure to cost risks, even if sharing rates and/or the precise design of regulatory incentives vary from sector to sector; and
- all of the companies have sizeable RABs relative to ongoing expenditures and revenues.

The positioning of NIE depends on the scale of the business's expenditure projections and the regulatory framework that the Utility Regulator puts in place for RP7. We have been told to assume that the business will:

- deliver a six-year capital programme worth around £2.1 billion (in nominal prices);

- be subject to a revenue cap, which will give NIE an income entitlement irrespective of the volumes passing through its network;
- be given 6-year allowances for opex and base capex, and split 50:50 with customers any out-turn under- or over-spending against these allowances; and
- receive additional capex allowance as the design and costings of certain enhancement capex projects firm up during the RP7 period.

We can therefore add a further entry to the list in table 6 as follows.

Table 7: Characteristics of NIE

	Exposure to demand risk	**Exposure to cost risk**	**Operational gearing – average annual totex-to-RAB ratio**
NIE T&D	Low – company has a revenue cap	Low to moderate – costs are mainly repeated opex and capital works, with some major enhancement projects. Costs have high labour content, with some exposure to commodity prices and the construction cycle. Price control design incorporates incentive rates of around 50%.	Low – around 10-15%

The key points to note here are that:

- the revenue and cost risk borne by NIE's shareholders is not dissimilar from the risk that investors in other UK utilities carry, although the precise designs of the price control formula and associated incentive framework differ slightly from the specifications that have been put in place in other sectors; and
- there is also nothing in NIE's totex-to-RAB ratio to distinguish it from other network businesses.

From our perspective, therefore, the evidence suggests that NIE's beta should sit squarely within the 0.29 to 0.36 range identified at the start of this section.

Choosing a point estimate is not an exact science. Our advice is that the similarities in NIE's risk profile to the risk profiles of the GB electricity transmission and distribution means that the Utility Regulator can logically position NIE's asset beta at 0.35 in line with Ofgem's RIIO-2 beta value. This will also position NIE's allowed return in line with the return that the Utility Regulator has given to PNGL and FE.

4. Gearing

Assumptions about gearing affect directly the weightings of the cost of debt and cost of equity components of the weighted average cost of capital calculation. They are also important inputs to the calculation of the cost of debt and cost of equity themselves as, all other things being equal, a higher level of gearing will increase the risk to both debt and equity holders, causing them to demand a higher return in exchange for making capital available.

Regulatory precedent in this area is shown in table 8. In each case the regulator concerned sought to select a figure for gearing which is consistent with the regulated company maintaining an A to BBB/Baa credit rating.

Table 8: Gearing assumptions in relevant regulatory reviews

Decision	Gearing assumption	Year
Utility Regulator, RP6	45%	2017
Ofgem, RIIO-GD&T2	55-60%	2020
CMA, water and sewerage	60%	2021
Utility Regulator, NI Water	50%	2021
Utility Regulator, GD23	45-55%	2022
Ofgem, RIIO-ED2	60%	2022

The table gives a range of 45% to 60%. In comparing NIE against these other companies, it is important to be cognizant of the assessment of relative risk given in section 3. This tells us that there is no particular reason to think that NIE should not be 'in the pack' with the other regulated utilities.

Reference may also usefully be made to the assumptions made by the Competition Commission and the Utility Regulator at the RP5 and RP6 reviews and the 'exit rate' of gearing in the Utility Regulator's 2017 modelling. The precedent here is for an assumed gearing of approximately 45%.

Our advice to the Utility Regulator is that there is no compelling reason to depart from this 45% figure as the starting level of gearing for the RP7 period. However, we note that the Utility Regulator's modelling indicates that it is reasonable to expect NIE's gearing to increase thereafter as the company finances a sizeable new investment programme with new debt. The Utility Regulator has advised us that its modelling of financial ratios indicates that a terminal RP7 gearing ratio of 55% ought to be compatible with a solid investment-grade credit rating. We therefore weight the cost of debt and the cost of equity 55:45 in our cost of capital calculation.

5. Cost of Debt

Our task in putting a value to the cost of debt is to use available data to benchmark the interest that we would expect an efficiently financed business with an A to BBB/Baa rating to pay on its borrowings.

In previous cost of capital reports, we have expressed a preference for focusing on the interest paid by the real-life company as the natural starting point in this analysis. Although we would not want to go as far as to match pound-for-pound the monies paid by NIE in all circumstances, we think we should also feel comfortable about drawing information from the actual borrowing arrangements the company has entered into at times when the T&D business has encountered externally driven financing challenges. If we can say that NIE responded to those challenges in the way that any normal commercial company would when faced with the same situation, it would seem logical to take the resulting interest payments as the efficient costs of financing the networks.

Accordingly, our cost of debt calculation starts with the interest payable on NIE's actual borrowings, as follows.

Table 9: NIE's outstanding bonds

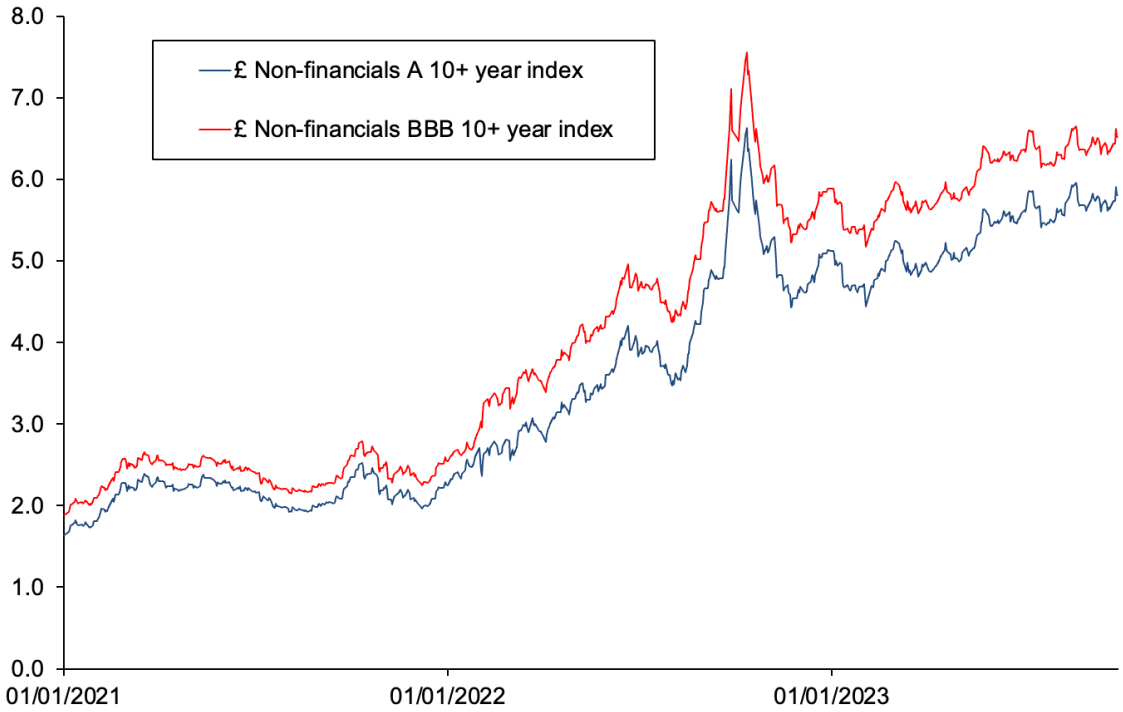
Amount	Maturity date	Yield at issue
£350m	October 2025	2.52%
£400m	June 2026	6.39%
£350m	December 2032	5.97%

The weighted average cost of this embedded debt at the start of the RP7 period is 4.96%. However, more than two thirds of the borrowing matures in 2025 and 2026. A more appropriate time-weighted cost of embedded debt for the whole of the RP7 period is 5.79%.

NIE will need to refinance its maturing debt during 2025 and 2026. It may also wish to borrow additional monies to support ongoing investments in the network. Our cost of debt calculation therefore needs to include a component which reflects the cost of the new debt which NIE is likely to take out during the RP7 period.

Figure 1 plots the yields on A and BBB rated UK corporate bonds with 10+ years to maturity.

Figure 1: iBoxx bond yield indices (%)

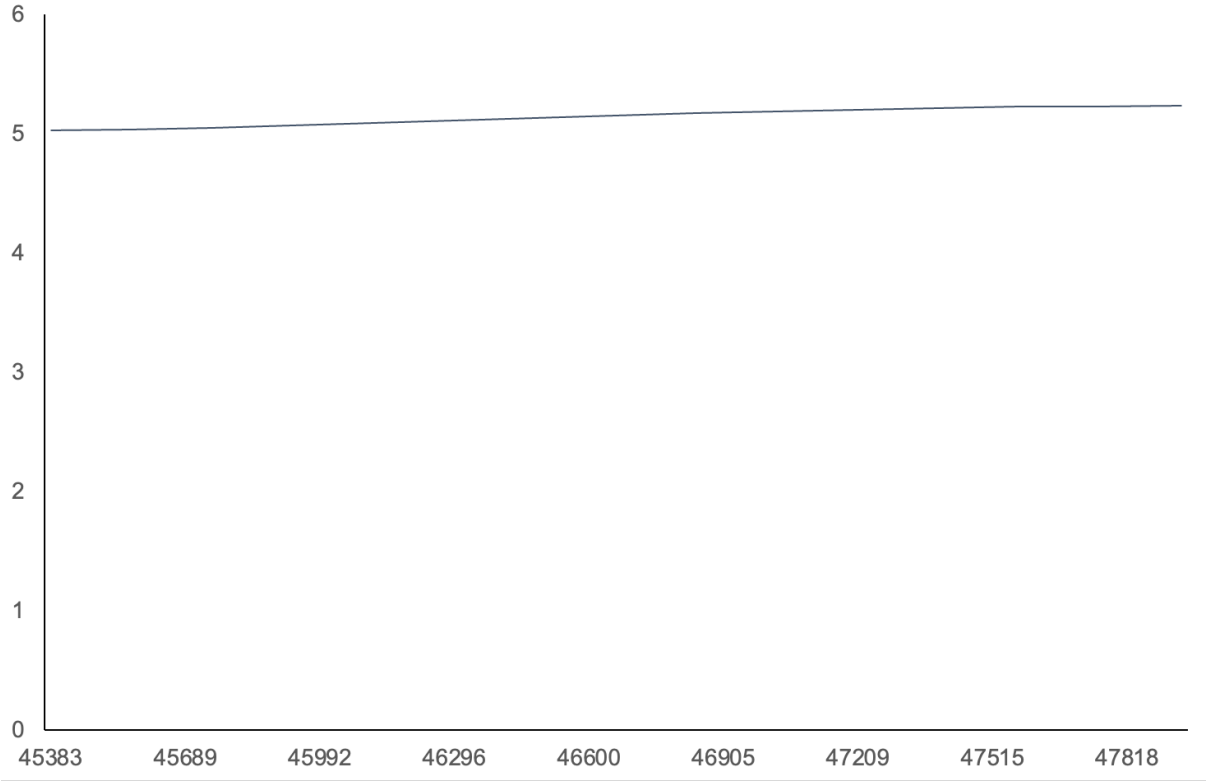


Source: S&P Global.

The chart shows that yields have increased markedly over the last year. At our cut-off date for this report of 30 September 2023 the yield on the iBoxx A index stood at approximately 5.75% and the yield on the iBoxx BBB index stood at 6.5%.

We build our 'placeholder'[4] for the cost of new debt as follows. We start from a 6.1% market cost of debt in our cost of capital calculation, as the average of the September 2023 yield on A and BBB 10+ year corporate bonds. Our usual practice would be to allow next for a forward-rate adjustment in line with market expectations for a move up or down in interest rates. However, figure 2 shows the forward gilt curve is currently very flat. We therefore do not consider that it is necessary to allow for a forward-rate adjustment at this point in time.

Figure 2: Forward rates for 20-year nominal gilts (%)



Source: Bank of England website and First Economics' calculations.

It is necessary to make allowance for debt-related costs. We initially provide for 10 basis points to be consistent with the information that NIE has provided to the Utility Regulator have about fees paid during its three most recent debt raising exercises and the cost incurred maintaining liquidity facilities. We note that further discussion with the Utility Regulator is likely to be required on these costs, having regard to factors such as the type, quantum and tenor of debt that NIE proposes to raise in its future financing exercises.

The preceding numbers come together into the calculation of the overall cost of debt shown in table 10. The weights for the cost of existing debt and new debt are 30:70 to be consistent with the Utility Regulator's financial modelling. However, we note that the weights are sensitive to the size of NIE's RP7 capex allowance and, hence, there may be a need to revise the figures prior to the regulator's determination.

[4] The Utility Regulator has informed us that it intends to put in place an adjustment mechanism via which the RP7 allowance for the cost of new debt will be set in accordance with out-turn iBoxx yields.

Table 10: Forecast average costs of debts for RP7

Average nominal cost of debt			
		Current market rates	6.1%
Average interest costs	5.8%	Forward rate adjustment	nil
Transaction costs	0.1%	Transaction costs	0.1%
Embedded debt	5.9%	Cost of new debt	6.2%
	30:70 weighted average		
	Weighted average cost of debt = 6.11%		

We also need to convert from a nominal figure to a real cost of debt for inputting into our real, CPIH-stripped cost of capital computation. We advise that the conversion for inflation should be consistent with the inflation forecasts that the regulator is using throughout the RP7 review. Pending detail on what these forecasts are, the Utility Regulator has asked us to use an average inflation rate of 1.55% in line with the Office for Budget Responsibility's most recent published CPI forecast. This means that we convert the nominal cost of debt into a real, RPI-stripped cost of debt of 4.49%.[5]

6. Generic Cost of Equity Parameters

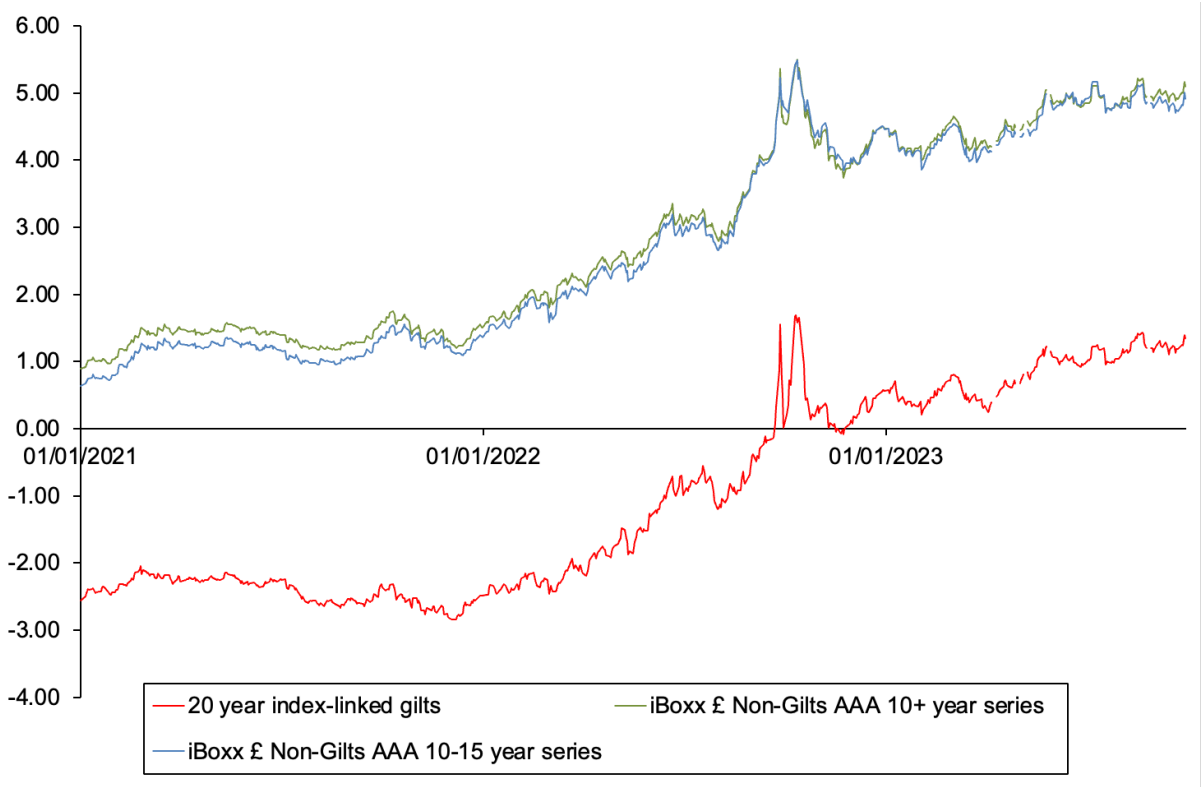
6.1 Risk-free rate

Having estimated the cost of debt directly, an estimate of the risk-free rate is needed solely for the purpose of estimating the cost of equity.

The CMA has suggested that readings of the CAPM risk-free rate can be obtained by examining the yields on government gilts and AAA rated corporate bonds. Figure 3 below plots the yields on three benchmark indices.

[5] The conversion formula is (1 + real cost of debt) = (1 + nominal cost of debt) / (1 + forecast inflation).

Figure 3: Yields on government gilts and AAA corporate bonds (%)



Source: Bank of England and S&P Global websites.
Note: the yields on index-linked gilts are in RPI-stripped terms; the yields in the iBoxx non-gilts indices are in nominal terms.

The chart shows that there has been a sharp move up in the yields on low-risk assets during 2022 and 2023 as central banks have raised base rates in response to the emergence of very high inflation. We do not expect this increase to be transitory – i.e. there is no reason at the time of writing to expect rates to fall back to the historical lows seen up to 2021 even when inflation reverts to normal.

A 50:25:25 weighted average of the gilt and two AAA series respectively, appropriately deflated for expected inflation, in the month of September 2023 was approximately 2.2% in real, CPIH-stripped terms.

Table 11 overleaf compares this estimate to the risk-free rate assumptions identified in other recent reviews.

Table 11: Risk-free rate assumptions in recent regulatory reviews

Decision	Risk-free rate	Year
Ofgem, RIIO-GD&T2	-1.48%	2020
CMA, water and sewerage	-1.34%	2021
Utility Regulator, NI Water	-1.3%	2021
Utility Regulator, GD23	1.77%	2022
Ofgem, RIIO-ED2	1.23%	2022
CAA, Heathrow Airport	1.5%	2023

Note: where necessary, we have converted published values into real, CPIH-stripped equivalents using RPI and CPIH inflation assumptions of 2.9% and 2.0% respectively.

The table shows that our risk-free rate calculation is above other estimates from the end of 2022 and the start of 2023. However, the increment versus the final rows in the table is in line with the movement in the data shown in figure 3. As such, we are content that our proposed 2.2% figure is a fair starting benchmark for the RP7 review.

6.2 Market return/ Equity risk premium

The final input into CAPM is the return on the market portfolio, R_m. Some cost of capital studies arrive at a value for R_m only indirectly by estimating an equity-risk premium and adding this figure to the risk-free rate. Like Ofgem and the CMA, we prefer to estimate R_m directly so as to ensure that there is no inconsistency in the cost of equity calculation.[6]

Recent regulatory assumptions for the overall market return for equities are given in table 12.

Table 12: Equity market return assumptions in relevant regulatory reviews

Decision	R_m assumption	Year
Ofgem, energy networks	6.5%	2020
CMA, water and sewerage	6.81%	2021
Utility Regulator, NI Water	6.8%	2021
Utility Regulator, GD23	6.5%	2022
Ofgem, RIIO-ED2	6.5%	2022
CAA, Heathrow Airport	6.8%	2023

The CMA undertook an extensive review of the evidence on R_m as part of its PR19 inquiry. The CMA's conclusion from its work was as follows:

> In coming to a view on a reasonable range of TMR estimates, we have placed most weight on the historic ex-post and historic ex-ante approaches. The former gives a range of 5.6% to 6.5%

[6] The main risk of inconsistency comes from using an R_f in the derivation of an equity-risk premium that differs from the choice of R_f that we made earlier (note that R_f appears twice in the CAPM formula and should take the same value each time). Among other things inconsistencies can arise due to the measurement of R_f over different times periods or as a result of using data from different 'risk-free' securities when deriving an equity-risk premium.

> (RPI real), while the latter gives a range of 5.2% to 5.7% (RPI real) ... On this basis, we conclude that the overall TMR range is between 5.2% and 6.5% (RPI-real).

(NB: a range of 5.2% to 6.5% in RPI-stripped terms converts into a CPIH-stripped range of 6.1% to 7.4%.)

We are aware that the ONS published a new backcast of CPIH inflation since the conclusion of the CMA's work and that, all other things being held equal, this points to a small increase in estimates of the after-inflation returns that investors have historically taken from stock market investments. However, the end points in the CMA range were positioned, respectively, in line with estimates of historical ex ante returns and RPI-stripped historical ex post returns. Our understanding is that the new ONS backcast does not directly impact either of these reference values.

The Utility Regulator selected a point estimate of 6.5% in its recent GD23 decision. The CMA stated in a 2021 appeal decision that a 6.5% figure could not be said to be "wrong". Given the importance of regulatory consistency across similar decisions, we are of the view that 6.5% remains a reasonable value for the Utility Regulator to input into its RP7 calculations for the purpose of the draft RP7 determination.

7. Overall Cost of Capital Calculation and Conclusions

Table 13 combines our individual component estimates into a calculation of the overall real, CPIH-stripped vanilla cost of capital.

Table 13: Proposed range for NIE's RP7 Cost of Capital

	Estimate
Gearing	0.55
Cost of debt (%)	4.49
Risk-free rate (%)	2.2
Market return (%)	6.5
Asset beta	0.35
Equity beta	0.69
Post-tax cost of equity (%)	5.15
Vanilla WACC (%)	4.79

Our estimate of the real vanilla cost of capital is 4.79%.

This figure is higher than the current rate of return of 3.18%, reflecting the shift up in market interest rates since the Utility Regulator's RP6 determination.

The Utility Regulatory will need to pay attention to movements in market interest rates after the cut-off date for this paper (30 September 2023) with a view to incorporating the best available estimates of each cost of capital parameters into its calculation of NIE's RP7 allowed return.