Anglian Water

15C. A RESPONSE TO OFWAT'S HALO EFFECT FOR PR19

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A Response to Ofwat's Halo Effect for PR19

A Report for Anglian Water

July 2018

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Executive Summary

In its December 2017 final methodology document, Ofwat proposed to set the cost of new debt based on the benchmark A/BBB iBoxx index adjusted downwards by 15bps to reflect the water companies' ability to outperform the benchmark index (also referred to as the "halo effect").[1] Ofwat cites a study by Europe Economics (EE) which observed a lower yield on an iBoxx Utilities index relative to iBoxx Corporate bond indices, although it has also commissioned recent reports from CEPA on the same issue.

Ofwat's approach follows a similar approach to Ofgem at the RIIO-1 energy network price controls[2], where Ofgem assumed that companies could outperform the iBoxx index in setting the cost of debt allowance. By contrast, at the British Gas Trading (BGT) ED1 2015 appeal, the Competition and Markets Authority (CMA) concluded there was no longer evidence to support a halo.[3]

In this context, Anglian Water commissioned NERA Economic Consulting (NERA) to undertake a study to review the evidence presented by Ofwat and its advisors in PR19, as well as the evidence provided by Ofgem at RIIO-1 and in its most recent framework consultation for RIIO-2.

CEPA's estimate of a halo effect at PR19 simply reflects the stronger rating of its sample of bonds relative to the iBoxx benchmark

In its 2016 report for Ofwat, CEPA examines the halo effect in the water sector by comparing the average of the A and BBB iBoxx 10-year+ Corporate bond indices with the yields at issue for a sample of water bonds. CEPA reports a declining halo effect (i.e. lower yields for water companies) over time: 36 bps over 2006-2009 and 29 bps over 2011-2013, but finds no halo effect after 2013 based on the most recent two bond issues.

However, CEPA's apparent halo effect simply reflects rating differences in its sample relative to the benchmark indices. CEPA calculates the halo effect by comparing its sample of water bonds which are A or BBB rated to the *average* of A and BBB iBoxx indices. Given that most water bond issues were A-rated prior to the financial crisis, the so-called halo effect reflects the rating difference between A-rated water bonds and the average of the A and BBB iBoxx indices. The decline in the apparent halo over time identified by CEPA simply reflects the alignment of the average rating of water bonds and the benchmark indices, as water companies' ratings have weakened over time.

We have conducted our own analysis of the halo effect for water companies. Comparing A rated water bonds with the A rated iBoxx index, and BBB-rated water bonds with the BBB iBoxx, we found no evidence of halo effect, as illustrated in Figure 1.

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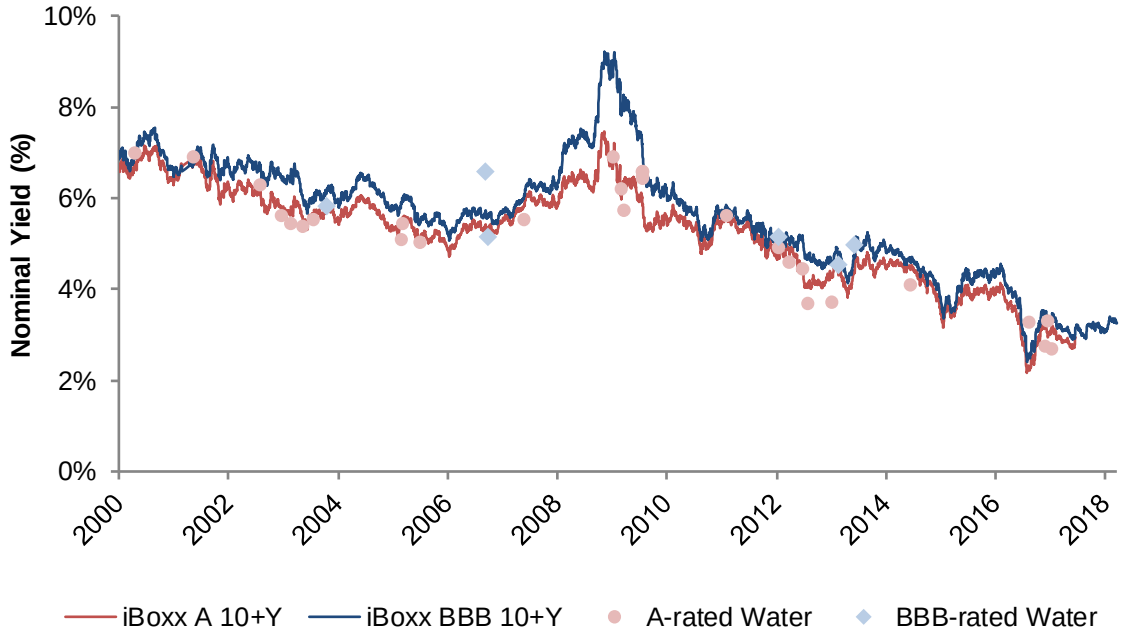
1 Ofwat (December 2017): Delivering Water 2020: Our methodology for the 2019 price review Appendix 12: Aligning risk and return, p.75.

2 Ofgem (March 2013), RIIO-ED1 Strategy decision, p.12.

3 CMA (September 2015) BGT vs The Gas and Electricity Markets Authority. Link: https://assets.publishing.service.gov.uk/media/5609588440f0b6036a00001f/BGT_final_determination.pdf

Figure 1
Comparing A-rated water bonds with the A-rated iBoxx index, and B-rated bonds with B-rated iBoxx, eliminates the apparent halo effect



Similarly, CEPA's study published as part of Ofgem's recent RIIO-2 consultation framework is flawed for similar (and additional) reasons. In the case of energy bonds, as well as its failure to account for the stronger rating of the sample of energy bonds relative to the benchmark indices, CEPA incorrectly uses coupon as its measure of the cost of debt as opposed to yield-at-issue. We show that correcting for these two errors again eliminates the halo effect.

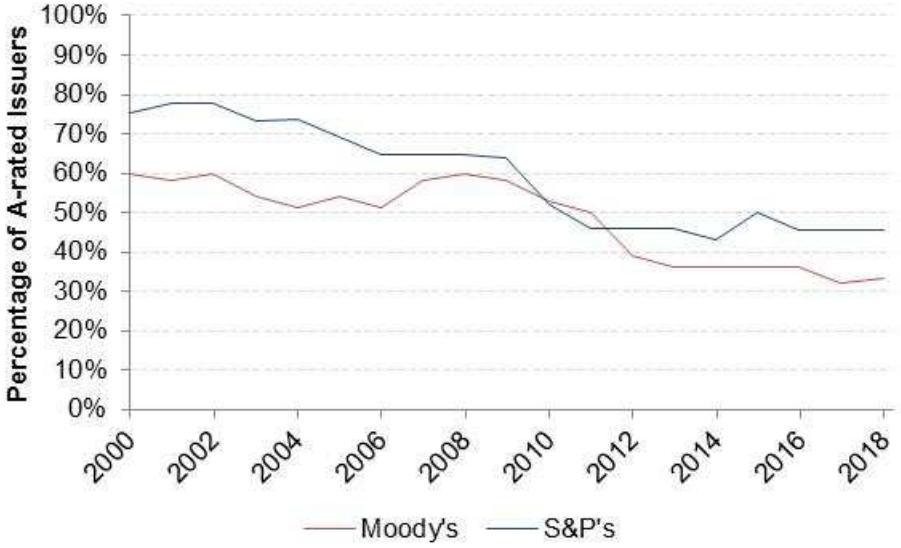
Similarly, EE's evidence of halo based on a comparison of the iBoxx Utilities and average A/BBB iBoxx Corporate indices reflects rating differences

In its December 2017 report for Ofwat, Europe Economics (EE) analysed the halo effect by comparing yields on the iBoxx Utilities 10+Y index to the average of the A and BBB iBoxx Corporate indices. EE calculated that the iBoxx Utilities had a lower yield, with a spread relative to the iBoxx Corporate indices of around 15 bps which it incorrectly interpreted as a halo.

As with the CEPA analysis, EE's halo is in fact explained by rating differences between the two indices, with the iBoxx Utilities index prior to 2010 including predominantly A-rated bonds, while the average of the A and BBB iBoxx Corporate indices by definition represents an average of A and BBB rated bonds.

As shown in Figure 2, we find that most of the regulated utilities' bonds, the constituent elements of the iBoxx Utilities index, were A-rated at issuance before 2010, which means that the iBoxx Utilities index average rating was higher the average of A and BBB until around 2010. We show that the stronger rating, rather than any regulatory halo, explains the observed yield.

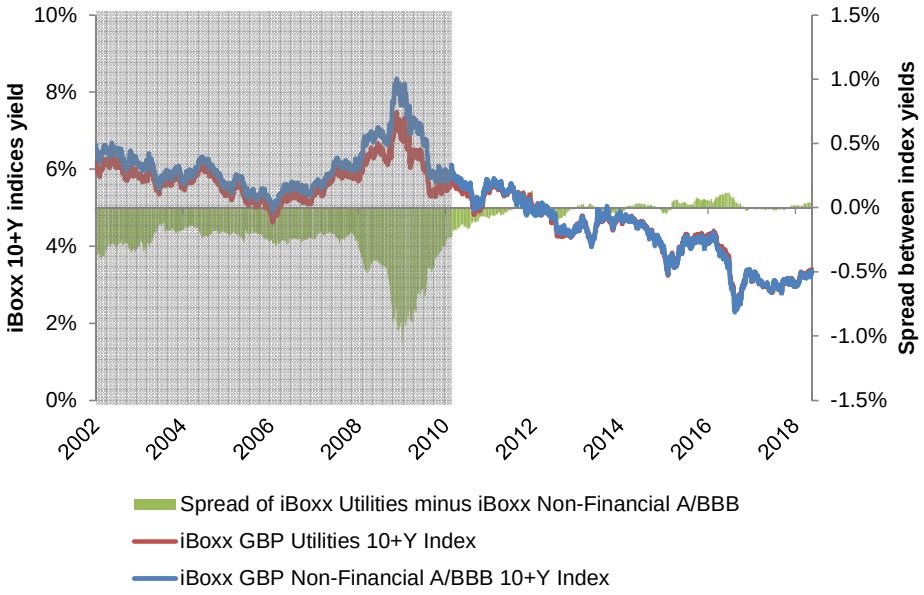
Figure 2
Utilities bonds were predominantly A-rated prior to 2010, which explains EE's apparent halo



Source: NERA analysis of Bloomberg data

Indeed, we show that as the utility issuers' ratings have weakened over time, and therefore the average rating of utilities' bonds has moved closer to the average of A and BBB, the spread between the iBoxx Utilities index and the average of A and BBB rated iBoxx indices has entirely disappeared.

Figure 3
Pre-2010, the stronger rating of the Utilities index relative to the average of A and BBB iBoxx Corporate Indices explains the apparent halo. Post 2010, the spread has disappeared as ratings have aligned



Source: NERA analysis of Factset data

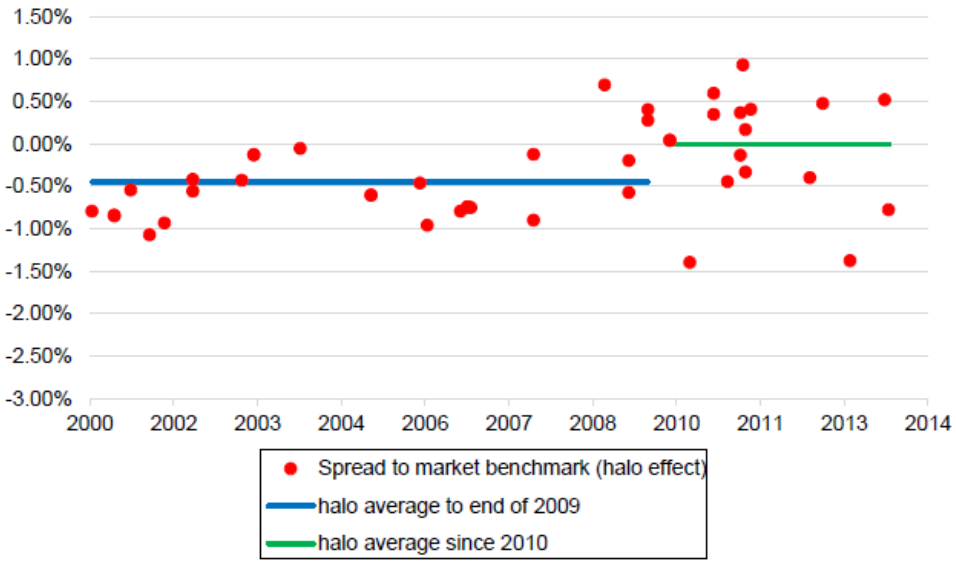
The CMA found no evidence of halo going-forward at BGT appeal; conclusion particularly relevant for water sector at PR19

The CMA also considered evidence on the halo effect as part of the appeal of Ofgem's RIIO-ED1 decision by British Gas Trading (BGT).[4] Although the CMA found some evidence for the halo effect before 2009 (as shown by the blue line in the Figure below), the CMA noted that there was no evidence of a halo effect since 2009 (as shown by green line), and that any historical halo effect had diminished over time.[5]

[4] CMA (2015) British Gas Trading Limited v The Gas and Electricity Markets Authority, Figure 15, p.137, para 8.8 (c)

[5] CMA (2015) British Gas Trading Limited v The Gas and Electricity Markets Authority, Figure 15, p.150

Figure 4
CMA found no evidence for halo for the period from 2010



Source: CMA (September 2015), CMA BGT vs GEMA Final determination, p.150

The CMA's conclusion at BGT 2015 appeal that the halo has diminished has particular relevance to the water sector at PR19. Ofwat intends to use the iBoxx index to set the cost of debt allowance for new debt only so any historical halo, to the extent that such an effect existed (which we contest), is not relevant at PR19. Rather, any historical halo will be captured for customers through the use of average industry embedded debt costs.

The downgrade and weakening credit performance of the sector further implies no prospect for outperformance over PR19

Conceptually, there is no reason to believe that regulated companies can outperform the benchmark index because of the quality (or otherwise) of the regulatory regime. The rating agencies take into account the credit support offered by the regulatory framework in their assessment of the issuers' bond rating, and therefore any halo will be fully reflected in the rating (in other words, the effect of the framework is "fully priced in").

However, even if we were to accept the conceptual basis for a halo or empirical evidence for it (both of which we strongly contest), the recent downgrade of the sector by Moody's to Aa from Aaa in terms of its view of the stability and predictability of Ofwat's regime, and the general rating and financial metric deterioration, implies that there is no prospect for industry outperformance of the benchmark index at PR19 due to a regulatory halo. We therefore consider any downward adjustment to the iBoxx benchmark in setting the cost of new debt at PR19 is unjustified.

1. Introduction

In its December 2017 final methodology document, Ofwat proposed to set the cost of new debt based on the benchmark A/BBB iBoxx index adjusted downwards by 15bps to reflect the water companies' ability to outperform the benchmark index (also referred to as the "halo effect")[6].

Ofwat's approach follows a similar approach to Ofgem at the RIIO-1 energy network price controls[7], where Ofgem assumed that companies could outperform the iBoxx index in setting the cost of debt allowance. By contrast, at the British Gas Trading (BGT) ED1 2015, the Competition and Markets Authority (CMA) concluded there was no longer evidence to support a halo.[8]

In this context, Anglian Water commissioned NERA Economic Consulting (NERA) to undertake a study to review and critique the evidence presented by Ofwat and its advisors in PR19, as well as the evidence provided by Ofgem at RIIO-1 and in its most recent framework consultation for RIIO-2.

The remainder of this report is structured as follows:

- Section 2 discusses the evidence for the halo effect as presented at the RIIO-1 energy network controls and the CMA appeal;
- Section 3 sets out our assessment of evidence presented by Ofwat at PR19 and its advisors as well as Ofgem for RIIO-2;
- Section 4 draws conclusions.

6 Ofwat (December 2017): Delivering Water 2020: Our methodology for the 2019 price review Appendix 12: Aligning risk and return, p.75.

7 Ofgem (March 2013), RIIO-ED1 Strategy decision, p.12.

8 CMA (September 2015) BGT vs The Gas and Electricity Markets Authority. Link: https://assets.publishing.service.gov.uk/media/5609588440f0b6036a00001f/BGT_final_determination.pdf

2. Regulatory Precedent on the "Halo Effect"

In this section, we review evidence on the so-called halo effect from Ofgem's analysis at RIIO-ED1 energy price controls (Ofgem's most recent decision on this), as well as the CMA's consideration of the halo effect at the British Gas Trading (BGT) appeal of RIIO-ED1 in 2015.

We show that there is no evidence to support the halo effect when a comparison of network debt issues and the benchmark index is undertaken on a like-for-like basis, and that the CMA agrees with our view.

2.1.1. Ofgem's so-called halo reflects sample bias

At RIIO-ED1, in support of the halo effect Ofgem first compared the *yield at issue* of utility bonds with iBoxx A/BBB index and concluded that utilities can issue debt at a lower yield than the index. [9]

At ED1, we were commissioned by distribution network owners (DNOs) to analyse Ofgem's claim that energy networks could issue debt more cheaply.[10] Our analysis showed that the so-called "halo effect" was almost entirely explained by:

- the inclusion of utility index-linked debt (ILD) which were significantly cheaper for a specific period of time, potentially driven by new regulations, [11] (see Figure 2.1); and
- the stronger rating of network companies' bonds which were predominantly A rated over the period of Ofgem's analysis, compared to the benchmark average of the iBoxx 10Y+indices for A/BBB index.

Our analysis showed that correcting for these two errors results in a spread between the relevant iBoxx benchmark and the utility *yield at issue* of only 1 to 4 bps.[12]

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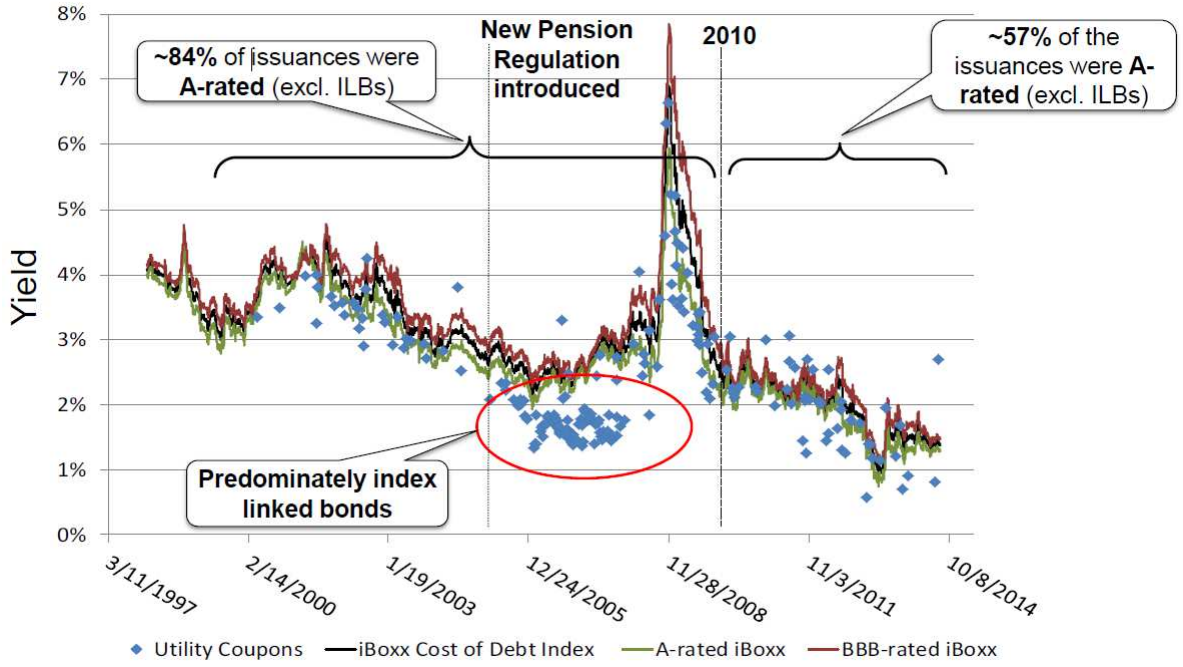
9 Ofgem (March 2013), RIIO-ED1 Strategy decision, p.12

10 See footnote 12.

11 The low yield of index-linked bonds was due to inelastic demand driven by the new pension regulation.

12 See for example reports commissioned by WPD, SPED and Energy Networks Association from NERA Economic Consulting over the course of RIIO-ED1. Links: http://www.westernpower.co.uk/docs/About-us/Stakeholder-information/Our-future-business-plan/Supporting-Financing-plan/NERA-Analysis-of-Ofgem-s-Halo-Effect.aspx; http://www.spenergynetworks.co.uk/userfiles/file/App12_201408_NERA_AnalysisOfOfgemCostOfDebtDraftDetRIIOED1.pdf.; http://www.spenergynetworks.co.uk/userfiles/file/App13_201409_NERA_ResponseToOfgemProposalsCoECoD.pdf

Figure 2.1
Ofgem's "halo effect" is driven by ILD issues in 2005-2008, and stronger rating of utilities prior to the financial crisis



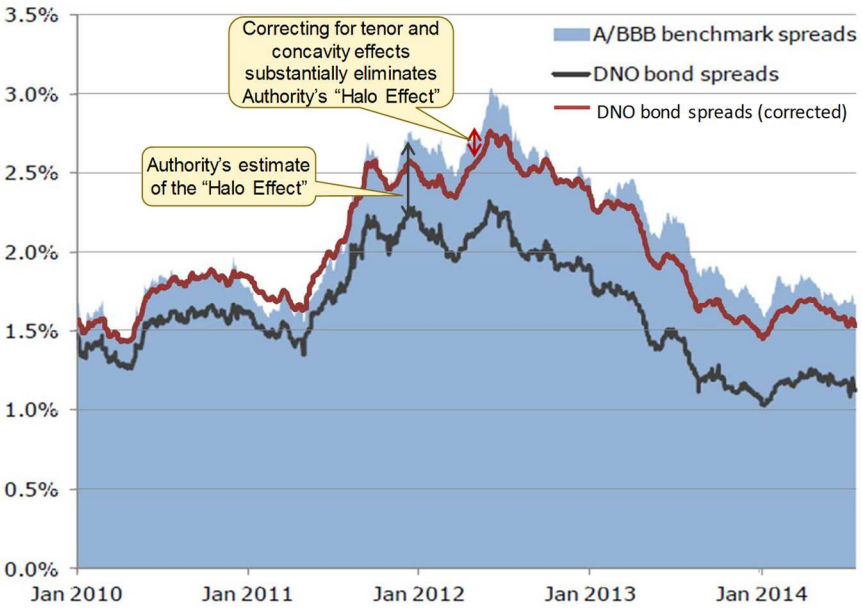
Source: NERA analysis of Ofgem data

At its Draft Determination for RIIO-ED1, Ofgem presented an alternative analysis on the halo effect to correct for the errors identified above. In its revised analysis, it compared the *yield to maturity* data for DNO bonds and the iBoxx index, and concluded that DNO bonds' spread over UK gilts is systematically smaller than that of the iBoxx index. However, as with its earlier analysis, our analysis showed that the apparent halo effect reflected sample bias in the selection of companies' bonds, principally, that the remaining tenor of DNO bonds was systematically shorter than that of the index (which results in a lower yield).

We showed that controlling for the difference in tenor, and other effects[13], substantively eliminated the so-called "halo effect" (see Figure 2.2).

[13] For example, the concavity effect, which relates to the concave shape of the yield curve, i.e. that the yield increases as the tenor of the bonds increases, but at a decreasing rate. This means that the average yield of two bonds with a maturity of 5 years and 25 years is not the same, but in fact smaller than the yield on a 15-year bond (i.e. a bond with their average maturity). This thus implies that a portfolio of bonds with a high variability in the tenor of the composite bonds (e.g. the utilities bond portfolio), will have a lower average yield than a portfolio with a low variability (i.e. the iBoxx index), even if the bonds have the same average tenor.

Figure 2.2
Ofgem's "Halo effect"is Substantively Eliminated Once the Comparison with the Benchmark is Made on a Like-for-like Basis



Source: NERA analysis. See *http://www.spenergynetworks.co.uk/userfiles/file/App13_201409_NERA_ResponseToOfgemProposalsCoECoD.pdf*

In its Final Determinations, Ofgem accepted that its analysis did not take account of differences in tenor.[14] Based on its revised analysis, it estimated a substantially reduced halo which it considered to be "*negligible*" for the substantive period of its analysis. [15]

2.1.2. CMA found halo effect substantively eliminated at ED1 appeal

The CMA also considered evidence on the halo effect as part of the appeal of Ofgem's RIIO-ED1 decision by British Gas Trading (BGT).[16] The CMA undertook its own analysis of the existence of the halo effect based on utility *yield at issue.* Although it found some evidence for the halo effect before 2009 (as shown by the blue line in Figure 2.3), the CMA noted that there was no evidence of a halo effect since 2009 (as shown by green line), and that any historical halo effect had diminished over time.[17]

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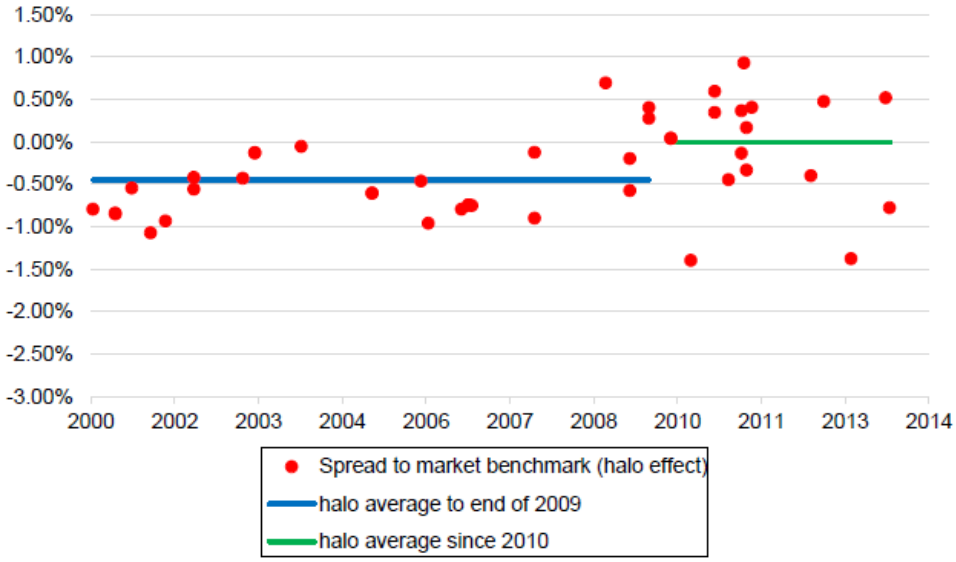
[14] Ofgem (December 2014) Final Determinations – Overview, Appendix 8, para. 1.2; https://www.ofgem.gov.uk/ofgem-publications/92249/riio-ed1finaldeterminationoverview-updatedfrontcover.pdf

[15] Ofgem (December 2014) Final Determinations – Overview, Appendix 8, para. 1.4; https://www.ofgem.gov.uk/ofgem-publications/92249/riio-ed1finaldeterminationoverview-updatedfrontcover.pdf

[16] CMA (2015) British Gas Trading Limited v The Gas and Electricity Markets Authority, Figure 15, p.137, para 8.8 (c)

[17] CMA (2015) British Gas Trading Limited v The Gas and Electricity Markets Authority, Figure 15, p.150

Figure 2.3
CMA found no evidence for halo for the period from 2010



Source: CMA (September 2015), CMA BGT vs GEMA Final determination, p.150

The CMA's conclusion at BGT 2015 appeal that the halo has diminished has particular relevance to the water sector at PR19. Ofwat intends to use the iBoxx index to set the cost of debt allowance for new debt only so any historical halo, to the extent that such an effect existed (which we contest), is not relevant at PR19. Rather, any historical halo will be captured for customers through Ofwat's use of average industry embedded debt costs to set the embedded cost of debt allowance.

2.2. Conclusion: there is no empirical or conceptual basis for a regulatory halo

In this chapter we have shown that any empirical evidence for a regulatory halo effect is based on a failure to compare energy company bonds with the iBoxx index on a like-for-like basis, namely the failure to adjust for rating or tenor differences.

The absence of empirical evidence for a regulator halo effect aligns with the absence of a conceptual basis for the effect. We assume that the (unsound) rationale for a regulatory halo is that the credit support offered by the regulatory regime improves credit quality and reduces companies' debt issuance costs relative to non-regulated companies included in the iBoxx index, allowing regulated networks to outperform the index. However, this line of argument fails to consider that rating agencies take into account the credit quality of the regulatory regime in determining the issuers' rating, e.g. Moody's assesses the "*stability and predictability*" of the regulatory regime in its credit assessment. Therefore, an A-rated regulated utility bond will have the same yield-at-issuance and cost as an A-rated non-regulated utility bond, assuming other attributes of the bond such as tenor are equal.

In the following chapter, we also set out how the most recent evidence from Ofwat and Ofgem for RIIO-2 fails to substantiate the existence of a regulatory halo.

3. Review of Ofwat's Halo Evidence for PR19

In this section, we review the evidence presented by Ofwat, and its advisors CEPA and Europe Economics (EE) in support of its downward adjustment to cost of debt allowance for water companies at PR19. We also review CEPA's evidence on outperformance for energy companies, which was presented by Ofgem as part of its recent RIIO-2 framework consultation.

We conclude that even if we were to accept empirical or a conceptual basis for the halo, both of which we do not, the recent downgrade by Moody's of its view of the stability and predictability of the regime, and weakening credit metrics, means that there is no prospect for debt outperformance over PR19.

3.1. Summary of PR19 and RIIO-2 approach to regulatory halo

In its December 2017 PR19 final methodology, Ofwat proposed a 15 bps downward adjustment of the iBoxx index value for setting new debt cost allowances, reflecting water companies' outperformance of the benchmark iBoxx index.[18] Ofwat's estimate relies on a report by EE on the cost of capital at PR19. EE estimated a 15bps halo effect by comparing yields on the iBoxx GBP utilities 10+Y index to the average of the A/BBB GBP iBoxx corporate non-financials 10+Y index over the last 10-15 years.[19] Ofwat also states that its evidence is consistent with the findings of PwC at PR14.[20]

Although not specifically cited by Ofwat in its methodology decision, Ofwat also commissioned a recent report by CEPA on setting cost of debt allowances. In its 2016 report, CEPA assessed the halo effect by comparing water companies' nominal bonds' yields at issue to the benchmark iBoxx A/BBB indices, and calculated an average halo effect of around 30 bps.[21] In a more recent 2018 report for Ofgem, CEPA set out evidence that energy network companies have outperformed the iBoxx index by around 40 bps, and CEPA recommends that the cost of debt allowance should be based on the iBoxx index less 25 bps, after taking into account evidence of diminished outperformance over time.[22]

We examine the evidence on the halo effect in these different reports, and set out our own assessment.

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[18] Ofwat (December 2017): Delivering Water 2020: Our methodology for the 2019 price review Appendix 12: Aligning risk and return, p75. Link: https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Appendix-12-Risk-and-return-CLEAN-12.12.2017-002.pdf

[19] Europe Economics (December 2017): PR19 - Initial assessment of the cost capital, p73 - p75.

[20] Ofwat (December 2017): Delivering Water 2020: Our methodology for the 2019 price review Appendix 12: Aligning risk and return, p75

[21] CEPA (August 2016): Alternative approaches to setting the cost of debt for PR19 and H7, p39 - p40.

[22] CEPA (2018): Review of cost of capital ranges for Ofgem's RIIO-2 for onshore networks, Link: https://www.ofgem.gov.uk/system/files/docs/2018/03/cepa_report_on_baseline_allowed_returns_for_riio-2.pdf

3.2. Ofwat and CEPA evidence of halo effect at PR19 suffers from sample bias

In its 2016 report for Ofwat[23], CEPA examines the halo effect in the water sector by comparing the average A/BBB iBoxx 10-year+ index with the yields at issue of water bonds. CEPA considers water bonds that are denominated in £ sterling, with either an A- or BBB+ credit rating, and with a nominal fixed coupon and bullet payment structure. Overall, it has a sample of 25 bonds. CEPA reports an average halo effect of 36 bps over 2006-2009 and 29 bps over 2011-2013, but finds no halo effect after 2013 based on the two most recent bonds included in CEPA's sample.

Figure 3.1
CEPA finds halo effect of around 30 bps for the period 2006-2013, but no halo effect after 2013

Source: NERA analysis of CEPA report

We consider CEPA's analysis draws incorrect conclusions for a number of reasons.

First, CEPA fails to control for rating differences for water bonds and the A/BBB iBoxx index, which has led to material overestimation of the halo effect. CEPA calculates the halo effect by comparing bonds with A or BBB rating to the average A/BBB iBoxx benchmark index, which introduces biases if the average rating of the bond sample is different from the average of A and BBB. Given that most of water bond were A-rated at issue before the financial crisis, the so-called halo effect reflects the rating difference between A-rated water

[23] CEPA (August 2016): Alternative approaches to setting the cost of debt for PR19 and H7, p39 - p40.

bonds and the average of A and BBB rated bonds in the iBoxx indices, rather than a regulatory halo.

The bias of rating difference is accentuated during the period of the global financial crisis, when the yield spread between A and BBB iBoxx indices widened. CEPA mistakenly observes significant "outperformance" during this period, which likely reflects the spike in BBB iBoxx index value relative to predominantly A-rated network bond yields, as shown in Figure 3.2.

Figure 3.2
CEPA's bond sample has stronger rating on average than average of A and BBB iBoxx, which explains its so-called halo

Source: NERA analysis of CEPA report

In addition, CEPA's adjustment for differences in tenor for the sample of water bonds relative to the index is opaque and subject to error. The tenor of the individual bonds within its sample is typically shorter than the tenor of the iBoxx index. CEPA has attempted to adjust for the tenor difference between the individual bond issuances and the benchmark index by adjusting companies' yield at issue according to a Bloomberg yield curve, e.g. for shorter dated bonds is makes an upward adjustment to the yield at issue based on the term structure of bonds.[24] However, CEPA has not provided any details of the adjustments it has made, and therefore we cannot identify the extent to which this contributes to its alleged halo.[25]

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[24] See CEPA report, footnote 34

[25] Notably, we are concerned with its use of the Bloomberg yield curve to derive a tenor adjustment given the limited number of constituent bonds in the Bloomberg index. For example, the Bloomberg non-financial A BVAL curve has 53 constituent bonds which cover tenors from less than 1Y to 30+Y or fewer than two bonds per tenor on average, which provides a weak basis for its tenor adjustment.

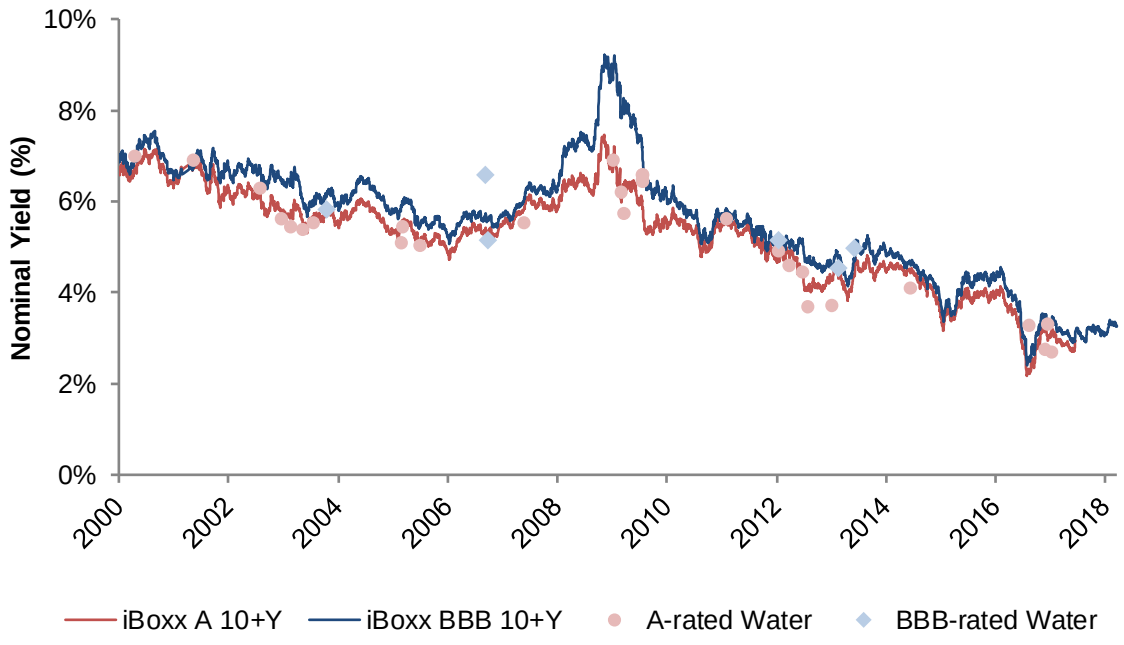
We have conducted our own analysis of the halo effect for water companies comprising, to align with CEPA, nominal water companies' bonds that are denominated in £ sterling, rated A and BBB at issue, tenor of at least 10 years, and fixed coupon and bullet payment structure.[26] We find a negligible halo effect of only 3 bps using the correct benchmark to control for the rating difference, i.e. comparing A-rated water bonds with the A-rated iBoxx index, and BBB-rated water bonds with the BBB iBoxx, as shown in Table 3.1 and Figure 3.3.

Table 3.1
There is no evidence of halo effect for water companies' nominal bonds after controlling for the rating differences

	Entire period (2000 - 2018)
Difference vs. A/BBB iBoxx benchmark	26 bps
Correcting for rating difference	-23 bps
Final "halo effect"	3 bps

Source: NERA analysis of Bloomberg and Factset Data

Figure 3.3
There is no evidence of halo where water bonds compared to same rated iBoxx



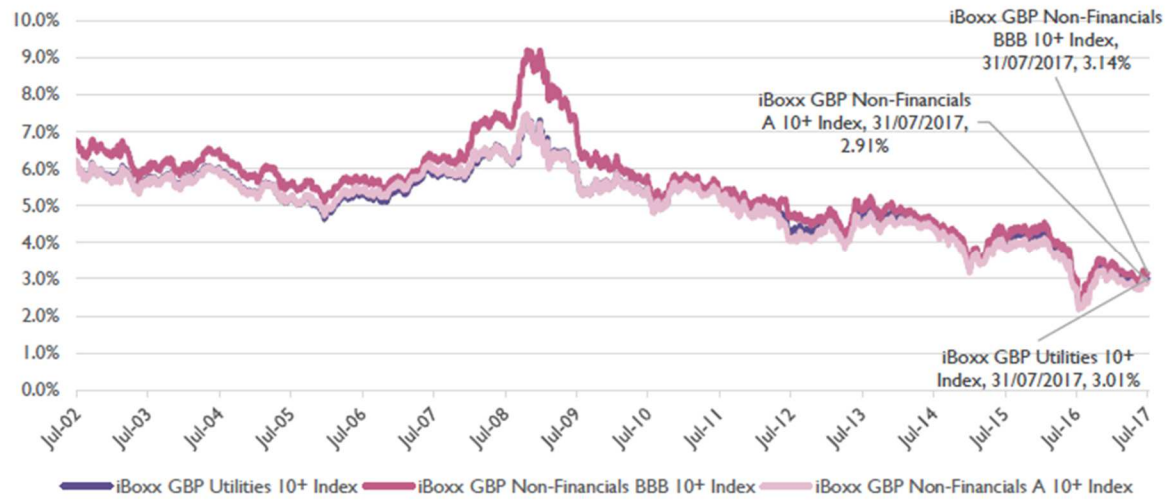
Source: NERA analysis of Bloomberg and Factset Data

[26] Compared to CEPA's sample of 25 bonds, our wider sample includes 35 bonds.

3.3. Europe Economics analysis suffers from similar sample bias

In its December 2017 report for Ofwat, Europe Economics (EE) analysed the halo effect by comparing yields on the iBoxx GBP utilities 10+Y index to the average of the A/BBB GBP iBoxx corporate non-financials 10+Y index over the last 10-15 years, as illustrated in Figure 3.4. EE calculated that the 10-year historical average spreads to be around -14 bps and the 15-year average to be around -17 bps. The respective series are shown in Table 3.2.[27]

Figure 3.4
EE analysed the halo effect by comparing yields on iBoxx Utilities index and iBoxx Non-Financial indices



Source: EE report, p.74.

Table 3.2
EE estimate an average wedge between iBoxx Utilities index and iBoxx Non-Financials index to be around 14-17 bps

	Average Non-Financials 10+ A & BBB	Average Non-Financials 15+ A & BBB
Over the last 10 years	-13.74	-13.06
Over the last 15 years	-16.52	n/a

Source: EE report, p.73.

3.3.1. Again, correcting for rating bias largely eliminates so-called halo

As with CEPA's analysis, EE's apparent halo is explained by rating differences between the two indices, with the iBoxx Utilities index prior to 2010 including predominantly A-rated

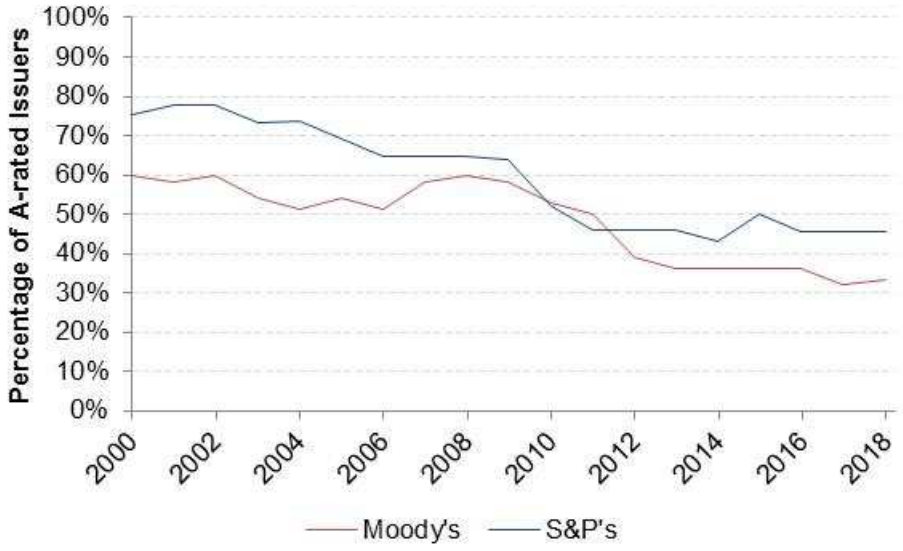
[27] Europe Economics (December 2017): PR19 - Initial assessment of the cost capital, p73 - p75.

bonds, while the A and BBB iBoxx Corporate bond indices by definition represents and average of A and BBB rated bonds.[28]

Although the data provider Markit does not report an average rating for iBoxx GBP Utilities index, the iBoxx GBP Utilities index consists of bond issues by utilities that are subject to "*rate regulation by a governmental authority*".[29] Therefore, we can proxy the average rating of iBoxx GBP Utilities index using the credit ratings of the regulated utilities issuers in the UK energy and water sectors which comprise the overwhelming share of regulated utilities.

As shown in Figure 3.5, we find that most of the regulated utilities issuers were A-rated at issuance before 2010, which means that the iBoxx Utilities index's effective average rating was higher the average of A and BBB until around 2010. Indeed, it is the rating difference, rather than any regulatory halo, explains the observed yield spread between the predominantly A-rated iBoxx utilities index and the average A/BBB-rated iBoxx GBP Non-Financial index. The impact of the rating difference is particularly evident during the financial crisis (shown in Figure 3.4), when "flight to quality" caused the spread between A and BBB-rated bonds to increase, and led to the observed spread.

Figure 3.5
The percentage of A-rated regulated utilities issuers have declined over time



Source: NERA analysis of Bloomberg data

We find that the spread between iBoxx Utilities index and iBoxx A/BBB non-financial index has disappeared over the most recent period since 2010, as shown in Table 3.3 and Figure 3.6.

[28] In our analysis at RIIO-1 controls, we have shown that Ofgem's halo effect estimate prior to 2010 was primarily driven by comparing utility bonds which were predominantly A rated to the A/BBB rated iBoxx and similar issues apply to EE's comparison.

[29] Markit (October 2016): Markit iBoxx GBP Regulated Utilities Index Guide, p.6.

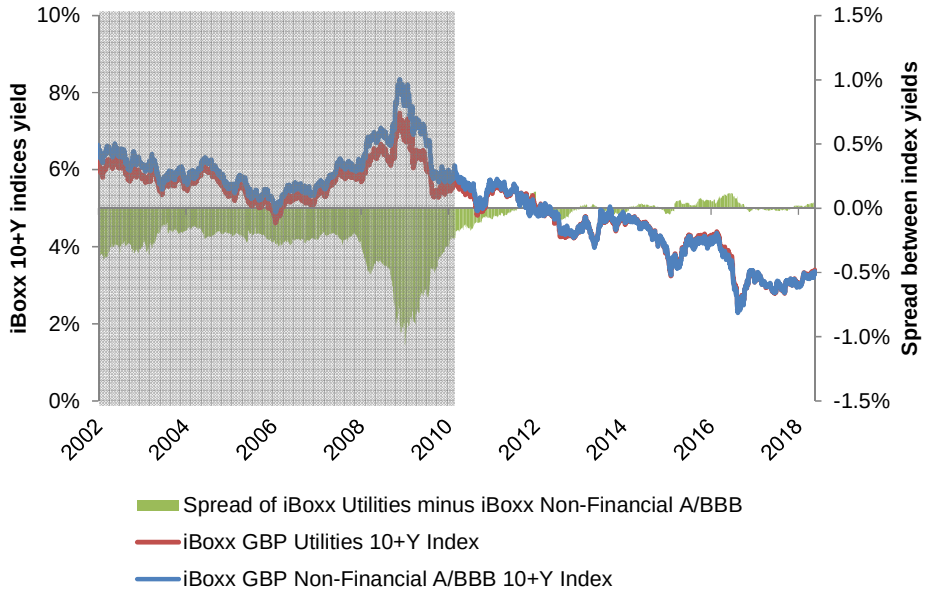
Table 3.3
The spread between iBoxx Utilities index and iBoxx Non-Financials index has disappeared for the period since 2010

	iBoxx Non-Financial A/BBB index
Over the last 10 years (2008-2018)	-0.11% (as reported by EE)
Over the last 15 years (2003-2018)	-0.15% (as reported by EE)
Post-2010 (2010-2018)	-0.01%

Source: NERA analysis of Factset data

As the average rating of the bonds in the iBoxx Utilities has aligned with the average of A and BBB rated iBoxx indices, the so-called halo has disappeared.

Figure 3.6
The spread between iBoxx Utilities and iBoxx Non-Financial A/BBB has disappeared post-2010



Source: NERA analysis of Factset data

3.4. Ofgem and CEPA evidence of halo effect suffers from sample bias (similarly to Ofgem RIIO-1 analysis)

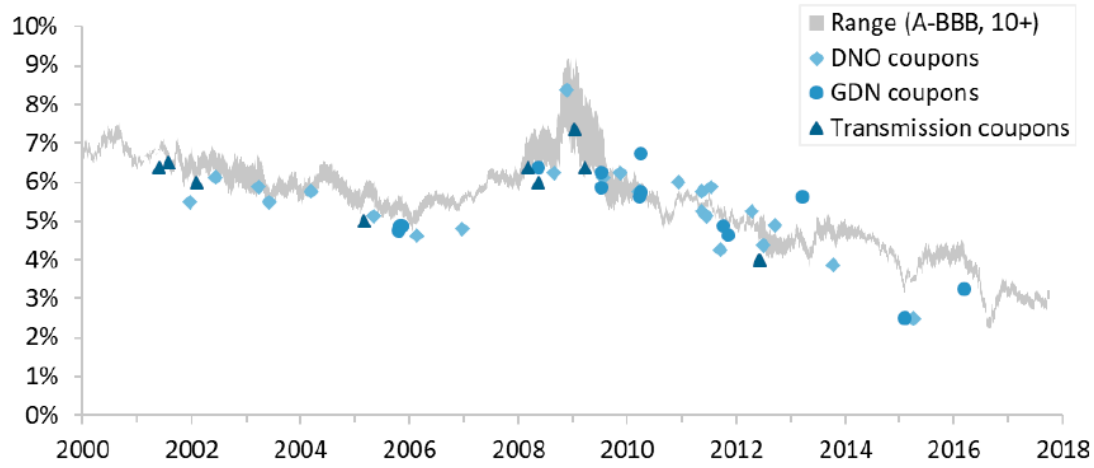
In its February 2018 report for Ofgem, CEPA carries out an assessment of the halo effect based on a sample of GB regulated energy networks' bonds.[30] Based on a comparison of the

[30] CEPA (February 2018) : Review of cost of capital ranges for Ofgem's RIIO, p.29-p.32.

coupons of energy networks bonds and the iBoxx A/BBB index, CEPA estimates an average halo effect of 38 bps for nominal bonds (see Figure 3.9) and 49 bps for ILD (Figure 3.10).[31]

Based on this evidence, CEPA proposes a 25 bps downward adjustment of the iBoxx index value in setting the allowed cost of debt in its low case, and assumes that outperformance would offset its estimate of 10bps transaction cost in its high case[32].

Figure 3.7
CEPA compares the energy companies' nominal coupon to the average A and BBB iBoxx non-Financial 10-year+ indices

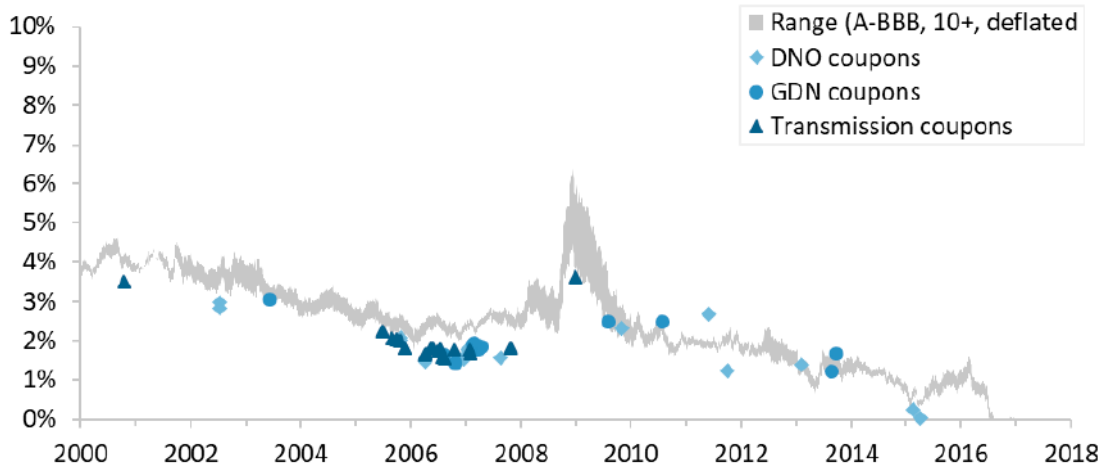


Source: CEPA (2018), p.30.

[31] For nominal bonds, CEPA compares the nominal coupons for bonds with at least 10 year tenor to the average A/BBB rated iBoxx non-financial corporates 10 year+ indices. For index-linked bonds, CEPA compares the real coupon with the "real" iBoxx indices deflated with 20-year breakeven inflation.

[32] CEPA (February 2018) op, cit., p.36.

Figure 3.8
CEPA compares the energy companies' index-linked coupons to the average of A/BBB iBoxx index deflated by 20-year breakeven inflation



Source: CEPA (2018), p.31.

3.4.1. CEPA's analysis of nominal bonds is not based on a like-for-like rating analysis

CEPA's analysis is flawed for similar reasons to those explained above. In this case, CEPA's starting point is incorrect as it uses the coupon rate as its measure of the cost of debt whereas the correct measure of the cost of debt is the yield at issue.[33] Many companies' debt issuances over the period were issued at below par, which means the coupon rate understates the cost of debt in these cases.

In addition, CEPA fails to correctly control for bonds' rating difference to the benchmark. Specifically, CEPA does not take into account that energy networks' bonds were predominantly A-rated *at issuance*, especially during the pre-2010 period where around 80 per cent of the energy networks' bonds by number and value were A-rated.[34] Unsurprisingly, a comparison of predominantly A rated bonds at issuance to the average of A and BBB rated iBoxx indices will show "outperformance"; by contrast, comparing A rated bond issuance with the A rated iBoxx and BBB rated bonds with BBB rated iBoxx substantively eliminates the so-called halo effect.

Correcting for these two errors in CEPA's analysis reduces the so-called halo effect to practically zero. We estimate an overall difference in energy network bonds' yield-at-issuance with the respective A or BBB rated iBoxx Corporate indices, ensuring a like-for-like comparison in ratings, of 3 bps.

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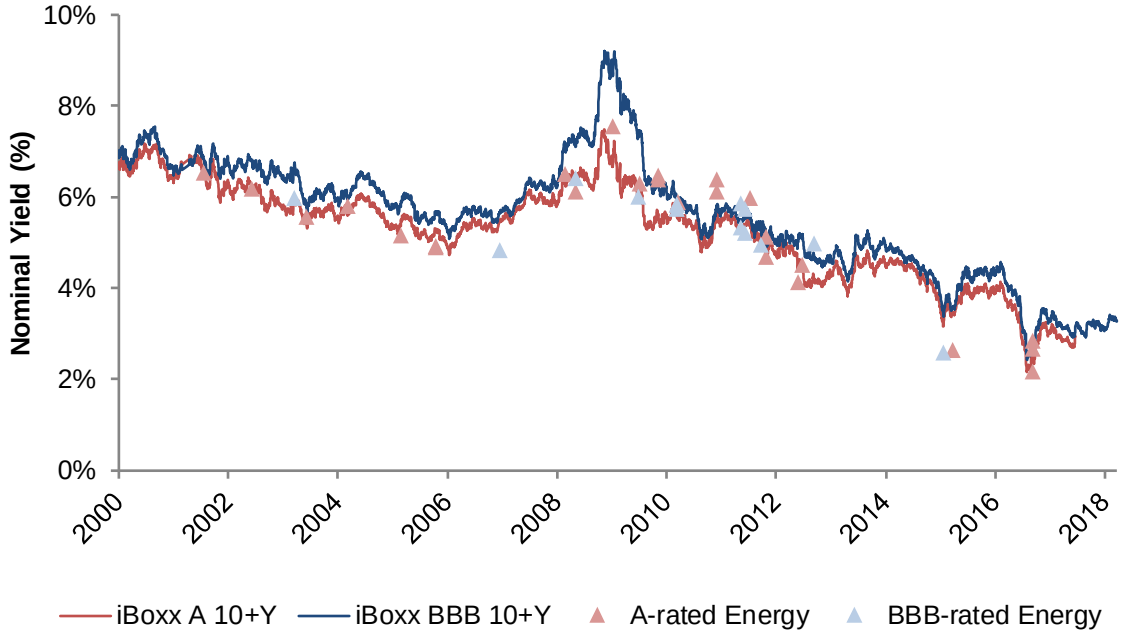
[33] The use of yield-at-issue rather than coupon costs= was the approach used by Ofgem at RIIO-ED1 Strategy Decision, and the CMA at the appeal of Ofgem's RIIO-ED1 decision by British Gas Trading (BGT)

[34] CEPA acknowledges that a proportion of differences in ratings between utility debt issuances and the iBoxx indices.

Figure 3.9
There is no evidence of halo where energy bonds compared to same rated iBoxx



Source: NERA analysis of Factset data

3.4.2. For ILD bonds, any outperformance has been eliminated since 2010

For ILD bonds, we also correct CEPA's errors of using the coupon and failure to control for rating differences. In this case, and unlike nominal bonds, we do find that water companies ILD outperformed the index by 39 bps over the period of 2000-2018, as shown in Table 3.4

However, as we show in Table 3.4 there is no outperformance, and indeed a *negative* halo or underperformance of 7 bps for energy bonds and 24 bps for water bonds, for the most recent period since 2010 for both energy bonds (included in CEPA's sample), as well as for recent water bonds (not included in CEPA's analysis).

Table 3.4
There is evidence of outperformance pre-2010 for ILD, but underperformance post-2010

	CEPA:	**NERA Analysis :**	
	2000 – 2018: energy bonds	2010-18: energy bonds	2010-18: water bonds
CEPA "halo effect"	49 bps	n.a.	n.a.
NERA's replication using real coupon	48 bps	-9 bps	-34 bps
NERA's analysis using yield at issue	-1 bps	+ 0 bps	+ 9 bps
correct benchmark	-8 bps	+ 1 bps	- 0 bps
Final "halo effect" for ILD bonds	**39 bps**	**- 7bps**	**- 24 bps**

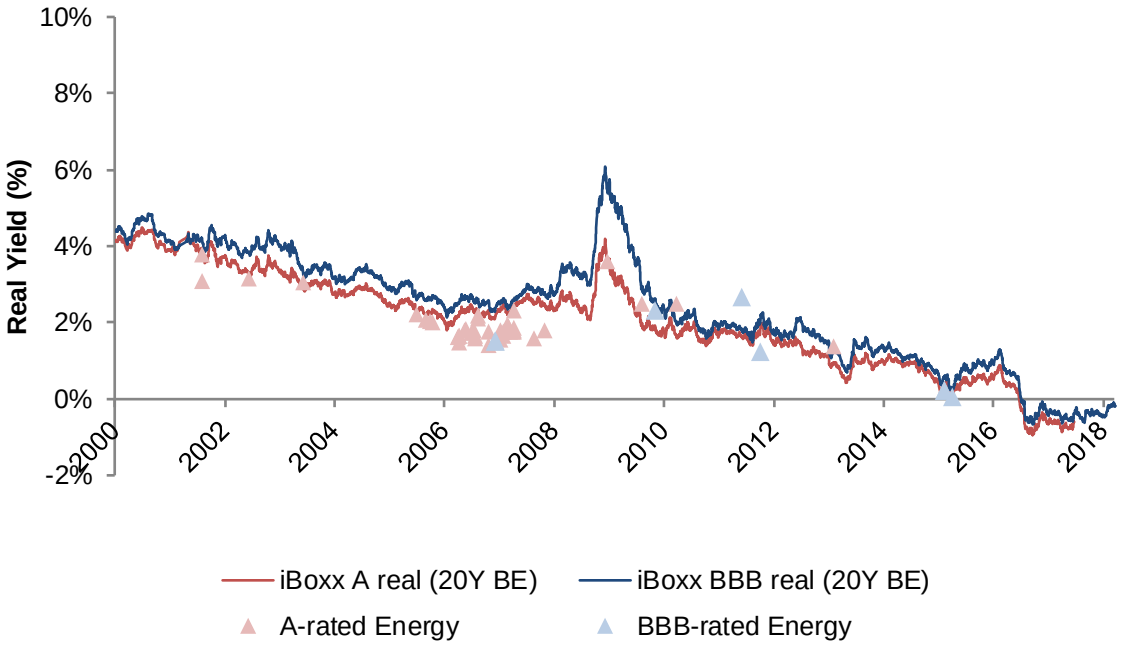
Source: NERA analysis of Bloomberg and Factset data. Note: we have used the iBoxx 10+year indices deflated by 20-year breakeven inflation to be comparable with CEPA's estimate.

Most of the outperformances of energy companies' ILD bond are observed before 2010 when the ILD bond market was distorted by the New Pension Regulation, as shown in Figure 3.10. In the post-2010 period, there is no outperformance and it is likely to remain the case. In particular, Moody's has recently down-graded the credit quality of the water sector as a result of Ofwat's recent proposals for PR19.[35] Moreover, companies' RPI ILD issuance is likely to substantively diminish given the switch to CPI indexation, as intended at PR19.

Overall, we consider there is no robust evidence to conclude any systematic outperformance of ILD bonds, and therefore a downward adjustment is unjustified.

[35] Moody's (22 May 2018) Regulator's proposals undermine the stability of the regulatory regime

Figure 3.10
Energy Companies' ILD bonds vs. iBoxx A and BBB indices deflated using 20-year Breakeven inflation



Source: NERA analysis of Bloomberg, Factset, and Bank of England Data. Note: If the 10-year breakeven inflation is used to deflate the nominal iBoxx indices, the real iBoxx index values will be higher, which reflects the wedge between 10-year and 20-year breakeven inflation. The outperformance of ILD bonds relative to the real iBoxx deflated using the 10-year breakeven inflation will be materially higher than that relative to the real iBoxx deflated using the 20-year breakeven inflation.

3.5. PwC 2014 report provides no evidence on outperformance

As well as specifically citing EE, Ofwat also states that its 15 bps downward adjustment is consistent with evidence from PwC at PR14, "*who found that water bonds' yields at issue had been on average 15 basis points lower than the iBoXX index in the 10 years leading up to 2013.*"[36]

However, the PwC conclusion cited by Ofwat appears in a footnote in its report.[37] The main body of the report makes it clear that PwC does not make any inference as to the ability for companies to outperform the index. The report concludes:

[36] Ofwat (December 2017): Delivering Water 2020: Our methodology for the 2019 price review Appendix 12: Aligning risk and return, p75

[37] PwC (2014) Cost of capital for PR14: Methodological considerations, p. 36, footnote 26. Link: https://www.ofwat.gov.uk/wp-content/uploads/2016/01/rpt_com201307pwccofc.pdf

> *If it was judged that water companies could systematically finance themselves at a cost either above or below the iBoxx index rate then an adjustment factor could be built into the index calculation.*[38]

In other words, PwC does not draw any conclusions on the ability of companies to outperform the iBoxx index, and makes no attempt to control for the factors that may explain the 15 bps differences in yield, e.g. timing, differences in debt rating, in order to identify outperformance.

As we have explained in the previous sections, the supposed historical outperformance is largely explained by the stronger credit rating of water companies over the period, as well as other factors, such as tenor. Even if the stronger sector rating was considered (wrongly) a source of outperformance, the weaker credit rating of the sector has eliminated such "outperformance", as we explain below.

3.6. Weakening credit quality and conclusions for PR19

Conceptually, there is no reason to believe that regulated companies can outperform the benchmark index because of the quality (or otherwise) of the regulatory regime. The rating agencies take into account the credit support offered by the regulatory framework in their assessment of the issuers' bond rating, and therefore any halo will be fully reflected in the rating (in other words, the effect of the framework is "fully priced in"). A comparison of the yield-at-issuance for an A-rated water company bond should equal the yield-at-issuance for an A-rated non-water corporate bond, all other things equal (such as tenor).

Consistent with this conceptual view, we have shown that the empirical evidence for the halo is based on a failure to compare water (and energy) bond issuances with the iBoxx benchmark indices on a like-for-like basis, notably a failure to correct for the general stronger rating of companies' bonds. Correcting for these failures, there is no evidence of a regulatory halo.

However, even if we were to accept the conceptual basis for a halo or empirical evidence for it (both of which we strongly contest) the recent downgrade of the sector by Moody's, and the general rating and financial metric deterioration, implies that the CMA conclusion that the halo has been substantively eliminated is likely to continue to hold over PR19. For example, in its recent sector credit rating report, citing Ofwat's recent proposals on "gearing outperformance", and the politicisation of the regulatory regime, Moody's notes:[39]

> *"In our view, these developments evidence a modest deterioration in the stability and predictability of the regulatory regime, in the face of a difficult political environment for the sector. We also see increasing risk of future political interference in the design of the regulatory framework, and have changed our assessment of stability and predictability of the UK water regulatory regime under our methodology to Aa from Aaa […]"*

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[38] PwC (2014) Cost of capital for PR14: Methodological considerations, p. 36. Link: https://www.ofwat.gov.uk/wp-content/uploads/2016/01/rpt_com201307pwccofc.pdf

[39] Moody's (22 May 2018) Regulator's proposals undermine the stability and predictability of the regime, p. 4

In conclusion, given that any historical halo is explained by sample bias, the CMA's conclusions that the halo has been substantively eliminated, Moody's downgrade of the regime and the greater pressure on water companies' financial metrics over PR19, there is no prospect that the water industry will outperform the benchmark index, and any downward adjustment to the iBoxx benchmark in setting the cost of new debt at PR19 is unjustified.

4. Conclusion

We find that there is no evidence to support the halo effect when a comparison of water or energy bond issues and the benchmark index is undertaken on a like-for-like basis, based on our review of reports by Ofwat and its advisors CEPA and Europe Economics at PR19.

In all cases, the regulators and their advisers fail to adequately take into account the general stronger credit rating of utilities bonds relative to the iBoxx benchmark indices. As the average rating of utility bond issuers' has deteriorated over time, and therefore the rating has aligned with an average of A and BBB, the apparent halo has disappeared (but in any case, the earlier apparent halo was simply indicative of a stronger rating on average of utilities' bonds).

At the BGT 2015 appeal of ED1, the CMA found no evidence to support outperformance of regulated network bonds relative to the average of A and BBB rated iBoxx indices for the most recent period. The CMA's conclusion has particular relevance to Ofwat at PR19, as Ofwat proposes to set the cost of new debt only on the basis of the iBoxx index (unlike Ofgem, which sets both embedded and new debt costs based on the iBoxx). Any historical halo, to the extent it existed, will be captured by customers under Ofwat's approach to setting the embedded cost of debt allowance based on actual industry debt costs.

Furthermore, even if we were to accept the conceptual basis for a halo or empirical evidence (both of which we contest), given Moody's downgrade to the regulatory framework, it is implausible that the sector will outperform the benchmark index on average over PR19. Therefore, we consider that there is no justification for Ofwat's proposed approach to set the cost of new debt allowance based on an assumed halo of 15 bps.

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