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Analysis of Ofgem's Cost of Debt Draft Determination for RIIO-ED1

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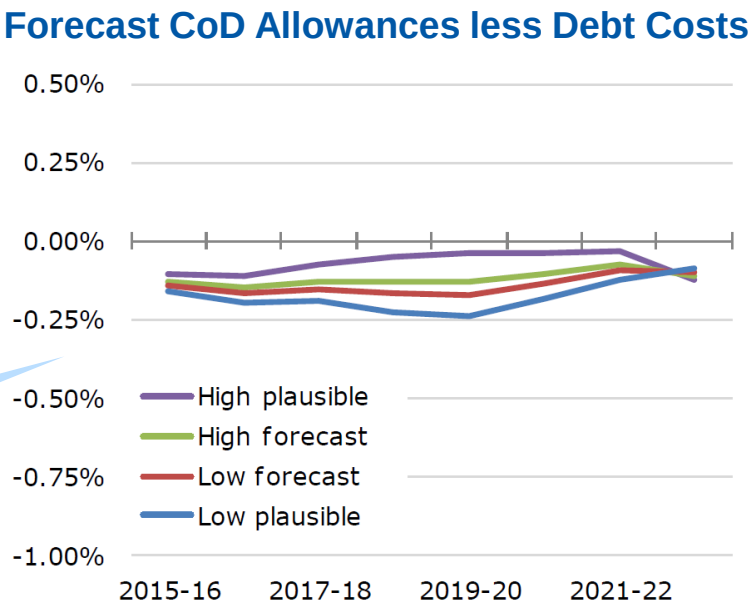
Ofgem's "Trombone" Index Proposals

Ofgem's July RIIO-ED1 Proposals

- In its July 2014 DD, Ofgem proposed to calculate allowed CoD using a 10-year initial average of the iBoxx A/BBB index extending to 20-year average over time ("trombone index").
- Ofgem acknowledges that its proposed index fails to recover DNOs' debt costs.
- But it justifies this under recovery by arguing:

1. There is a 'halo' effect, where DNOs are able to issue debt at a cost below the iBoxx index (see Ofgem DD – Financial Issues, para 2.46, p12); and
2. Ofgem has allowed headroom on the cost of equity (see Ofgem DD – Financial Issues, para 2.47, p13).

CoD Out(under)-performance of DNOs



We do not find empirical support for Ofgem's reasons for justifying under recovery of debt costs are flawed

Source: Ofgem RIIO- ED1 Draft Determination Financial Issues Annex, p12

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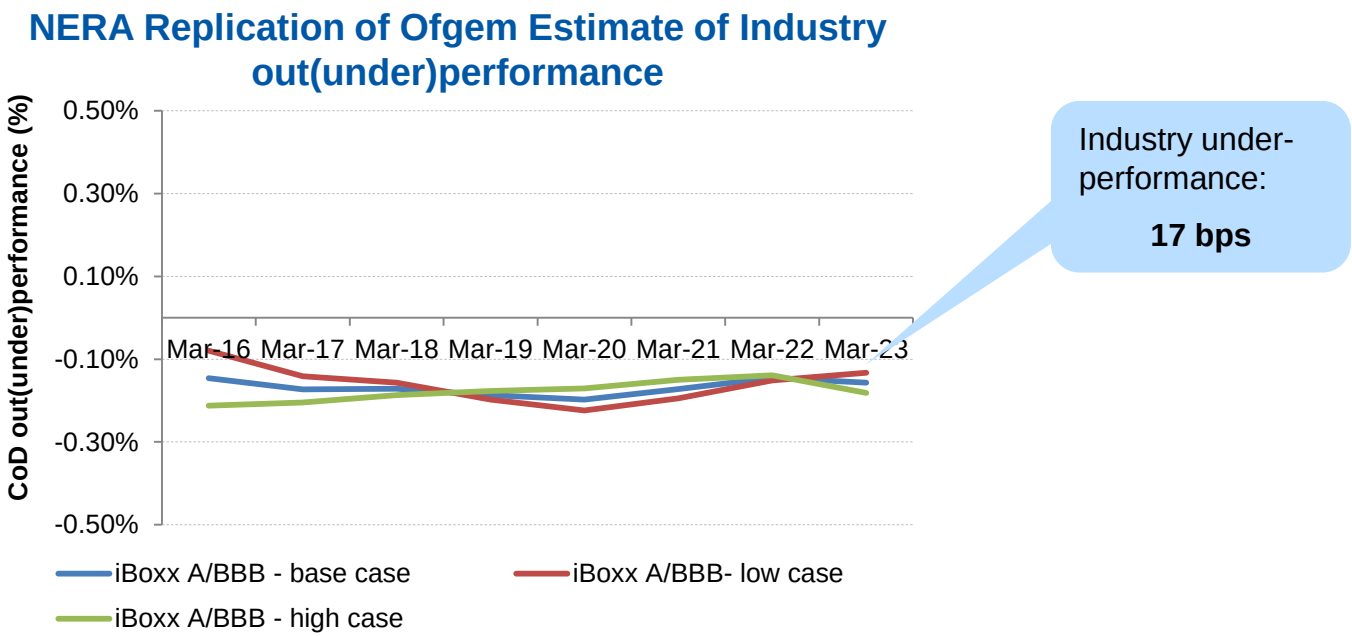
NERA Analysis of DNO Under/Outperformance

NERA Methodology for Estimating Under/Outperformance

- We have constructed a model which:
  - calculates **future debt costs** for individual DNOs and the industry as a whole; and
  - compares these to **allowed cost of debt** calculated using different initial averaging periods for the iBoxx index.
- In our model, we have:
  - populated the model with **data received from the DNOs**;
  - calculated **new debt issuances** using Ofgem's PCFM; and
  - modelled **future debt costs** (measured by the iBoxx index) under different interest rate scenarios.
- Further details on the modelling assumptions are provided in Appendix B.

NERA's own model confirms Ofgem's analysis that companies do not recover their debt costs based on the 10Y initial average index

- We have replicated Ofgem's analysis of the index with a 10-year initial average, increasing to 20 years by the final year of RIIO-ED1.
- We confirm Ofgem's finding that this index would lead to significant underperformance (of 17) bps for the industry on average.
- Moreover, there is substantial industry variation, and some DNOs underperform significantly more.



Source: iBoxx, NERA analysis

We do not find support for Ofgem's reasons for justifying under-recovery of debt costs

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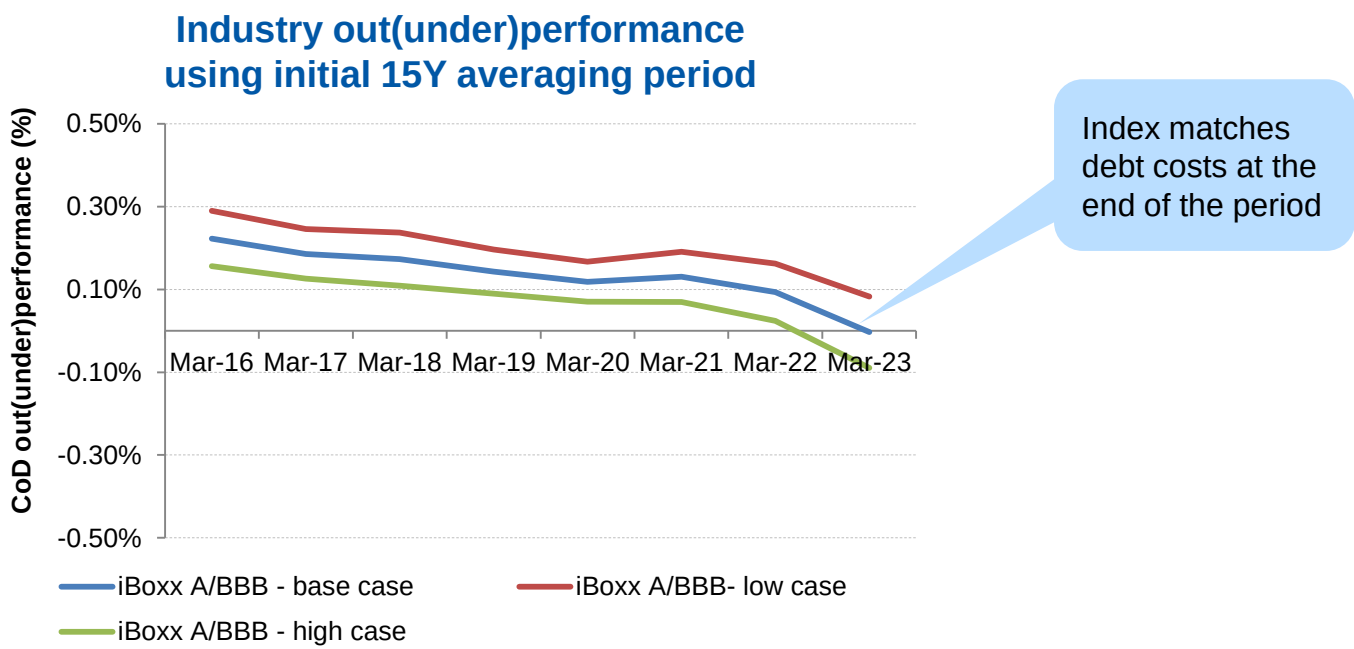
1. Ofgem's analysis of the 'halo' effect contains a design flaw that results in the comparison not occurring on a like-for-like basis
   - Ofgem's 2014 analysis contains a major design flaw. The YTM analysis looks at the *remaining* maturity of a portfolio of bonds while companies new debt costs will always be locked in at the maturity *at issuance*
   - Consequently, Ofgem's 2014 DNO benchmark has a shorter average maturity than the iBoxx index. Ofgem does not adjust for this difference, instead subtracting the same gilt yield from all bond yields.*
   - Ofgem's analysis does not adjust for the concavity of the yield curve, and by including DNO bonds with maturity below the index, it results in a decrease in yield disproportionately greater than the decrease in maturity. This effect is substantial for short maturity bonds included in Ofgem's sample.
2. Ofgem's estimate of the cost of equity does not contain any significant headroom
   - TMR decision that is inconsistent with CC NIE decision
   - Inappropriately high debt beta, thus underestimating the equity beta

Ofgem cannot afford to rely on "headroom" in other aspects of its decision to balance out underperformance on the CoD index

(*) See Ofgem DD, para 2.60.

Conceptually the best approach for choosing the averaging period is to match the (preferred) 20 year tenor as closely as possible (given data limitations)

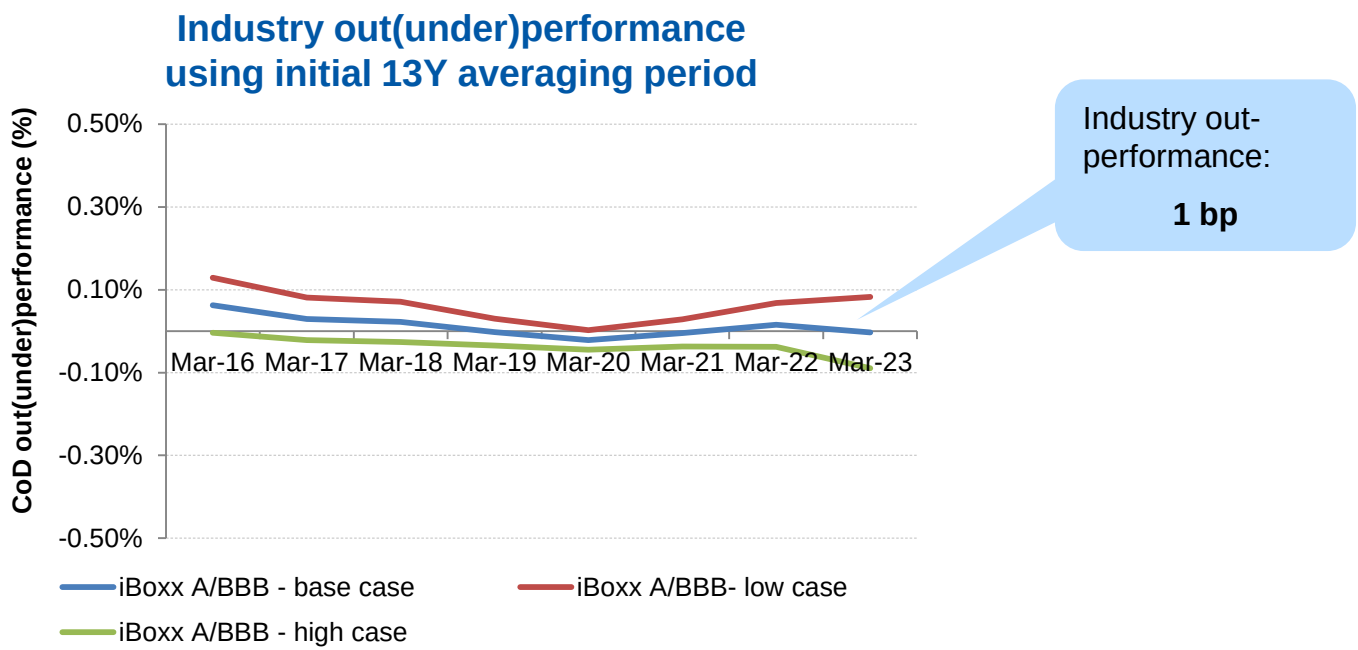
- In principle, using the average maturity of DNO debt, which is 20 years, is the most conceptually sound approach to determining the initial averaging period.
  - Ofgem explicitly acknowledges this by proposing an index which extends to a 20-years average over time.
  - We note that there are only 15 full years of data available for the A/BBB iBoxx index, so in practice the maximum initial averaging period is 15 years.
- Using a 15Y initial averaging period is the best available approach because (based on the data available) it most closely matches the tenor of the DNOs debt
- After a period of transition, this index will closely match DNO debt costs once companies have re-financed a significant amount of existing debt



Source: iBoxx, NERA analysis

NERA's analysis shows a 13Y initial averaging period is the minimum that allows the industry to *just r*ecover its debt costs

- A 13Y initial averaging period is the minimum required to ensure the industry recovers its debt costs on average.
- There is industry variation in performance, so some DNOs would still underperform under this 13Y index.
- In addition, the 13Y index does not fully match the tenor of DNOs debt, and there is no theoretical argument for supporting a 13Y average.



Source: iBoxx, NERA analysis

Conclusion

- Ofgem justifies the underperformance under the 10-year averaging period by arguing it allows headroom on the cost of equity and that DNO issuances exhibit a halo effect. Our analysis shows that both of these arguments are incorrect and there is no additional headroom.
- Given these flaws, the underperformance using a 10-year initial average is a significant concern as the industry as a whole underperforms by 17 bps.
- Ofgem does not justify a 10-year initial averaging period for the index:
  - The average maturity of DNO debt is 20 years and Ofgem explicitly acknowledges this by proposing an index which extends to a 20-year average over time.
  - Around 29% of issued value of DNO debt at the beginning of RIIO-ED1 was issued prior to 2004 - the first year covered by the allowance under the 10-year initial average.
  - Ofgem's own analysis shows underperformance relative to the "trombone" index using the10-year initial averaging period.
- The theoretically sound method is to match the averaging period to DNO average tenor of 20 years. Based on the data available, we use a 15-year initial averaging period as the longest available.
- At the very minimum, a 13-year initial average is required to ensure the industry as a whole is able recover its efficiently incurred debt costs.
- If Ofgem's own financeability testing shows downgrades to BBB for a number of companies then the iBoxx index used for the allowed cost of debt should be BBB.

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Appendix A – Assessment of Ofgem's 2014 Assessment of the Halo Effect

Ofgem's (2014) RIIO-ED1 Draft Determination uses a different methodology to estimate the halo effect

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- **Ofgem (2014) departs from the earlier (2013) analysis and estimates the "halo" effect as follows:**
  - Uses DNO debt rather than the debt issued in the wider utilities space
  - Uses Yield to Maturity (YTM) rather than issuance costs
  - Compares spreads over UK gilts calculated for both the DNO YTM Index and the iBoxx Index benchmark
- **Our Analysis of Ofgem (2014) suggests that :**
  1. **Ofgem's (2014) analysis suffers from a fundamental design flaw and therefore cannot appropriately estimate the possible halo effect going forward**
     - Ofgem's YTM analysis looks at the *remaining* maturity of a portfolio of debt instruments while companies new debt costs will always be locked in at the maturity *at issuance**
     - It also fails to account for new issuance premia
  2. **In practice, Ofgem's debt "outperformance" is based on a flawed comparison which is not made on a like-for-like basis**
     - Ofgem's (2014) DNO bond index has a weighted avg tenor of c.17 yrs to the index' c.20 years
     - The impact of the average difference is exacerbated by the fact that Ofgem's index includes a number of very short maturity bonds, which skews the result (due to the concavity of the yield curve)

Ofgem's Methodology (2014) is based on an incorrect benchmark for debt costs

Ofgem mitigates but does not resolve this inconsistency by removing bonds that mature between 2010 and 2014 (i.e. those with the shortest remaining lives) from the sample.

Ofgem's 2014 "halo effect" is in fact driven by the tenor differential in the DNO YTM Index and the Iboxx Benchmark and the concavity of the yield curve

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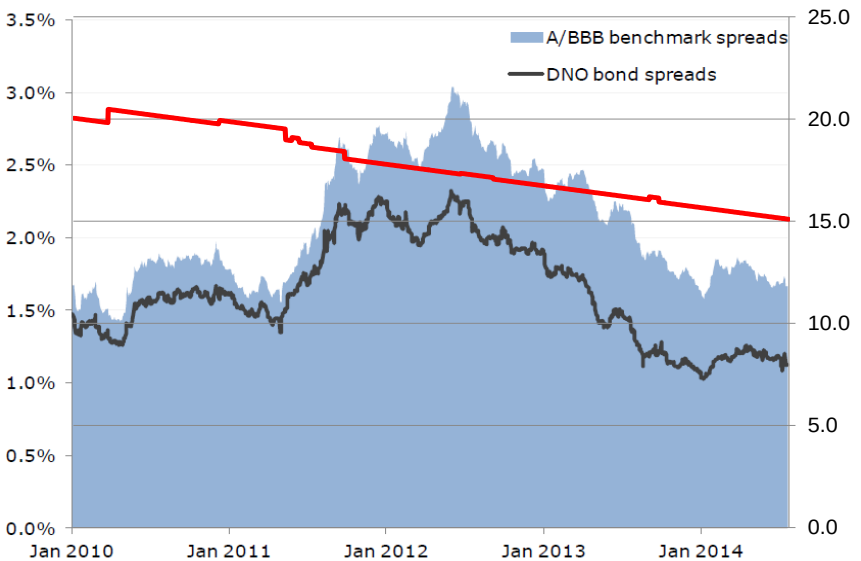
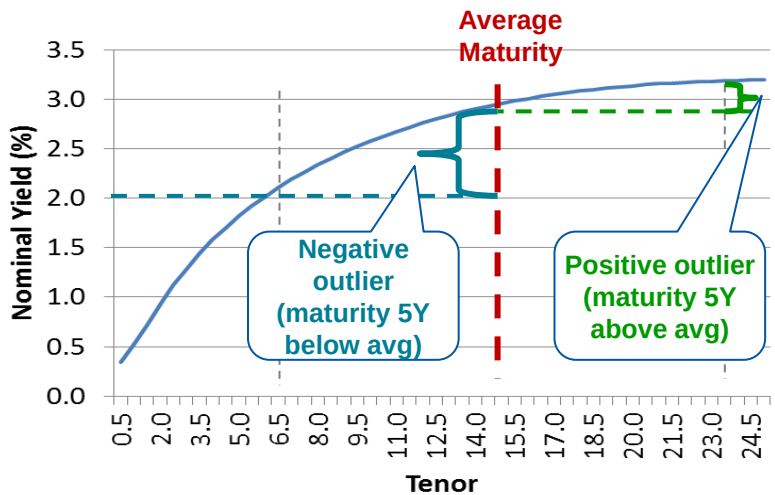
1) TENOR Effect

- The halo effect that Ofgem observes appears to be strongly driven by the (weighted) average maturity of the DNO benchmark falling from c. 20 years to 15 years.
- It is notable that in the early years where the DNO benchmark index has a maturity of close to 20 years the spread is <u>not sufficient to cover issuance costs</u>



2) Concave Yield Curve Effect

- Maturity of bonds in the DNO sample is between 2.2 and 42.2 years (Aug 2014) while bonds in the iBoxx 10Y+ index are necessarily all higher than 10Y in remaining life.
- Because of the concave shape of the yield curve the average of a 5Y and a 25Y bond yield is lower than the 15Y bond yield.
- On 18 Aug 2014 this effect accounted for 45 bps for UK gilts* for the above combination, even *after accounting for tenor*, which can potentially explain a very significant part of the alleged halo effect.



Source: Bank of England, YC date 18/08/2014, NERA analysis, Ofgem DD. (*) The yields on 5Y, 15Y and 25Y UK gilts were 1.82%, 2.96% and 3.20% respectively.

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Appendix B – A Recap of NERA's Critique of Ofgem's previous Analysis of the Halo Effect

Our 2013 Analysis found that Ofgem's analysis of the "Halo Effect" (2013) was not suited to estimating the Halo Effect going forward

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In the RIIO – ED1 Strategy Decision, Ofgem estimated a so-called "halo effect", i.e. that network companies can issue cheaper debt than the benchmark based on yields at issue:

- 14 bps for the period since 2010 vis-à-vis the iBoxx, and 53 bps over the history of the iBoxx index (2000+)
- Our 2014 results show 11bps for 2010+ and 57bps for 2000+

Ofgem derives the result based on the following key assumptions:

1 Inclusion of Index-Linked Bonds (ILBs)

- Ofgem includes the yields at issue for coupon-paying ILBs, many of them wrapped (in particular in the period '05 – '08)
- New Pension Regulation introduced in the early 2000's created inelastic demand for these bonds
  - *The inclusion of (wrapped) ILBs is a key driver of Ofgem's apparent "halo" effect that is unlikely to exist going forward*

2 Inappropriate Index Benchmark

- Pre-financial crisis, utility bonds were mainly "A" rated, in some cases even better thanks to wrapping
  - *The A/BBB index used by Ofgem is an inappropriate benchmark for utility CoD over that period in particular*
- Post-financial crisis, a higher proportion of utility bonds are BBB rated
  - *The reduction in the share of "A" rated bonds explains why issues post-crisis are more in line with Ofgem's index*

Source: Ofgem RIIO- ED1 Draft Determination Financial Issues Annex & NERA analysis

Ofgem's "halo effect" is driven by Index Linked issues in '05 - '08

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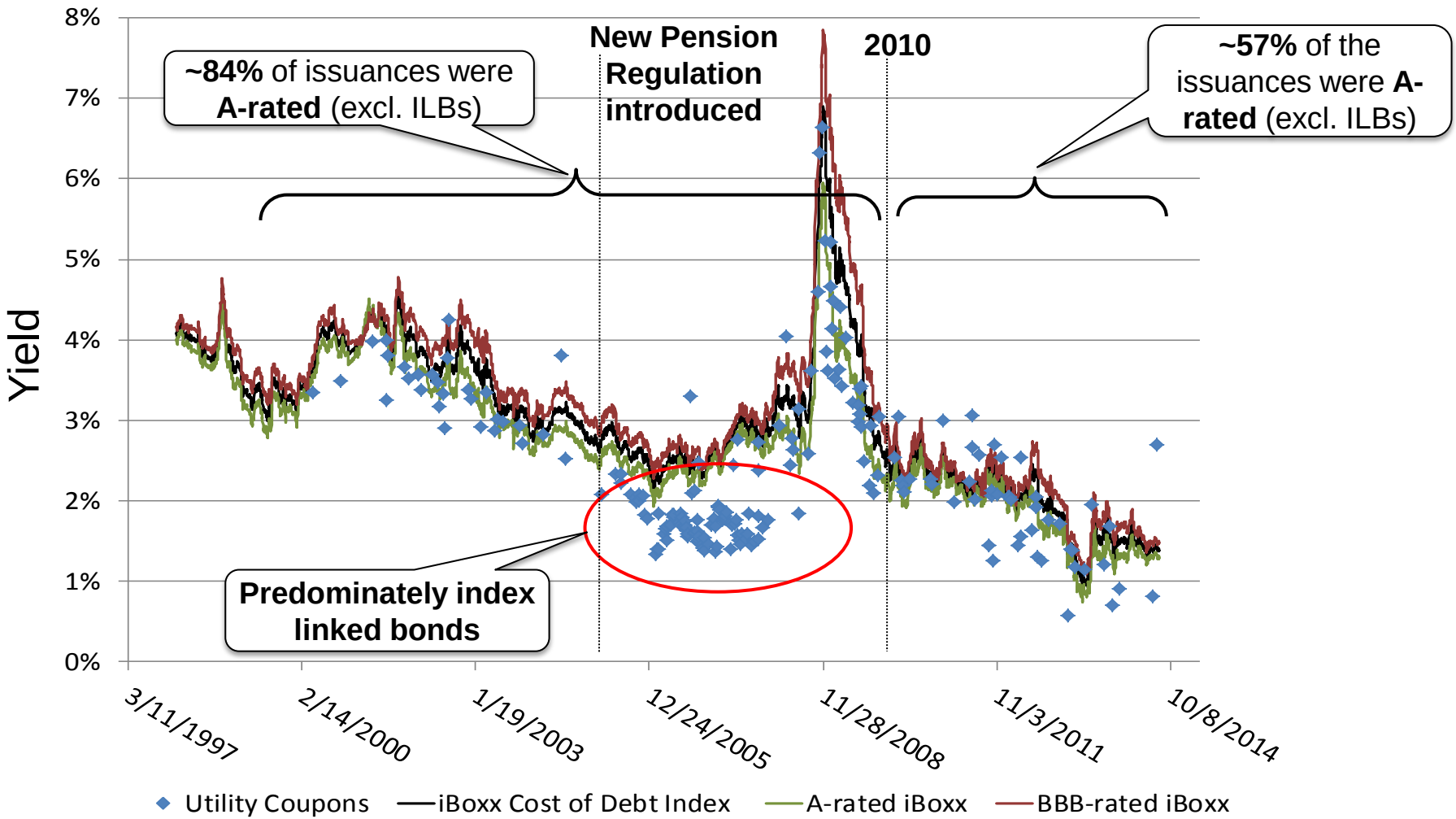
Utility Coupons vs. iBoxx A and BBB



Source: iBoxx, Bloomberg, Ofgem, NERA analysis

DNOs are likely to be unable to issue the same amounts of cheap IL debt in the future

- Significant changes in market conditions
  - Demand for IL issuance has dropped since 2005-07 due to the near disappearance of demand from "asset swappers" such as Depfa and Dexia. Remaining buyers (pension funds) often require ratings above BBB
  - Wrapping from monoline insurers, which was common in 2005-07 has become irrelevant as the credit ratings of monoline insurers have dropped
- Market commentators have noted the following reasons for the decreasing attractiveness and availability of IL debt:
  1. **Illiquidity premium**: Following the reduction in the number of buyers IL bonds are less liquid than nominal bonds, which can result in an illiquidity premium for new issues;
  2. **Changes in rating agency methodology on IL debt**: S&P has changed its methodology in evaluating IL debt, and now does not deduct the indexation elements from interest expenses in its financial ratio assessment. Hence companies with a higher proportion of index-linked debt will have a lower credit ratio.
  3. **Inefficiency of Index-linked Swaps**: Index-linked swaps have to be monitored constantly because they are market to market, and therefore affect gearing. It could have a negative impact on credit ratings if gearing increases, and therefore, companies prefer to avoid the cost of constantly monitoring them.

Sources: Investec "Why issuers don't want to issue inflation-linked bonds" August 2013; S&P "Methodology And Assumptions: Recognizing The Sustainable Cash Cost Of Inflation-Linked Debt For Corporates" Feb 2009

Controlling for Credit Rating Reduces the "Halo Effect" to <5 bps

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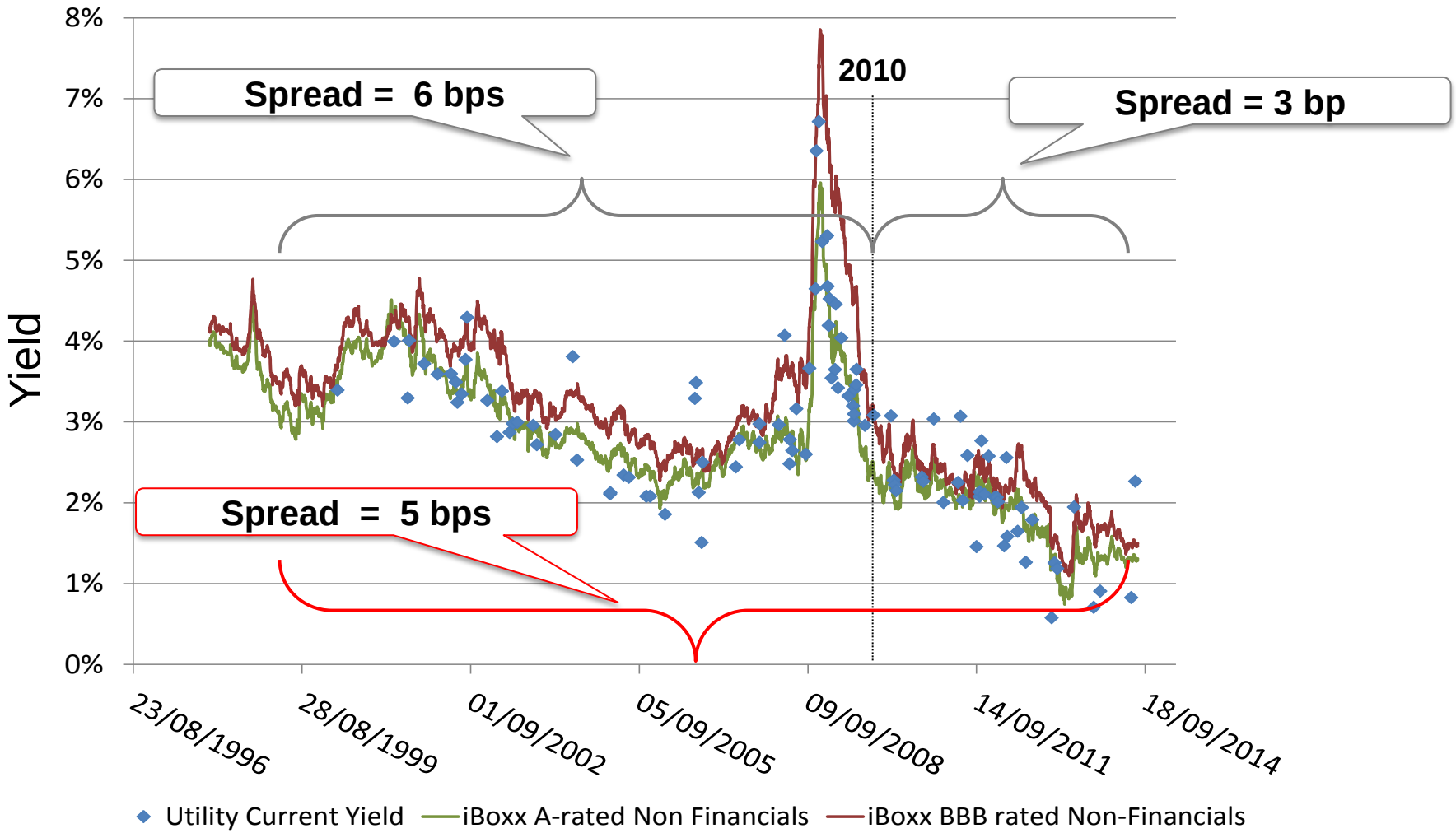
Utility Current Yields at issuance vs. Relevant iBoxx benchmark (excl. ILBs)



Source: iBoxx, Bloomberg, Ofgem, NERA analysis

We continue to find that correcting for Ofgem's flaws significantly reduces the "halo" effect based on the 2013 methodology

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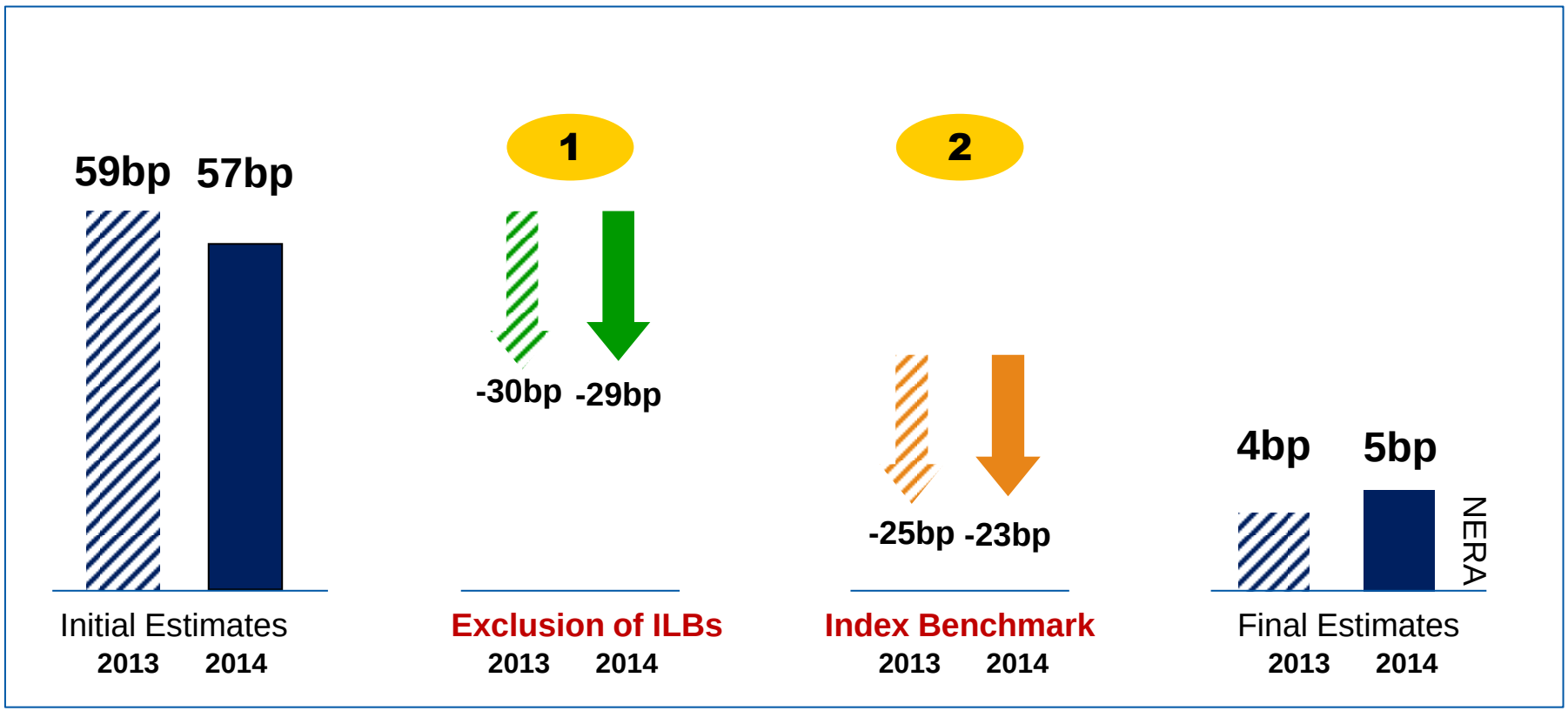
Long-term period (2000 -)



NERA uses "current yields" rather than "coupon yields" (i.e. accounting for non-par issuance) as the appropriate return measure against the iBoxx total return index. The impact on the final spread estimates due to the methodological difference is negligible.

➡ Correcting for 1) and 2) results in a long-term spread between the Relevant iBoxx Benchmark and Utility CoD of between **4-5 bps.**

Source: NERA analysis

The same results holds over the short-term

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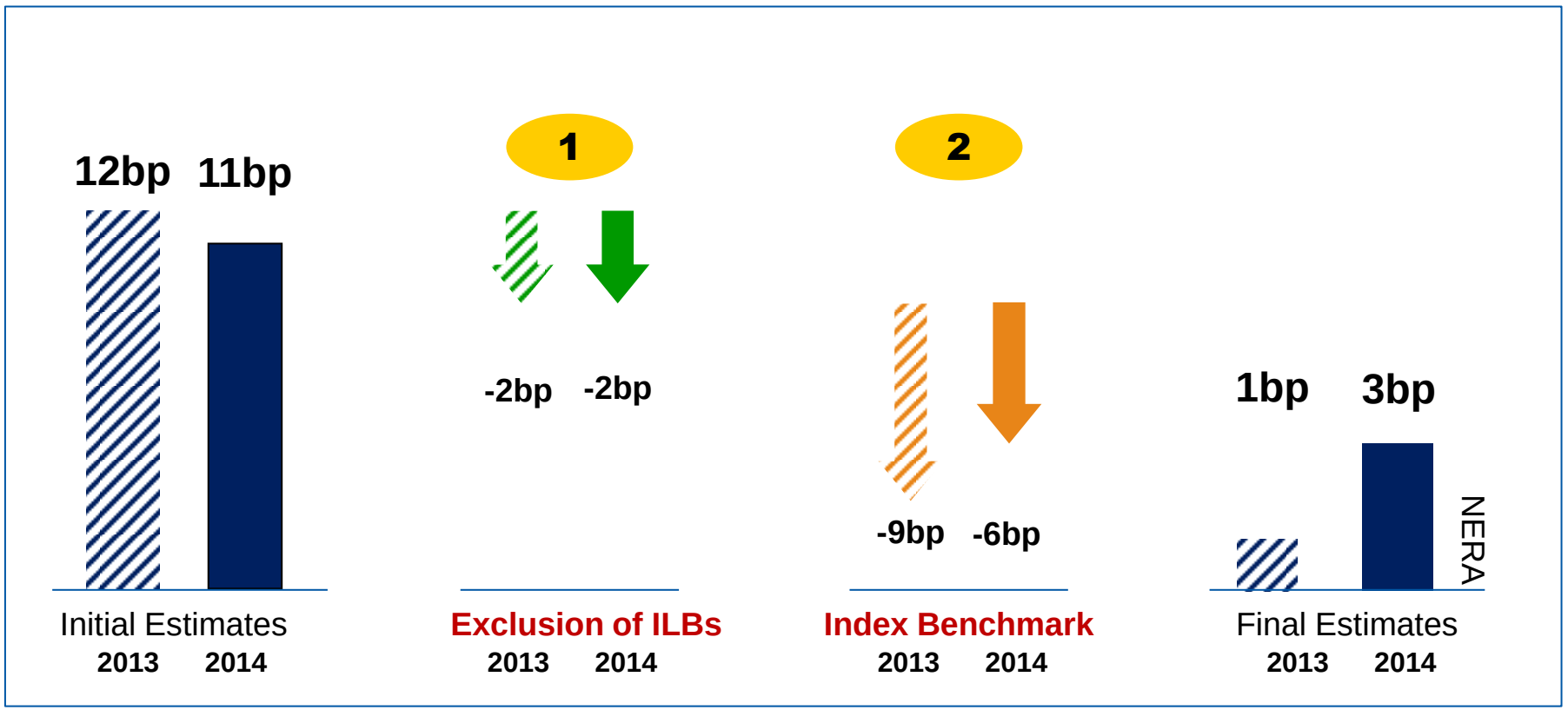
Short-term period (2010 -)



NERA uses "current yields" rather than "coupon yields" (i.e. accounting for non-par issuance) as the appropriate return measure against the iBoxx total return index. The impact on the final spread estimates due to the methodological difference is negligible.

➡ Correcting for 1) and 2) results in a short-term spread between the Relevant iBoxx Benchmark and Utility CoD of between **1-3 bps.**

Source: NERA analysis

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Appendix C – NERA Cost of Debt Modelling Assumptions

Model Assumptions I

Embedded debt:

- Volumes and costs calculated based on info provided by the DNOs in response to our data request.
- We only consider coupon and wrap costs (we do not consider additional costs – e.g. swaps as those represent treasury management).
- We use the yield at issue, in contrast to Ofgem's use of coupon cost. The yield of issue represents the estimate of true cost of debt for DNO, whereas Ofgem mistakenly assumes all bonds are issued at par.

Issuance costs:

- We include 20bps of issuance costs for embedded debt (in line with Ofgem's modelling) to show the effect of Ofgem not explicitly allowing for issuance costs. We also include 20bps for new debt since Ofgem is incorrect in arguing there is a halo effect.

Inflation:

- We compare real cost of DNO debt with the allowed iBoxx index in real terms.
- To deflate DNO embedded debt cost expressed in nominal terms, we use forecast of RPI inflation of 3.1% in line with Ofgem.

Model Assumptions II

New debt issuances:

- New debt modelled as i) re-financing of maturing debt plus ii) new debt additions as per Ofgem's PCFM.
- New debt in each year is issued at the prevailing forecast A/BBB iBoxx rate for that year which is assumed to stay fixed until the end of RIIO ED1. We do not include detailed modelling of issuances in tranches/pre-financing.
- If Ofgem's own financeability testing shows downgrades to BBB for a number of companies then the iBoxx index should be BBB.

Interest rate projections:

- We forecast base case iBoxx cost using forward rates for the RFR + iBoxx spread calibrated using historical analysis.
- We include a high/low case scenario, around the base case of +/-1% to test sensitivity of results to different interest rate environments.

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