Northern Gas Networks

A26 - NGN RIIO-2

Assessment of a Comfortable Investment Grade Credit Rating

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ASSESSMENT OF A COMFORTABLE INVESTMENT GRADE CREDIT RATING

A report for Northern Gas Networks

2 December 2019

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EXECUTIVE SUMMARY

Frontier Economics has been commissioned by Northern Gas Networks (NGN) to carry out an independent study on the appropriate credit rating target for NGN for the RIIO-GD2 Price Control period.

NGN currently targets a BBB+ (Baa1) credit rating, in line with the minimum credit rating presupposed by Ofgem's Cost of Debt allowance[1] and with general guidance that UK regulators have hitherto provided to regulated utilities in price controls. This represents a "comfortable" investment grade rating, which has traditionally been an implicit interpretation of the relevant licence requirement.

NGN has asked us to consider whether targeting a BBB+ credit rating (rather than a lower credit rating) is justified.

In order to answer this question, we have carried out a comprehensive assessment of the advantages and disadvantages of targeting a lower credit rating than NGN's current target rating, specifically whether it would be in customers' interest for NGN to adopt a lower credit rating. Our assessment draws on both quantitative and qualitative analysis. In particular, we:

- carry out a quantitative assessment (using a discounted cashflow model to compare the net present value of a downgrade) of:
  - the benefit to customers of setting a price control that would lead to a downgrade from NGN's current rating of BBB+ to a lower investment grade rating, where this benefit arises from the need to allow a lower revenue requirement to ensure financeability when targeting weaker credit metrics;
  - compared with the cost to customers of the higher credit premium that would result from that downgrade, which would need to be funded by customers;
- summarise relevant regulatory precedent on guidance for target credit ratings; and
- discuss other practical considerations to NGN of adopting a credit rating below BBB+.

Based on the above analysis, we conclude that it will likely be in the best interest of NGN's current and future customers to continue to target a comfortable investment grade credit rating of BBB+ throughout RIIO-GD2. In particular:

- Broadly speaking, the customer benefit from lower allowed revenues which result in a downgrade from BBB+ to BBB would be more than offset by the higher future cost of debt (in present value terms). The net present value loss in the case of a downgrade from BBB+ to BBB- would be even more pronounced. This finding alone provides a sound rationale for supporting NGN's existing credit rating.

[1] Ofgem calculates the Cost of Debt allowance as a trailing average of actual corporate bond yields issued by entities within broad A and BBB rating bands captured by the relevant iBoxx index. By implication a company would have to have a rating notionally positioned between BBB+ and A- to incur costs aligned with this average.

- Our analysis is reasonably insensitive to modelling assumptions, such as the time horizon modelled, and the discount rate used.
- There is an argument that our modelling may be conservative as it does not take account of the risk that sector-wide factors of the rating methodology utilised by the rating agencies, for example in respect of the Stability and Predictability of Regulatory Regime, may be downgraded over the course of the RIIO-2 process. Should the presently strong ratings given to these factors of the methodology weaken, then NGN's key financial metrics may need to be strengthened just to retain its current rating. There is therefore a risk that the benefit we have modelled is overstated, as any such reduction in allowed revenues may trigger a more rapid or more pronounced downgrade than we have modelled.

- NGN's existing bank financial covenants[2] require the headroom provided broadly by the BBB+ rating metrics. If these covenants were breached it would trigger a default and require costly mitigating action. Any rating downgrade of one notch with any agency would require NGN to provide the European Investment Bank with satisfactory security.[3] Such events could lead to higher costs to customers through for example early repayment of debt.
- However, it is also necessary to consider the resilience of the business to unforeseen macro-economic or other uncontrollable shocks. To illustrate, targeting BBB- as a steady-state credit rating in the long run, would provide almost no headroom to accommodate such shocks, exposing NGN's customers to an increased risk of a potentially catastrophic escalation of its financing costs.
  - Firstly, a shock that caused an unexpected worsening of NGN's financial metrics, leading to a downgrade into the BB credit rating band (known as high yield or junk bond), would put NGN in breach of its licence. It is not clear then that NGN could prudently adopt a target credit rating that gave rise to a material risk of this coming to pass.
  - Secondly, even if NGN were able to retain a BBB- rating through such a shock, it would still likely face higher financing costs as a result of the higher market risk and would be further constrained in being able to raise any new debt at competitive interest rates relative to a higher rating. These effects would further increase NGN's ongoing debt service costs, and may in extremis limit its ability to raise debt finance at certain times, with much of the resulting increase in cost potentially borne by customers.
- Regulatory precedent in the UK and Ireland, based on regulatory decisions by the CMA, Ofgem, Ofwat, and the Irish regulator, CRU (formerly CER), suggests that regulators favour targeting a credit rating of at least BBB+ or above. Regulators generally recognise the logic of the arguments set out above, i.e. that a "comfortable" investment grade credit rating is likely to minimise long-run costs to consumers.

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[2] According to NGN's existing financing agreements, NGN would be in breach of its bank and Private Placement Note covenants should its Post-Maintenance Interest Coverage Ratio (PMICR) fall below 1.3x

[3] Failure to provide security for the loan (in the form of a guarantee or cash collateral) within 30 days would result in the bank demanding immediate early repayment of the loans (including all accrued interest and other amounts) and would trigger cross-default clauses in other debt agreements.

Our overall conclusion is therefore that continuing to target a rating of BBB+ would minimise the long-run financing costs borne by customers, create a reasonable buffer above the minimum investment grade rating, would be in line with regulatory precedent, and would ensure that NGN has ongoing access to debt capital markets to efficiently finance infrastructure investment at competitive interest rates.

1 INTRODUCTION

Frontier Economics has been commissioned by Northern Gas Networks (NGN) to carry out an independent study on the appropriate credit rating target for NGN for the RIIO-GD2 Price Control period.

NGN currently targets a BBB+ (Baa1) credit rating, in line with the minimum credit rating presupposed by Ofgem's Cost of Debt allowance[4] and with general guidance that UK regulators have hitherto provided to regulated utilities in price controls. This represents a "comfortable" investment grade rating, which has traditionally been an implicit interpretation of the relevant licence requirement.

NGN has asked us to consider whether targeting a BBB+ credit rating (rather than a lower credit rating) is justified.

In order to answer this question, we have carried out a comprehensive assessment of the advantages and disadvantages of targeting a lower credit rating than NGN's current target rating, specifically whether it would be in customers' interest for NGN to adopt a lower credit rating. Our assessment draws on both quantitative and qualitative analysis.

The remainder of the report is structured as follows:

- Section 2 provides the outcome of our cost-benefit analysis of the appropriate credit rating for NGN, including the consequences of a credit downgrade in relation to NGN's existing bank covenants;
- Section 3 summarises the recent regulatory precedent in considering an appropriate target credit rating;
- Section 4 provides market evidence of the constraints placed on companies with lower investment grade credit ratings; and
- Section 5 sets out the overall conclusions of the above research and analysis.

[4] Ofgem calculates the Cost of Debt allowance as a trailing average of actual corporate bond yields issued by entities within broad A and BBB rating bands captured by the relevant iBoxx index. By implication a company would have to have a rating notionally positioned between BBB+ and A- to incur costs aligned with this average.

2 COST-BENEFIT ANALYSIS OF A COMFORTABLE INVESTMENT GRADE CREDIT RATING

We have constructed a stylised model to assess the costs and benefits to NGN and its customers of targeting a higher/lower credit rating. This provides a way to triangulate with the evidence of prevailing practice in the sector (as presented in Section 3 of this report). Below we present a high-level summary of the modelling and its findings. More detail is provided in Annex A.

Methodology

We conduct a cost-benefit study to assess whether it would be in customers' long-term interest for Ofgem to reduce the allowed revenue for NGN in the short-term (RIIO-GD2) (e.g. by not allowing NGN to recover all of its costs) with the consequence of NGN sustaining a credit downgrade from its current target credit rating of BBB+ to a weaker investment grade of BBB (or less). We measure the cost and benefit of a credit downgrade separately as follows:

- The customer benefit stems from the immediate short-term gain in lower bill levels, based on allowed revenue levels that reflect the weaker financial metrics required by the assumed lower target credit rating; and
- The cost stems from the longer-term effect of a higher cost of capital, arising from the higher debt premium that would be required to raise debt at a lower credit rating. [5]

We compare the cost and benefit in net present value (NPV) terms using appropriate discount rates over a certain time horizon.

In identifying the levels of short-term revenue reductions, we have had regard to the financial metrics that NGN needs to maintain before its existing bank covenants are breached (i.e. PMICR falls below 1.3x). Based on estimates from NGN's current financial model for RIIO-2, we find this level to be towards the middle of the BBB rating band, i.e. it is possible that the covenants are breached at a one-notch downgrade to BBB, and would definitely be breached with a downgrade to BBB-.

On this basis, we have constructed a 'base case' scenario using the following assumptions:

- We identify a range for the reduction in RIIO-GD2 allowed revenues, with a lower bound reflecting the minimum level that induces a credit downgrade to a BBB rating, and an upper bound reflecting the maximum level that induces a credit downgrade to a BBB rating, but in both cases without breaching NGN's existing bank covenants.
- We model the longer-term increase in financing costs beyond RII0-GD2 over a 30-year time horizon.

[5] We have based our credit spread on Damodaran's bond spread data, with interpolation where granular data was unavailable. http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ratings.htm

- We discount back the future expected cash flows from the above using Ofgem's estimate of the weighted average cost of capital (WACC) of 2.88% in CPI real terms.

We describe our methodology in more detail in Annex A, including sensitivity analysis around the base case assumptions described above.

Findings

Based on this assessment, we find that reducing bills in the short run by not allowing companies to fully recover their costs, at the expense of a weaker target credit rating, would not be in the interests of customers in the long run. This is because any short-term savings on household bills due to lower allowed revenues are more than offset by the longer-term higher financing costs.[6]

More specifically, our base case results are as follows:

- Reducing short-run allowed revenue leading to worsening financial metrics compatible with a downgrade from BBB+ to BBB, without breaching NGN's existing bank covenants, we estimate a net cost to customers of the downgrade in the range of £32m-53m (in present value terms, as at the start of RIIO-GD2 in 2021).
- For a downgrade from BBB+ to BBB-, we estimate a net cost to customers of the downgrade in the range of £78m-121m (in present value terms, as at the start of RIIO-GD2 in 2021).

Our analysis is reasonably insensitive to modelling assumptions, such as the time horizon modelled, and the discount rate used.[7] Across most of these sensitivities, we conclude that there are significant net costs associated with a reduction in credit rating.

Furthermore, if Ofgem sets NGN on this path towards a BBB rating on a standalone basis, it would be costly to move back to the higher rating of BBB+. For example, at a lower rating of BBB, NGN would need to offer a higher coupon on new debts reflecting the higher risk premium associated with the lower credit rating. Hence for any level of issued debt, it would incur a higher level of debt service cost (noting that in the fullness of time the entire quantum of issued debt would be subject to a higher rate).

In order to return interest cover metrics to the levels necessary to achieve a higher credit rating, Ofgem would then need to allow a significantly higher level of revenue than it did prior to the assumed downgrade, in order to provide sufficiently strong metrics to warrant an upgrade versus this higher level of debt service cost. Simply returning revenues to previously allowed levels would be unlikely to be sufficient to bring about a return to a higher credit rating. NGN would also need to sustain this high level of revenue for a period of time before any upgrade would be considered. The cost of attempting to transition back to the previous higher rating is therefore

[6] Our analysis assumes that Ofgem would recognise these higher financing costs in the future and allow NGN to recover this from customers. Otherwise the credit metrics would continue to deteriorate until further downgrade, leading to NGN breaching its license, a scenario we assume Ofgem would need to avoid as part of its regulatory duties.

[7] See Annex A for further results from this sensitivity analysis

likely to be material. Consequently, a decision which results in a weaker credit rating of BBB or lower for NGN on a standalone basis could turn out to be enduring/permanent.

3 TARGET RATINGS – REGULATORY PRACTICE

We have reviewed the target credit ratings of a number of regulatory offices. A target credit rating is typically used as a basis on which to determine whether a contemplated price control is consistent with the regulatory office's own interpretation of its financeability duty. The regulatory office will take its target credit rating and, using Ratings Agencies' guidance, use this to determine target ranges for the usual credit metrics. It will then use a financial model to assess whether these target ranges are likely to be satisfied or not, and hence whether there is a reason for it to revisit any elements of its decision.

This review shows that of the UK and Irish regulatory offices reviewed, most favour targeting a credit rating at a comfortable investment grade of A- to BBB+.

Ofgem

RIIO-1

At RIIO-1, Ofgem's financeability assessments were relatively sophisticated, involving sensitivity analysis around its best view financial modelling, in order to test the financial resilience of the companies it regulates in the light of its determinations.

For example, in Ofgem's 'Strategy decision for RIIO-ED1's subsidiary document on financial issues, it states that:

> "*In setting price controls, we are required to have regard to the ability of efficient network companies to secure financing to facilitate the delivery of their regulatory obligations. This is also in the interests of consumers. We define this ability as indicated by a notional efficient network company attaining a 'comfortable investment grade' credit rating (i.e. in the BBB to A range).*"[8]

This is consistent with its approach to determining the cost of debt allowance using its rolling index mechanism, which relies on the average of iBoxx data for BBB and A corporate bonds.

In practice Ofgem undertook analysis of a modified measure of PMICR (post maintenance interest cover ratio), and found that under its central interest rate assumption, all DNO groups had sufficient financial resilience to retain their ratings (for the most part BBB+) and across the full suite of simulations, that no DNO group would suffer more than a single notch downgrade.

A similar approach was adopted by Ofgem at its transmission price control review, RIIO-T1. At this review, Ofgem made use of Monte Carlo modelling and found that the credit rating for NGET and NGGT even at its 95th percentile was no lower than BBB+.

Ofgem's past approach then involves ensuring that not only is a comfortable rating achieved under some central set of assumptions, but also that it allows headroom

[8] Ofgem, 4th March 2013, 'Strategy decision for RIIO-ED1 – Financial issues', paragraph 3.1

in the credit metrics in order for the regulated networks to have a high level of resilience in their financing structure to withstand more adverse circumstances.

Figure 1 below provides a summary published by Ofgem in 2013 of the minimum key credit metrics that Fitch, Moody's and Standard & Poor's expected to see for A and BBB rated companies in RIIO-ED1.

Figure 1. Minimum credit ratios recorded by Ofgem: Strategy decision for RIIO-ED1 distribution price control - Financial Issues

	Fitch	Moody's	S&P
A rating			
PMICR (interest coverage)	>1.7	2.0 - 4.0	
Leverage (net adjusted debt/RAV)	50 - 65%	45 - 60%	<70%
FFO/ Net Debt %		12 - 20%	>12%
FFO Interest Cover	4.0x - 5.0x	3.5x - 5.0x	>3.5 x
BBB (Baa) rating			
PMICR (interest coverage)	<1.7	1.4 - 2.0	
Leverage (net adjusted debt/RAV)	>65%	60 - 75%	>70%
FFO/ Net Debt %		8 - 12%	8 - 12%
FFO Interest Cover	< 4.0	2.5x - 3.5x	2.5x - 3.5x

Source: Ofgem, 4th March 2013, 'Strategy decision for RIIO-ED1 – Financial issues', p26

RIIO-2

In setting out its methodology for assessing financeability at RIIO-GD2, Ofgem has noted that:

> *'We do not believe it is our role to provide a specific methodology with explicit ratio guidance or factor weightings for assessing financeability. We see our role as critically assessing company business plans for financeability and performing the necessary modelling, assessments and other checks which we feel are necessary to satisfy ourselves that network companies are financeable on a notional basis.'*[9]

However, in its initial analysis for RIIO-GD2 Ofgem has undertaken some "high level" financial analysis of a notional company, and provided the credit metrics that resulted from this exercise. Ofgem noted that it considered that the level of these metrics would be adequate to support financeability of its notional company. In particular, it estimates that PMICR will reach 1.5x by the end of RIIO-2, which indicates Ofgem's implied target.[10]

[9] Ofgem, RIIO-2 Sector Specific Methodology Decision – Finance p.82, 24 May 2019

[10] We note that NGN's AICR at the current BBB+ target rating is 1.46x, marginally lower than Ofgem's implied target

Competition and Markets Authority (CMA)

The CMA, in the final determination for Northern Ireland Electricity (NIE) at the previous price control (RP5), pointed out NIE's licence obligation to maintain at all times an investment grade credit rating, allowing it to raise financing at efficient rates. It stated that "this obligation reflects the public interest that a firm holding the Licences should not only have sufficient funds to pay interest on its (reasonably incurred) historical debts but it should also be able to incur further debts at reasonable (i.e. investment grade) cost in future."[11]

Furthermore, the CMA noted that while no specific target rating was set within NIE's licence condition to maintain an investment grade rating, "that the typical distribution of ratings in the utilities sector may provide an indication of the appropriate credit rating to adopt".[12]

The CMA considered it important to form a view of how potential lenders would assess NIE's creditworthiness and decide at what rates they would be willing to provide financing. To do this, the CMA spoke to credit rating agencies in order to understand the requirements for maintaining an investment grade rating. It considered the levels of financial metrics necessary to maintain an investment grade credit rating, according to each rating agency. It then concluded that the financial ratios set out in Figure 2 would allow the efficient licence holder to finance the RP5 price control.[13]

Figure 2. CMA guidance ratios

Credit metrics	CMA guidance ratio
PMICR (Interest coverage)	≥ 1.4 x
Leverage (net adjusted debt/RAV)	≤ 70%
FFO/ Net Debt %	≥ 10%
FFO Interest Cover	≥ 3.5x

Source: Competition Commission (2014) Northern Ireland Electricity Limited price determination, final determination, table 17.4

This is in line with the minimum credit metrics from Fitch and S&P, as set out in their specific guidance for NIE in achieving a credit rating of BBB+ standalone.[14]

Furthermore, the CMA targeted a rating of Baa1/BBB+ in its 2010 Bristol Water inquiry.[15] It stated that Ofwat aimed to ensure that values for credit ratios "lie comfortably within the investment grade". Based on this the CMA targeted Baa1/BBB+ and examined the relevant financial ratios to determine whether this would be achieved.

The CMA targeted a similar credit rating level when conducting financeability assessment for Bristol Water as part of its appeal in 2015, although this was done

[11] Competition Commission (2014) Northern Ireland Electricity Limited price determination, final determination, para 17.1

[12] Ibid para 17.53

[13] Ibid paras 17.52 – 17.73

[14] NIE rating agencies reports

[15] Competition Commission (2010) Bristol Water plc, Provisional findings report, para 10.11

in line with the company's own proposed target credit rating BBB+ using a notional financing structure.[16]

Ofwat

At PR09, Ofwat considered credit ratings across the sector, noting that "although there is some variation in the sector, companies are clustered around a credit rating of BBB+".[17] It then used a target credit rating of A-/A3 for selecting thresholds for financial ratios at PR09.[18] It then compared the actual levels of financial ratios and their trends over time in order to determine whether the price determination was financeable.

Ofwat has been less explicit in the target rating at PR14 and PR19, and instead has left the responsibility to the companies to propose their own target rating for the price control.[19] However, Ofwat has used the A and BBB -rated iBoxx indices in assessing the cost of new debt for both of these price controls, implicitly suggesting that the target rating should be a comfortable investment grade, broadly in line with the midpoint between BBB+/A-.

Furthermore, we are aware of at least one instance (for South East Water) in which Ofwat has asked for further action with regards to it targeting a rating one notch above investment grade (i.e. at BBB), noting that the company needed to "provide further evidence, with Board assurance, to support its view that this is reasonable for the financeability of the company given the proposed investment and the funding requirement of the company." In its Draft Determination in July 2019, Ofwat further noted that it had considered that "certain financial ratios provide limited headroom against the target credit rating which in turn provides just one notch headroom to a minimum investment grade rating."[20]

CRU (formerly CER) in Ireland

In Ireland, the regulator (CRU) has targeted a credit rating of BBB+ or above in the most recent price controls. This includes the IRC2 water price control for Irish Water, the PR4 electricity price control for ESBN/EirGrid, and the PC4 gas distribution price control for Gas Networks Ireland (GNI).[21]

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16 Competition and Markets Authority (2015) Bristol Water plc, price determination, Final determination, final report, para 11.26

17 Ibid., p19

18 Ibid., p22

19 2014 price review – Ofwat's approach to assessing financeability

20 Ofwat's PR19 draft determinations: South East Water – Aligning risk and return actions and interventions (July 2019) , para. 12.56

21 CER Decision on October 2017 to September 2022 Transmission Revenue for Gas Networks Ireland (30 August 2017), Table 8.5

4 RISKS AND CONSTRAINTS IN TARGETING A LOWER CREDIT RATING

In Section 2 above, we highlighted the additional costs that NGN's customers would face if NGN were to target a rating lower than BBB+.

In addition to these costs, NGN would also likely face further risks and constraints related to:

- its ability to access financial markets at a lower credit rating, particularly if it were to experience unforeseen macro-economic or other uncontrollable market shocks; and
- any implications on its credit ratings and key metric thresholds following a potential re-assessment of the stability and predictability of the regulatory environment by credit rating agencies.

We discuss each of these in turn below

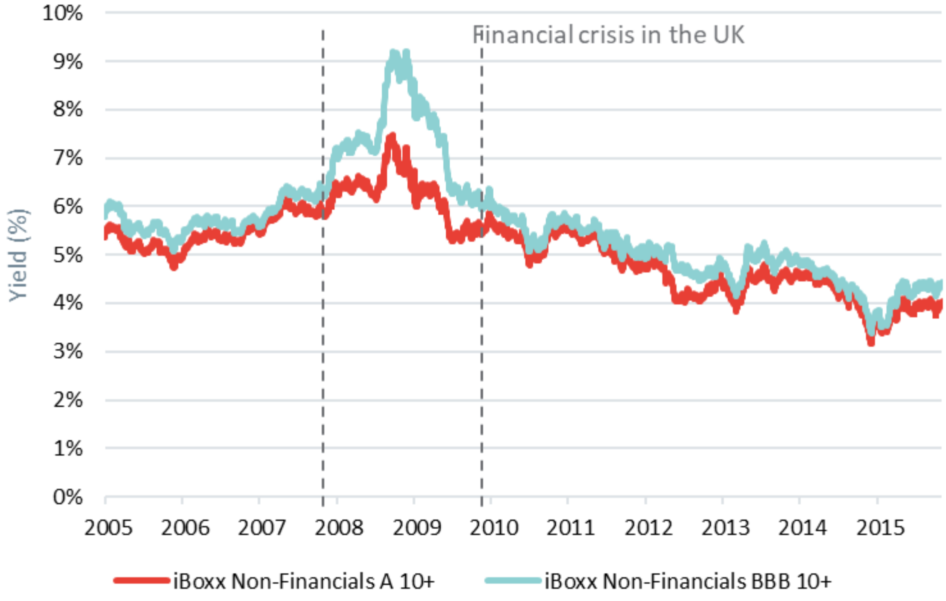
Constraints placed on companies with lower credit ratings

NGN would also likely face additional constraints to accessing financial markets at a lower credit rating, particularly if it were to experience unforeseen macro-economic or other uncontrollable market shocks.

To illustrate the financial constraints that may be placed on a companies' ability to access capital markets during a period of economic turbulence, we have assessed the UK market during the financial crisis of 2008-2009. We find strong evidence to suggest that a rating at BBB or below limits the ability to issue debt during times of general market stress.

Figure 3 below shows the yields on A and BBB category non-financial corporate bonds for maturities of 10 years or more.

Figure 3 Yields on A and BBB category corporate bonds, 2005-2015

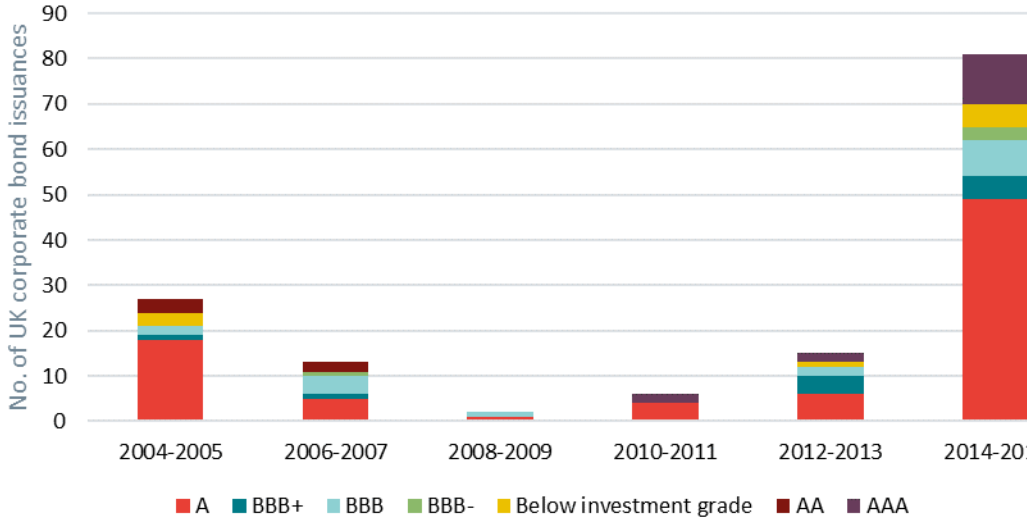


Source: iBoxx data

At the height of the crisis in 2008 and 2009, the yields on A and BBB corporate bonds diverged significantly, with a sharp spike in BBB yields over the period. This suggests that companies with lower credit ratings (at BBB or below) are less well placed to access new debt during periods of financial market stress relative to those with higher ratings (holding all else equal).

This is further evidenced by assessing corporate bond issuances at different credit ratings in the UK around the financial crisis. Figure 4 shows the number of bond issuances in the UK in each two-year period between 2004 and 2015.

Figure 4 Number of corporate bond issuances in the UK, 2004-2015



Source: Frontier Economics, based on Bloomberg data

This highlights that, both before and after the financial crisis, particularly for the periods 2004-2007 and 2012-2015, a larger number of corporate bonds were issued to companies, including at ratings at or below BBB.

However, during the height of the financial crisis in 2008 and 2009 and further into 2010 and 2011 (with ongoing recovery and fears of a double-dip recession), almost all bonds issued were A-type bonds and no bonds were issued below a BBB rating. The number of bonds issued was also significantly lower than in the periods both before and after the economic downturn.

To illustrate the potential impacts this might have for NGN, let us consider a case where, in the extreme, NGN targets a rating of BBB- as a steady-state, long-run credit rating. This would provide almost no headroom to accommodate a market shock, exposing NGN's customers to an increased risk of a potentially catastrophic escalation of its financing costs.

- Firstly, a shock that caused an unexpected worsening of NGN's financial metrics would potentially result in a downgrade into the BB credit rating band (known as high yield or junk bond). This would put NGN in breach of its licence, and it is then not clear whether NGN could prudently adopt a target credit rating that gave rise to a material risk of this coming to pass. In addition, we estimate that this would result in higher longer-term financing costs to NGN's customers of £118m (in present value terms).[22]
- Secondly, even if NGN were able to retain a BBB- rating through such a shock, it would still likely face higher financing costs as a result of the higher market risk, and would be further constrained in being able to raise any new debt at competitive interest rates relative to a higher rating (in line with the evidence provided above). These effects would further increase NGN's ongoing debt service costs, and may in extremis limit its ability to raise debt finance at certain times, with much of the resulting increase in cost potentially borne by customers

Additional risk of downgrade based on regulatory stability and predictability

The financial metrics that we have considered as part of our analysis in Section 2 above reflect only one aspect of credit rating agencies' evaluation of company ratings. Credit rating agencies also include in their assessment other qualitative measures in determining the rating of a given company.

In particular, and in the context of the UK regulated energy sector, this relates to their assessment of the stability and predictability of the regulatory environment, which as a matter of principle may change as a result of the RIIO-2 process.

As an example, Figure 5 below sets out the methodology applied by Moody's in rating regulated electricity and gas utilities.

[22] In this scenario, we have not modelled any consumer benefit because we are focussing on an unintended credit downgrade, and there are no gains in allowed revenue.

Figure 5 Moody's methodology as applied to regulated electric and gas utilities, factor and sub-factor weightings

Broad scorecard factor	Factor weighting	Description of sub-factors assessed
Regulatory framework	25%	▪ Legislative and Judicial Underpinnings of the Regulatory Framework ▪ Consistency and Predictability of Regulation
Ability to cover costs and earn returns	25%	▪ Timeliness of Recovery of Operating and Capital Costs ▪ Sufficiency of Rates and Returns
Diversification	10%	▪ Market Position ▪ Generation and Fuel Diversity
Financial strength/ key financial metrics	40%	▪ AICR ▪ Net Debt / Regulatory Asset Value ▪ FFO / Net Debt ▪ RCF / Net Debt
Total	**100%**	

Source: Moody's, Regulated Electric and Gas Utilities, Rating Methodology,23 June 2017

This shows that key financial metrics have less than half weight placed on them by Moody's when it is undertaking a rating exercise. The evaluation of the regulatory framework and the ability of companies to cover their debt service costs and earn returns (based on the regulated allowances) make up 50% of the total rating decision.

If the UK regulated gas sector as a whole was faced with tighter regulatory pressure that reduces allowed revenues, or if there was an assessment that the consistency and predictability of Ofgem's regulatory regime had deteriorated, then it is possible that Moody's would downgrade the sector against either (or both) of the factors 'regulatory framework' or 'ability to cover costs and earn returns'. The current levels of these factors according to Moody's are AAA and AA respectively. Should either of these be reduced, then the thresholds that NGN (and other gas companies) would need to achieve in relation to other aspects of Moody's methodology, for example in respect of key financial metrics, would need to increase in order to meet the conditions for a given rating.

This risk has been made evident most recently as part of the regulatory process in the UK water sector for PR19. Based on the increased regulatory pressure placed on companies to deliver lower allowed returns and more stretching efficiency targets, Moody's placed the sector on negative outlook in December 2018. It noted:

> *'While we expect solid performance to continue until the end of the current period, this will be insufficient to offset the negative effect of the proposed cut in the headline return. Furthermore, with expenditure and performance targets likely tightening from April 2020 and less likelihood of the average*

company outperforming, downward pressure on companies' credit strength will continue.'[23] [24]

Based on this sector-wide negative outlook, the AICR requirement for a water company rating at BBB+ on a stand-alone basis was increased to 1.5x (from 1.4x, in line with the energy sector).[25]

Both Moody's and Fitch have expressed similar concerns for regulated electricity and gas network companies in relation to RIIO-2, based on Ofgem's proposed plans for the next regulatory period.

- Moody's has stated that '*Ofgem's proposals suggest a larger-than-anticipated reduction in allowed returns and constraints on outperformance that would, if reflected in final determinations, weaken interest coverage metrics at most gas network groups.'* In light of this, it has already placed a negative outlook on Scotland Gas Networks and Southern Gas Networks, which both currently hold BBB+ (Baa1) ratings, and has downgraded Wales and West Utilities' Class A notes to Baa2 with a negative outlook.[26]
- Fitch has expressed concerns that the reduction in allowed returns that Ofgem has proposed would lead to credit rating pressure for most companies, and that the credit-enhancing mechanisms that it has put forward to reduce any downside risks would not be sufficient to offset or protect companies from the resulting negative financial impacts.[27]

As in the water sector, this would place further pressure on gas companies' financial metrics (and therefore their ability to maintain its current rating) at some given level of revenue.

In relation to the cost-benefit analysis presented in Section 2, the potential for sector-wide factors of the rating agencies' methodology to suffer downgrades may mean that NGN could be at risk of downgrade at a higher level of allowed revenue than would otherwise appear to be the case. That is, should these factors be downgraded, NGN's credit rating would be less well able to withstand a reduction in allowed revenues. As such the short-term net benefits to customers we have captured in our modelling could be reduced, and the longer-term costs of financing new debt could be potentially higher than modelled. Since we have not reflected this risk in our modelling, we consider that this observation provides a qualitative reason to presume that our modelling may be conservative.

[23] Moody's, 2019 outlook negative as companies steer through troubled waters, outlook report, 5 December 2018

[24] This position was further reinforced following Ofwat's draft determination published in July 2019, which highlights that significant differences still remain between the companies and Ofwat, which if not resolved, will place further pressure on companies' credit ratings. See Moody's, Ofwat tightens the screws further, sector in-depth report, 26 July 2019

[25] Moody's, Risks are rising, but regulatory fundamentals still intact, sector comment, 28 May 2018. p.4

[26] Moody's, Credit quality likely to weaken in RIIO-GD2 regulatory period, sector in-depth report, 14 February 2019

[27] Fitch Ratings, Ofgem's Credit-enhancing mechanisms unlikely to benefit ratings, comment report, 28 February 2019

5 CONCLUSIONS

Based on both quantitative and qualitative analysis, we conclude that it will likely be in the best interest of NGN's current and future customers to continue to target a comfortable investment grade credit rating of BBB+ throughout RIIO-GD2. Continuing to target a rating of BBB+ would minimise the long-run financing costs borne by customers, create a reasonable buffer above the minimum investment grade rating, would be in line with regulatory precedent, and would ensure that NGN has ongoing access to debt capital markets to efficiently finance infrastructure investment at competitive interest rates.

In our cost-benefit analysis, we estimate that the customer benefit from lower allowed revenues which result in a downgrade from BBB+ to BBB would be more than offset by the higher future cost of debt (in present value terms). The net present value loss in the case of a downgrade from BBB+ to BBB- would be even more pronounced. Our analysis is reasonably insensitive to modelling assumptions, such as the time horizon modelled, and the discount rate used.

This finding alone provides a sound rationale for supporting NGN's existing credit rating. However, NGN's existing bank financial covenants[28] also require the headroom provided broadly by the BBB+ rating metrics. If these covenants were breached, it would trigger a default and require costly mitigating action. Any rating downgrade of one notch (i.e. to BBB) with any agency would require NGN to provide the European Investment Bank with satisfactory security.[29] Such events could lead to higher costs to customers through for example early repayment of debt.

We have also considered the resilience of the business to unforeseen macro-economic or other uncontrollable shocks. To illustrate, targeting BBB- as a steady-state credit rating in the long run would provide almost no headroom to accommodate such shocks, increasing the risk of a downgrade into the BB credit rating band that would put NGN in breach of its licence, and exposing NGN's customers to an increased risk of a potentially catastrophic escalation of its financing costs.

Furthermore, the risk that other qualitative factors considered by credit rating agencies in setting a company's credit ratings, such as the regulatory framework and its ability to cover costs and earn a return, places an additional risk on the financial metrics that NGN may need to achieve in order to maintain any given rating. The potential for sector-wide factors of the rating agencies' methodology to suffer downgrades may mean that NGN could be at risk of downgrade at a higher level of allowed revenue than would otherwise appear to be the case. As such the short-term net benefits of a downgrade to customers we have captured in our modelling could be reduced, and the longer-term costs of financing new debt could be potentially higher than modelled. Since we have not reflected this risk in our

[28] According to NGN's existing financing agreements, NGN would be in breach of its bank and Private Placement Note covenants should its Post-Maintenance Interest Coverage Ratio (PMICR) fall below 1.3x

[29] Failure to provide security for the loan (in the form of a guarantee or cash collateral) within 30 days would result in the bank demanding immediate early repayment of the loans (including all accrued interest and other amounts) and would trigger cross-default clauses in other debt agreements.

modelling, we consider that this observation provides a qualitative reason to presume that our modelling may be conservative.

Lastly, regulatory precedent in the UK and Ireland, based on regulatory decisions by the CMA, Ofgem, Ofwat, and the Irish regulator, CRU (formerly CER), suggests that regulators favour targeting a credit rating of at least BBB+ or above. Regulators generally recognise the logic of the arguments set out above, i.e. that a “comfortable” investment grade credit rating is likely to minimise long-run costs to consumers.

ANNEX A SENSITIVITY RESULTS FROM THE COST-BENEFIT ANALYSIS

As described in Section 2 of this report, our modelling has primarily focused on a base case scenario reflecting certain central assumptions. However, the result is dependent on the values adopted for these assumptions, and we have therefore considered sensitivities around these in undertaking this analysis. These are:

- the assumed reduction in allowed revenues in the short-term (i.e. over RIIO-2) which triggers a credit rating downgrade;
- the assumed time horizon over which the increase in financing costs over the longer-term are measured; and
- the assumed discount rate applied in bringing these future cash flows back to net present value.

We have relied on NGN's financial model to assess what reduction in allowed revenues is required to induce a credit downgrade from BBB+ to BBB.[30]

We consider each of these assumptions and the sensitivities around these in turn below and present the results of our cost-benefit analysis when adopting these sensitivity assumptions.

A.1 Assumed reduction in allowed revenues

Our methodology reduces the allowed revenues (through a reduction in the cost of equity) such that this triggers a credit rating downgrade to a BBB rating. The reduction in allowed revenues required to trigger a credit rating downgrade is not restricted to a single value, but rather covers a range of potential values. This reflects that the financial metrics at each credit rating allow for a range of outcomes based on the underlying financial metricsand against which a company's financeability is measured. We construct a range in our base case which reflects two trigger points:

- The first trigger point is the minimum allowed revenue reduction necessary to bring lower credit rating;
- The second trigger point is the maximum allowed revenue reduction necessary to breach NGN financial covenants.

This results in a range for the minimum and maximum short-term gains for the customers in exchange for a credit downgrade without triggering further costs such as breaching covenants and triggering default on existing debt.

However, to explore further a more extreme case, we present sensitivities that show the maximum fall in revenue which still allows a BBB rating. In other words, this is the lower bound that the revenue needs to be before the credit rating gets downgraded two notches to BBB-.

[30] We note that there are potentially other ways to assess this allowed revenue reduction. However, reducing the cost of equity presents the easiest and most transparent way to do this in the financial model.

Figure 6 sets out our estimates of the net costs to customers from the downgrade from a rating of BBB+ to BBB for the two cases considered. For each case, we present a range in the results to reflect the range in the reduction in the allowed revenues, along with the mid-point of this range.

Figure 6. Sensitivity results from assuming a larger reduction in allowed revenues – Net cost to customers (£m, NPV as of 2021)

Assumed reductions in allowed revenues	Net cost to customers	Mid-point of range
Up to the point at which NGN's covenants are breached (base case)	**32 to 53**	**42**
Maximum reduction in allowed revenues that can be tolerated without inducing further downgrade from BBB to BBB-	-9 to 53	22

Source: Frontier Economics

As can be seen in the table, even in the more extreme case, the midpoint of the range still represents a material loss for the customers in the long run. However, as described in the main report, the maximum reduction in the level of allowed revenue would also break NGN's existing bank covenants, and therefore carries additional costs of refinancing.

A.2 Assumed time horizon

The time horizon assumed relates to the number of years over which we assess both the short-term benefit of the credit downgrade and the longer-term costs to customers. Therefore, the results of our analysis can depend on the values adopted for this assumption, since the longer the time horizon assessed, the more long-term costs are captured in the net present value of the costs/benefits to customers (albeit more heavily discounted). However, choosing a shorter time horizon may not fully capture the higher costs faced by future customers due to a credit downgrade and place too much weight on the benefits that NGN's current customers might enjoy. It is therefore important to analyse the long-term impact, as both Ofgem and NGN have to ensure they serve the interests of not only present customers, but also future customers.

- In our base case, we therefore consider a time horizon of 30 years to be reasonable in balancing the interest of NGN's present and future customers.
- As a sensitivity, we further consider shorter time horizons of 10, 15 and 20 years, in line with the average tenor of debt for gas distribution networks. However, we consider these time horizons relatively short for this type of analysis in terms of capturing the costs to future customers.

Figure 7 presents the results of this sensitivity analysis.

Figure 7. Sensitivity results from assuming a shorter time horizon – Net cost to customers (£m, NPV as of 2021)

Assumed time horizon	Net cost to customers	Mid-point of range
30 years (base case)	**32 to 53**	**42**
20 years	17 to 38	27
15 years	7 to 28	17
10 years	-2 to 20	9

Source: *Frontier Economics*

This shows that a credit downgrade to a rating of BBB would result in a net cost to customers on average (mid-point of the range), including the most extreme scenario where customer interests beyond 10 years are disregarded.

A.3 Assumed discount rate

The discount rate is applied to a stream of future expected cash flows to bring them back to a net present value (NPV). Therefore, it represents the time value of money to customers. That is, the higher the discount rate, the more value is placed on any short-term benefits/costs, and the less value on longer-term costs and benefits. In this case, a higher discount rate therefore places less weight on the long-term costs to future customers relative to current customers.

- We therefore consider the appropriate discount rate in our base case to be the WACC as currently estimated by Ofgem for RIIO-2, of 2.88% (in real, CPIH terms). The WACC reflects the weighted average return on the cost of equity and the cost of debt, and so reflects the discount rate that NGN faces. This represents an upper bound on any social discount rate that we would accept as being reasonable.
- As a sensitivity, we test this assumption using a discount rate that reflects an average forecast of long-term GDP growth, of 1.4%.This takes into account the lower GDP growth rate in recent years, as well as recent forecasts by the IMF, OBR and OECD, as shown below.

Figure 8. Selected UK GDP growth forecasts

Source	Projected GDP growth rate	Date of estimate
International Monetary Fund (IMF)	1.5% (to 2024)	October 2019
Office for Budget Responsibility (OBR)	1.6% (to 2023)	March 2019
Organisation for Economic Co-operation and Development (OECD)	1.0% (to 2020)	May 2019

Source: *Office for Budget Responsibility, March 2019 Economic and fiscal outlook; International Monetary Fund, World Economic Outlook (October 2019); Organisation for Economic Co-operation and Development, Economic Outlook no. 105 – May 2019*

Note: *Real CPI inflation rate used*

- As a further sensitivity, we test the assumption using the 3.5% social discount factor based on the Government’s public procurement assessment guidance for publicly funded projects (the Green Book). However, we note that this rate assumes an annual real GDP growth rate of 2% based on the average over the period of 1950-1998.[31] Given economic developments since 1998 and our current economic outlook, a 2% per annum real GDP growth may be considered somewhat optimistic. As a result, a discount factor of 3.5% in real terms is likely to be an overestimate of the prevailing discount factor in the economy.

In both the base case and sensitivity scenarios, we estimate that a credit downgrade would result in a significant net cost to customers, as shown in Figure 9.

Figure 9. Sensitivity results from assuming an alternative discount rate – Net cost to customers (£m, NPV as of 2021)

Assumed discount rate	Net cost to customers	Mid-point of the range
2.88% WACC (Base Case)	**32 to 53**	**42**
3.5% Government Green Book rate	26 to 47	36
1.4% average GDP growth rate	52 to 74	63

Source: Frontier Economics

[31] *The Green Book, Central Government Guidance on Appraisal and Evaluation, 2018*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

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