Office of Gas and Electricity Markets

Managing cost of debt fluctuations

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Contents

Table of contents

1		Intro	oduction						
2		Sett	Setting the scene						
	2.	1	Bac	kground	. 4				
	2.2	2	Opti	Options for dealing with cost of debt fluctuations					
	2.3	3	Eva	luation criteria	. 6				
3		Opti	ions	for managing cost of debt fluctuations	. 9				
	3.	1	Opti	ion 1: Continue with the existing framework and approach	. 9				
	3.2	2	Opti	ion 2: Raise the allowed ex-ante cost of debt	10				
	3.3	3	Opti	ion 3: Debt trigger mechanism	11				
	3.4	4	Opti	ion 4: Introduce a substantial effect clause	15				
	3.	5	Opti	ion 5: Introduce a time-based re-opener	15				
	3.	6	Con	nparing the options	16				
4		Con	nclusi	lusion and recommendations					
5		Арр	endi	х	20				
	5.	1	Add	itional evidence on recent credit market conditions	20				
		5.1.	1	Spreads	20				
		5.1.	2	Tenor	21				
	5.2	2	Disa	application mechanism	21				
	5.3	3	Para	ameters of a Cost of Debt trigger mechanism	23				
		5.3.	1	When should a revenue adjustment be triggered?	23				
		5.3.	2	When should the allowed revenue be adjusted?	25				
		5.3.	3	What is the appropriate benchmark to use?	25				
		5.3.	4	Should the trigger apply to existing and new debt?	28				
		5.3.	5	When should new debt become embedded?	30				
		5.3.	6	Symmetric or asymmetric trigger?	31				
		5.3.	7	A model debt trigger mechanism	32				
	5.4	4	Des	igning a substantial effect clause	35				
		5.4.	1	Precedence	35				
		5.4.	2	Discussion of key principles	37				
		5.4.	3	Substantial effect clause - key principles	38				
5.5 Comparing the options				nparing the options	40				

1 Introduction

The Office of Gas and Electricity Markets (Ofgem) is currently undertaking the fifth Distribution Price Control Review (DPCR5) to set revenue allowances for electricity Distribution Network Operators (DNOs) for the five year period 2010-2015.

Ofgem's regulatory duty entails setting price controls that allow the DNOs to finance efficient investments, recover efficient operating costs and earn an appropriate return on investment whilst delivering specified outputs. An estimate of the cost of capital is necessary to determine the level of allowed return.

Recent conditions in the capital markets have led Ofgem to consider the possibility of reassessing the way in which the cost of debt is set for the purposes of determining the price controls. Ofgem has asked PricewaterhouseCoopers to consider various options for dealing with potential cost of debt fluctuations over the next price control period, including the possibility of introducing a cost of debt trigger mechanism.

In this paper we discuss the background to Ofgem's concerns and explore five potential approaches to dealing with cost of debt fluctuations over DPCR5 and beyond. We assess, in principle, the suitability of these five options in the context of Ofgem's statutory duties and the principles of better regulation.

This paper is structured as follows:

- Section 2 sets out the context and background to this study.
- Section 3 outlines the potential options and gauges their suitability in the context of Ofgem's statutory duties and the principles of better regulation.
- Section 4 outlines our conclusions and recommendations.

This document should be read in conjunction with the Appendix (Section 5) which contains the further detailed analysis underlying our conclusions.

2 Setting the scene

2.1 Background

In setting the allowed cost of debt (CoD) Ofgem has previously taken a long term view of credit market conditions. Figure 1 and Figure 2 put Ofgem's recent CoD allowances into an historical perspective.

Figure 1: Real risk-free rate: Ofgem allowances vs. real yields on 10-year zero-coupon bonds



Source: Ofgem, Bank of England



Figure 2: Total cost of debt: Ofgem allowances vs. real yields on 10-year benchmark bonds

Source: Ofgem, BOE, Datastream, PwC analysis

As the figures above demonstrate, credit market conditions over the past decade and until recently were very benign by historical standards and in general were characterised by declining risk-free rates and narrowing credit spreads. Regulated companies in the electricity distribution sector and others benefited from these trends as the actual cost of raising corporate debt was substantially below the *ex-ante*, long term CoD allowances set by the regulators.

With the onset of the credit crunch in mid-2007, the cost of accessing corporate credit increased. Extensive write-downs by the banks and the resulting increased counterparty risk, have acted to reduce bank credit availability. At the same time in the capital markets, faced with the worsening macroeconomic environment, investors have required higher compensation to cover credit risk. The widening spreads also reflect increased liquidity premia.

In spite of the difficult conditions, utility companies have continued to be able to access credit (both through loans and bond issuances), albeit generally at a shorter tenor and a higher cost (refer to Section 5.1 of the Appendix for evidence on recent bond issuances arrangements by utility companies). In the secondary market, bond yields for utility companies have also increased (see Figure 3). However, on the whole it appears that the CoD faced by utilities has been less impacted by the broader market turmoil thanks to the sector's defensive qualities.

Figure 3: Sterling investment-grade corporate bond spreads by sector



Source: Datastream

Over recent months there have been some signs of credit conditions beginning to ease on the back of Bank of England (BOE) interest rate cuts and UK government efforts to support lending in the UK economy and reinforce the stability of the financial system. However, the sustainability and the pace of this relative recovery remain uncertain.

2.2 Options for dealing with cost of debt fluctuations

Against this background of unprecedented credit market volatility and uncertainty, the question arises as to how the CoD allowances for DPCR5 should be set and, in particular, whether setting a single fixed *exante* CoD for the five-year price control period remains appropriate. If Ofgem continues to set the allowed CoD in line with long-term market average levels¹ then the DNOs run the potential risk of seeing their financeability threatened should the current market conditions persist or worsen over a prolonged period of time. On the other hand, if Ofgem places a greater relative weight on the recent developments and uplifts the CoD allowance to protect the DNOs from such risks, then consumers may pay unjustifiably high prices should credit conditions normalise relatively quickly.

In light of these concerns, we have identified a number of potential options and mechanisms for addressing the uncertainty around the appropriate CoD allowance for DPCR5. These options are described and assessed in Section 3.

2.3 Evaluation criteria

These options must be considered in the context of Ofgem's statutory duties, the principles of better regulation and the evaluation criteria for a potential debt trigger mechanism identified by Ofgem in its recent policy paper². These are summarised in the table below.

¹ This would in part reflect the recent spikes in the CoD to the extent that they feed through to the long-term averages.

² Electricity Distribution Price Control Review: Policy Paper, December 2008.

Table 1: Balancing objectives and obligations

Ofgem's statutory duties	Criteria used by Ofgem to evaluate a potential CoD trigger mechanism				
 Ofgem's principal statutory objective is to protect the interests of gas and electricity customers, present and future, wherever appropriate by promoting effective competition. In addition, Ofgem has a range of secondary duties to which it must also have regard including the need to ensure that licence holders are able to finance their obligations. The Energy Act 2004 has given Ofgem a new secondary duty to have regard to the principles of better regulation: 1. Transparency. Regulators should be open, and keep regulations simple and user friendly. 2. Accountability. Regulators must be able to justify their decisions, and be subject to public scrutiny. 3. Proportionality. Regulators should be appropriate to the risk posed, and costs should be identified and minimised. 4. Consistency. Rules and standards must be joined up and implemented fairly. 5. Targeting. Regulation should be focused on the problem and minimise side effects. 	 In considering the appropriateness of introducing some form of cost of debt indexation / trigger mechanism in the past, Ofgem examined the options against three evaluation criteria: Desirability – would the introduction of such a mechanism encourage the sort of DNO behaviour that Ofgem would like to promote? Practicality – how easy would it be to construct the mechanism and how transparent would it be to all affected parties? Materiality – what is the magnitude of the impact of introducing such a mechanism on consumers and the regulated companies? 				

Source: Electricity Distribution Price Control Review: Policy Paper, December 2008; Better regulation Task Force, BERR

Taking these considerations into account, we identified a set of seven criteria against which the five options for addressing CoD fluctuations are evaluated. In our view, these reflect the spirit of Ofgem's statutory duties and capture the key principles to which a prudent and pragmatic regulatory decision would be expected to adhere:

- Impact on consumers. Since Ofgem's primary duty is to protect the interests of electricity customers, it is imperative that each of the options is assessed in terms of its impact on consumers. In particular, we will focus on the impact of each of the proposed mechanisms on the expected level of electricity distribution prices and their variability. Other things being equal, customers would prefer to see low, predictable prices.
- 2. Incentivisation. The purpose of regulating companies with market power (such as the DNOs) is to mimic the effect of competition and thus to encourage such companies to operate efficiently and to ensure that consumers do not pay excessive prices. Policies adopted by the regulator in setting and varying the allowed CoD have the potential to alter DNOs' incentives. It is therefore important to consider how each of the options impact the regulated companies' incentives to make efficient financing decisions and, more generally, to operate efficiently.
- 3. **Complexity**. As far as possible, the regulatory framework should avoid excessive complexity in favour of clear and simple rules and regulations. In particular, Ofgem should avoid introducing regulatory mechanisms which require it to make significant arbitrary decisions around their design.
- 4. **Transparency**. For any form of regulation to be effective, it is desirable for it to be transparent to all the affected parties. In particular, the DNOs should have a good understanding of how and under what circumstances they can expect to be affected by Ofgem's CoD decisions, and be clear on the size and timing of any future adjustments to the CoD allowances.

- 5. **Targeting.** Ofgem's key underlying concern is to ensure that credit market conditions over DPCR5 do not compromise the ability of a prudent and efficient DNO to undertake its planned investment programme and to refinance any maturing debt. Each of the five options will be considered in terms of whether it allows a prudently operated notionally geared DNO to finance its obligations under a range of credit market conditions.
- 6. **Proportionality.** Any mechanism adopted by Ofgem should ensure that interventions occur only when they are necessary and that interventions are proportionate to the magnitude of the issue.
- 7. **Consistency.** The approach that Ofgem adopts to set and adjust the CoD allowances should be consistent with the broader RPI-X regulatory framework within which the DNOs operate and its application to date.

3 Options for managing cost of debt fluctuations

In light of Ofgem's concerns regarding potential credit market conditions over the course of DPCR5, we have identified five potential options for addressing the uncertainty associated with the appropriate CoD allowance over the next price control period:

- **Option 1**: Continue with the existing framework and approach.
- **Option 2**: Raise the allowed CoD relative to the long-term market average to reflect the recent market conditions.
- **Option 3**: Introduce a CoD trigger mechanism.
- **Option 4**: Introduce a "substantial effect" clause.
- Option 5: Introduce a time-based re-opener.

This is clearly a non-exhaustive list of potential approaches and it would be possible to devise numerous other methodologies which would combine the elements of the options identified here. Nevertheless, it is our view that the discussion of the key principles underlying these five options provides a good exposition of the main issues to be addressed in developing a mechanism for dealing with the potential CoD volatility in DPCR5.

3.1 Option 1: Continue with the existing framework and approach

Description

Ofgem's existing approach involves setting a CoD allowance which is in line with the long-term average cost of raising debt finance. In the context of DPCR5, this approach may result in a higher CoD allowance compared to DPCR4 and GDPCR 2007-2012 to the extent that the recent credit market volatility results in a higher estimate of the long-term averages. However, the CoD allowance determined in this way is still likely to be lower than the current CoD and substantially below the spikes recorded in late 2008 and early 2009.

In the event that the current high market CoD should persist over a prolonged period of time or there was to be a further tightening of the credit markets such that the DNOs could find their financeability jeopardised, in principle they could request their revenue caps to be lifted under the existing "disapplication" mechanism. The disapplication provisions embedded in the DNOs' licenses do not explicitly specify the circumstances under which a disapplication request would be appropriate. In a recent position paper³ Ofgem clarified that it would be "minded to consider" requests for disapplication of the price control in circumstances where:

"The cause of financial distress is largely due to factors beyond the company's control. These might include ... a material change in financial market conditions relative to those prevailing at

³ Ofgem: Arrangements for responding in the event that a network company experiences deteriorating financial health, December 2008.

the time a price control was set such that that an efficient company with an investment grade credit rating would no longer be able to finance its activities. It would be for the applicant company to set out the evidence and to persuade us that the causes of financial distress were beyond its control⁷⁴.

Assessment

Retaining the existing approach to determining the CoD allowances would be consistent with the spirit of RPI-X regulation: a fixed CoD allowance would give the DNOs a strong incentive to minimise their CoD by seeking out the opportunities to issue the debt on the most attractive terms. It may also be argued that it is appropriate for the equity holders to bear the risk that the CoD remains high relative to Ofgem's long-term CoD allowances. Over previous price controls equity holders have been able to retain the benefits of benign credit market conditions relative to the long-term trends. It might be considered reasonable, therefore, to expect them to bear the risk of the higher CoD in the current conditions. The equity holders are already compensated for this risk through the increase in the cost of equity associated with gearing. Furthermore, these implicit risks play an important part in encouraging financial discipline by the regulated companies and instilling confidence among the debt providers.

Though theoretically sound, the arguments in favour of retaining the existing approach to determining the CoD must be considered in terms of the practicality of such an approach. The DNOs must finance a very substantial capex programme over DPCR5 (estimated at £7.85bn, or 65% higher than DPCR4 capex⁵). Given the recent equity market turbulence, there is a risk that if an equity issuance is required to finance these investments, it may come at a time when equity prices are depressed. It is possible, therefore, that in practice even prudently operated DNOs may not be able to finance their operations when using a cost of capital figure underpinned by a CoD allowance set in line with the long-term trends. To ensure that Ofgem's financeability duty is met, it is appropriate to have a mechanism in place to deal with potential extreme CoD scenarios.

The disapplication mechanism may provide some comfort in this respect but so far it remains untested. In their current form, the clauses do not give a clear guidance as to how quickly the disapplication requests may be processed (indeed, the disapplication clauses state that the disapplication cannot be brought into effect before the end of the price control period unless a separate agreement is reached with Ofgem). Furthermore, neither the clauses themselves, nor Ofgem's clarifications on how it intends to apply them, explicitly quantify what constitutes a "material" change (whether in credit market conditions or other factors) or how far the DNOs' financeability ratios must deteriorate before any request for the re-opening of the price control is likely to be successful.

Nevertheless, it should in principle be possible to modify the clauses for DPCR5 to address these issues and make the disapplication process more expeditious and transparent. Our discussion of Option 4 (the "substantial effect" clause) provides some suggestions as to how this may be achieved.

Additional discussion of the existing disapplication procedures can be found in Section 5.2 of the Appendix.

3.2 Option 2: Raise the allowed ex-ante cost of debt

Description

In this scenario, Ofgem would place a greater relative weight on the credit market conditions observed over the past year and uplift the allowed CoD relative to the long-term average. The magnitude of the "headroom" implicit in the CoD allowance would be based on Ofgem's assessment of how long the current conditions are likely to persist and the financing requirements of the DNOs. Once set, the allowed CoD would be fixed for the duration of DPCR5. The disapplication mechanism would continue to apply.

⁴ Ibid. p.11.

⁵ DPCR5 Methodology and Initial Results Paper May 2009.

Assessment

Since the CoD allowance is fixed, as with Option 1, Option 2 preserves the DNOs' incentives to finance themselves efficiently and to seek the best terms for their debt finance.

However, there are a number of potential issues associated with this approach. Most importantly, while raising the CoD allowance in this way would reduce the likelihood that the DNOs would be unable to finance their operations over DPCR5, it would also increase the electricity distribution costs faced by consumers. In the event that the market CoD were to normalise there would be no mechanism to ensure that the benefits of the lower CoD would be shared with consumers. Furthermore, it must be recognised that while the risk to an efficient notionally geared DNO would be reduced under this scenario, it would not be eliminated altogether. If such circumstances arose, they would have to be dealt with under the existing disapplication procedure discussed previously.

3.3 Option 3: Debt trigger mechanism

Description

The introduction of a CoD trigger mechanism would result in an adjustment to the regulated revenue allowance in the event that some market-based measure indicative of the CoD faced by the DNOs breached a pre-agreed tolerance band. Designing a CoD trigger mechanism involves a number of decisions on the specific features of the trigger including the choice of the trigger benchmarks, thresholds, whether the triggers apply to all or part of the DNOs debt, and so on. Each of these decisions has the potential to change the way in which the trigger operates, its impact on the DNOs' incentives and the resulting degree of regulatory complexity.

In this section we present our views on the key features of a CoD trigger mechanism which could potentially be used to address Ofgem's concerns regarding likely credit market conditions over the course of DPCR5. For some aspects of the trigger we are able to arrive at relatively firm conclusions on the appropriate design based on the consideration of broad underlying principles. In other cases, a detailed modelling exercise would be required to determine the precise parameters of the mechanism, which was outside of the scope of this work. In any case, some elements of the design and calibration of a CoD trigger would inevitably remain subjective and open to debate.

This section should be read in conjunction with the Appendix which sets out the detailed discussion underlying the brief overview presented here. In addition, Section 5.3 of the Appendix provides an illustration as to how the CoD mechanism described here could operate in practice.

Cost of debt benchmark - what benchmark should be used as the index for the trigger?

In our view the most appropriate benchmark for the CoD faced by the DNOs is the total real CoD, as oppose to a trigger based on either the risk-free rate (RFR) or debt premium only. The debt premium would be calculated with reference to spreads on BBB and A benchmark corporate bonds⁶. This would then be added to real RFRs calculated with reference to the imputed yields on 10-year zero coupon index-linked gilts.

This is our preferred measure for a number of reasons. First, we believe that since the RFR component of the CoD lies entirely outside of the DNOs' control it should be included in the CoD benchmark. In addition, while the debt spreads for a notionally geared DNO are to a degree within the DNO's control we would not expect the regulated companies to be able to outperform the market consistently and obtain a significantly lower CoD than other equivalently rated companies. To the extent that a notionally geared DNO has only a limited control over the debt premium, it is not unreasonable to include it in the CoD benchmark measure in addition to the RFR although some consideration of adjusting for this controllability may be necessary.

Second, we note that there appears to be a negative correlation between the real RFR and the debt

⁶ As we discuss in Section 5.3.3 of the Appendix several options are available, including the broad cross sector indices and indices specific to utilities. The appropriate choice may be informed by analysis of historical trends and consideration as to whether regulated companies are able to influence utility-specific indices.

premia. Relying on either of the individual components of the total CoD would therefore be likely to misestimate the movements of the CoD actually experienced by the DNOs. In particular, a benchmark based on bond spreads would tend to overstate fluctuations in the CoD while using the real RFR would tend to understate them.

A more detailed discussion on the appropriate CoD benchmark can be found in Section 5.3.3 of the Appendix.

How wide should the tolerance band be?

The narrower the tolerance band, the smaller any movement in the CoD benchmark index that would be needed to breach it, and hence the more likely the revenue adjustment would be triggered. A CoD trigger mechanism based on an exceptionally narrow tolerance band would effectively shift the CoD risk to DNO customers.

Given that Ofgem's underlying concern is to create a mechanism which would allow the DNOs to finance their operations should extreme capital market conditions prevail, a relatively broad band is likely to be more appropriate. The precise parameters of the band would be informed through financial modelling, with the upper limit set such that a notionally geared DNO would find its financeability (for example as reflected in its investment grade credit rating) threatened should the CoD rise above that level. Whether the band is calculated with reference to an "average" DNO or determined separately for each individual company (taking into account the actual RAVs and proposed investment programmes, but applying notional gearing assumptions) would also have to be informed by financial modelling and scenario analysis. Broadly speaking, the wider the divergence among the companies in terms of investment relative to RAV, the less likely it is that the focus on an "average" DNO would be appropriate.

Further discussion of this issue can be found in Section 5.3.1 of the Appendix.

Duration of the breach

Ofgem would need to establish upfront whether the revenue adjustment would be triggered following a discrete breach of the tolerance band or whether a sustained shift in the market CoD measure would be required. A continuous breach appears to be a more appropriate trigger event, since discrete movements may result in "knee-jerk" revenue adjustments which may well unwind later.

In determining the length of time over which the breach has to persist before the mechanism is triggered, it would be important to take into account the existing debt covenants and embedded step-in procedures. On balance it would be preferable for these existing covenants to be triggered before the revenue adjustment process kicks in. This would ensure that the equity holders are exposed to the first impact resulting from any CoD fluctuations (for example, through dividend lock-up procedures). The implied equity risk is consistent with the higher allowed returns offered to equity holders and would ensure that incentives to perform and outperform operationally and financially were retained.

The precise parameter should be determined in close consultation with the market and debt providers as there is evidence to suggest that covenants have recently tightened⁷.

How should the initial CoD allowance be determined?

As evidenced by our discussion so far, we envisage that the CoD trigger mechanism would be invoked only in extreme market circumstances. Given this starting point, there appears to be little reason for departing from Ofgem's existing approach of setting the allowed CoD based on a long-term view of debt market conditions. As we have already explained in our discussion of Option 1, this approach may well result in a higher CoD allowance in DPCR5 compared to the earlier determinations to the extent that the recent increases in CoD feed through to Ofgem's view of the long-term average.

⁷ For example in its Q1 2009 Bulletin, the BOE notes that "Contacts ... commented that firms' credit lines from lenders were under increased scrutiny, in some cases being renegotiated or reduced".

When should the allowed revenue be adjusted?

In our view, once the trigger mechanism is breached, the corresponding adjustment to the regulated revenue should be implemented over the following price control period, suitably indexed to the Present Value. This is premised on the assumption that if the CoD rises significantly during the DPCR5 period, the DNOs would be able to avoid distress through refinancing on the back of the regulatory promise of higher revenues at the time of DPCR6. We envisage that the amount of the adjustment would be ring-fenced and explicitly catered for in the next price control and would not be subject to claw-backs if no debt was raised in practice.

On balance, this approach is preferable to an immediate price adjustment as it offers a greater degree of price certainty over the price control period for electricity customers and is likely to be less disruptive. We explore these arguments in detail in Section 5.3.2 of the Appendix.

Should the revenue adjustment be automatic or trigger a review by Ofgem?

We envisage that once the CoD trigger has been breached, the corresponding revenue adjustment should be automatic and mechanistic, in the sense of not requiring any further deliberations by the regulator. In our view, a mechanistic adjustment better meets the underlying aim of the trigger, which is to create certainty in protection against an increase in the CoD. If, instead, the trigger were to result in a full re-opening of the price control by Ofgem, in our view this would make it a variant of the "substantial effect" clause described below.

How should the new CoD allowance be determined once the trigger has been breached?

The new CoD allowance should be set in line with the average level of the benchmark market CoD which prevailed while it was outside of the tolerance band. In our view this approach would determine a CoD allowance necessary to access finance in the short term.

Should the trigger apply to actual debt or notional debt?

In order to create a level playing field and to allow the companies to manage and operate their own businesses, Ofgem has typically set price control allowances based on an indicative notional company. Therefore, we would expect any trigger mechanism to be more aligned with notional allowances rather than company specific debt portfolios. The notional allowance also lends itself to greater incentivisation and innovation to outperform the regulatory settlement rather than to mirror the determination.

Should the trigger apply to existing and new debt?

The main reason why Ofgem is considering introducing a CoD trigger mechanism is to ensure that the DNOs are able to finance their investment plans and refinance any maturing debt. Consequently, in our view all incremental notional debt issued by the company to finance capex and to refinance the existing debt should be subject to the trigger. Here the notional debt associated with capex is calculated as capex (based on the individual company forecasts submitted at the time of the price control review) multiplied by the notional gearing assumption. The notional refinancing requirement refers to the average refinancing requirement of a notionally geared DNO whose debt maturity profile matches the average life of its assets (currently assumed by Ofgem for other purposes to be 20 years). The annual notional refinancing requirement can be estimated as:

• RAV_i x notional gearing x 1/ (average asset life)

In our view, debt embedded at the start of DPCR5 should not be subject to the trigger since a large proportion of the outstanding DNO debt is fixed⁸ and will therefore not be affected by any future market CoD fluctuations. Making this debt subject to the trigger mechanism would expose customers to excessive price fluctuations which would not reflect the actual change in the CoD faced by the DNOs. In addition, when the embedded debt was originally raised it was raised on commercial terms given the circumstances at the time. Therefore, including embedded debt in the adjustment mechanism would introduce an explicit ex-post adjustment which is at odds with the ex-ante incentive approach of the

⁸ Based on the 2008 regulatory accounts we estimate that 69% of the DNOs' debt is fixed rate or index-linked debt.

regulatory regime to making informed judgements without perfect foresight.

Appendix Section 5.3.4 gives a further exposition of these arguments.

When should new debt become embedded?

The decision to exclude embedded debt from the debt trigger raises the question of when (if at all) new debt raised in DPCR5 should cease to be subject to the trigger mechanism and be treated as embedded. Our view is that the following treatment is appropriate.

If the trigger is breached in the first year of the price control and a new CoD applies to the notional new debt in the second year, then the second year notional debt should remain subject to the second year revised CoD allowance for the rest of the price control period. The allowances for the Year 2 notional debt would not be reviewed even if the mechanism is triggered again in the later years of the price control. At the end of the price control period, all new debt issued over the previous five years should be subsequently treated as embedded.

Our reasoning is that, if there was no mechanism to change the treatment of new debt into embedded debt at some point in the future, then Ofgem would need to keep a complicated record of different tranches of debt raised at different times for different DNOs and calculate different weighted CoDs reflecting these. If long term debt were raised, the effects of introducing a trigger mechanism could persist for many years, even if (as expected) the credit market conditions which prompted its introduction were to prove temporary.

Having the adjustment occur at the time of the new price control period would enable Ofgem to take stock of whether the DNOs had been adequately compensated by the trigger mechanism for any increase in the CoD. Further details of this approach are detailed in Section 5.3.5 of the Appendix.

Symmetric or asymmetric trigger?

Another important consideration is whether the trigger should be symmetric, that is, result in an adjustment both when the CoD rises above and falls below some threshold, or asymmetric, i.e. respond only to increases or to decreases in the CoD.

We believe that a symmetric trigger is more appropriate as it would allow Ofgem to offer both a degree of protection to the companies against the CoD fluctuations which are largely outside of their control and ensure that consumers can benefit from lower prices if the CoD declines dramatically. We recognise that introduction of a symmetric trigger may encourage the DNOs to increase their reliance on floating rate debt as we explain in Section 5.3.6 of the Appendix. However, in our view this risk is moderated by the fact that the trigger is only intended to operate *in extremis*, and therefore should have limited impact on the DNOs' incentives under "normal" circumstances.

Assessment

Given the sheer number of possible forms that the CoD trigger can take it is difficult to draw firm conclusions about whether a debt trigger, in principle, would be the appropriate mechanism for addressing the CoD uncertainty over DPCR5. On balance, the introduction of a debt trigger mechanism could be expected to lower the likelihood that the DNOs would run into financial difficulties as a result of large CoD fluctuations, without the need to introduce "headroom" into the initial CoD determination. However, as our brief description above and our detailed discussion in the Appendix demonstrates, there is a delicate and difficult balance between the ease of implementation and transparency on the one hand, against creating a level playing field for all DNOs, avoiding potential for super-returns and ultimately ensuring that the mechanism addresses the concerns it sets out to tackle on the other hand. It is also evident that practical implementation and ongoing monitoring of any debt trigger mechanism would be complex and challenging and would require a number of almost arbitrary design decisions to be made by Ofgem.

There is also a potential concern that the introduction of the CoD trigger mechanism would represent a departure from a core principle of RPI-X regulation – setting a price allowance at an aggregate level which is only very rarely re-opened.

3.4 Option 4: Introduce a substantial effect clause

Description

Similar to the substantial effect clause (otherwise known as the "shipwreck clause") in the UK water sector, this mechanism would allow for a DNO's allowed revenues to be adjusted in the event that the DNO's circumstances were to change materially. Such a shipwreck clause would enable Ofgem to raise allowed revenues in the event that a DNO was subject to an adverse effect which could not have been avoided through prudent management action. This could be applied symmetrically, enabling allowed revenues to decrease if a DNO was to experience a windfall gain which could not be attributed to prudent management action. This clause could be applicable in a wide range of circumstances, including dramatic changes in the CoD.

In contrast to the existing disapplication mechanism we envisage that the substantial effect clause would explicitly spell out what constitutes a material change in circumstances. In particular, the "materiality" threshold would be DNO-specific and would be set with reference to the credit ratios of a hypothetical DNO with the same operational performance as the company in question and a notional gearing structure. In this way it would be consistent with the approach Ofgem takes in determining the price control such that similar financeability tests would apply.

Unlike the debt trigger mechanism, the regulated revenue adjustments would not be mechanistic. Rather, in the event that any DNO could demonstrate that the materiality thresholds had been met, the mechanism would trigger an interim price control review by Ofgem.

Assessment

Since the materiality thresholds are based on the individual DNOs' financial ratios rather than movements in any individual cost line, this mechanism would allow Ofgem to take a holistic approach to assessing the company circumstances and determining whether an intervention is appropriate. This would avoid the circumstances where a re-opener might be triggered on the back of a large CoD increase, even if the DNOs were to enjoy significant offsetting savings elsewhere. As a result, the substantial effect clause appears to be more closely aligned with the underlying principles of RPI-X regulation. However, this "in the round" assessment may also mean that the mechanism provides a greater degree of protection to poorer operational performers and therefore potentially penalises more efficient operators. This may blunt the DNOs' incentives unless it is clear that Ofgem will apply clear principles when considering a reopener in light of inefficiencies rather than exogenous factors.

An important advantage of a substantial effect clause approach is that it is not specifically defined in terms of the CoD and as such gives Ofgem the flexibility to intervene in a wide range of circumstances. Further, depending on its design it could prove more expeditious than relying upon the disapplication clause.

3.5 Option 5: Introduce a time-based re-opener

Description

Under this approach, Ofgem would carry out more frequent (possibly annual, or once every 2.5 years) reviews of the allowed CoD, leaving the remaining elements of the price control unchanged. For this option to be transparent to the regulated companies and consumers, there needs to be a clear protocol in place setting out what would happen at the time of the CoD review. Broadly speaking there are three potential approaches:

- 1. The allowed CoD to be automatically brought in line with some market CoD measure. This would be done irrespective of whether the CoD has changed materially relative to the initial CoD allowance.
- 2. The CoD re-opener occurs only if the actual CoD moves outside some pre-determined tolerance band. If it occurs, the review would affect all DNOs.
- 3. The allowed CoD is reviewed only if the DNOs' financeability is threatened. The impact on financeability is assessed with reference to the credit ratios of the individual DNOs, assuming

that they are notionally optimally geared. The thresholds for the credit ratios would be established upfront and could be based on the indicative ranges appropriate for each rating level published by the credit rating agencies.

Assessment

The assessment of the time-based re-opener approach depends on which of the three design options outlined above is selected:

- 1. This is equivalent to a CoD indexation mechanism, which appears to be at odds with the spirit of RPI-X regulation and does not correspond to the nature of Ofgem's underlying concerns.
- 2. This approach is very similar in its core principles and design issues to the CoD trigger mechanism discussed previously.
- 3. The financeability assessment implicit in this design makes the time-based re-opener very similar to the "shipwreck" clause.

Despite the similarities, the time based re-opener has one key drawback relative to the debt trigger mechanism and the substantial effect clause – it commits the regulator to a periodic review which may or may not coincide with changes in the CoD. The CoD trigger and the substantial effect clause, on the other hand, explicitly correlate revenue adjustments with changes in the CoD. We therefore do not consider further a time-based re-opener as it appears less advantageous than the alternative options.

3.6 Comparing the options

In this section we assess each of the five policy options set out above against the evaluation criteria identified in Section 2. We provide a brief discussion of the relative advantages and risks associated with each of the approaches. For a further exposition of our relative grading please also refer to Section 5.5 of the Appendix.

Option 1: Continue with the existing approach

In principle, under normal credit market circumstances the existing approach remains fit for purpose. The premise that over the long term the DNOs' CoD should be well approximated by the average market CoD is valid and there are clear incentive benefits of exposing equity holders to fluctuations around this long term average. The disapplication mechanism could potentially provide the appropriate basis for Ofgem to fulfil its financeability duty and intervene in the event of extreme CoD fluctuations.

Given the recent market developments, it may be appropriate to streamline the disapplication mechanism to make it more transparent to the market participants. This is identified as "Option 1*" in Table 2 above.

Potential adjustments may include explicit guidance on what change in circumstances would justify a disapplication request (preferably quantified with reference to the DNOs' credit ratios) and how quickly it would be dealt with. The key principles for updating the disapplication mechanism can be gauged from our discussion of the substantial effect clause which is similar in spirit to the disapplication clauses but would offer a greater degree of transparency to the DNOs than the existing framework in its current form.

Option 2: Introduce CoD headroom

This approach necessarily involves higher prices to electricity customers irrespective of whether the higher revenues are strictly necessary for the DNOs' financeability and without an obvious downward adjustment mechanism that would pass the lower CoD to the consumers in the event that credit market conditions normalise over DPCR5.

On balance, the existing approach, particularly if the disapplication mechanism can be streamlined, should make the uplift of the allowed CoD relative to its long term average levels unnecessary.

Table 2: Comparative assessment of policy options



		Consumer benefit	Incentivis- ation	Complexity	Transpar- ency	Targeted approach	Proportion- ality	Consistency	
Option		Does the mechanism benefit the consumer (risk v. prices)?	Does the mechanism preserve the DNOs' incentives?	Simple and user friendly approach?	Clear when/how the regulator is likely to intervene?	Does the mechanism apply when an intervention is needed?	Is intervention proportionate to the issue?	Does the mechanism align with the broader reg. framework and its previous application?	
Option 1	Continue with the existing approach	√ √	$\checkmark\checkmark$	√ √	**	~	~	√ √	
Option 1*	Option 1 + disapplication clause review	√ √	$\checkmark\checkmark$	$\checkmark\checkmark$	V	$\checkmark\checkmark$	V	$\checkmark\checkmark$	
Option 2	Introduce CoD headroom	**	\checkmark	$\checkmark\checkmark$	**	~	×	**	
Option 3	CoD trigger mechanism	\checkmark	~	**	$\checkmark\checkmark$	\checkmark	\checkmark	~	
Option 4	Substantial effect clause	$\checkmark\checkmark$	$\checkmark\checkmark$	V	~	$\checkmark\checkmark$	$\checkmark\checkmark$	√ √	
Option 5	Specific CoD reopener	Not considered in detail by PwC							

Note that this table excludes the assessment of Option 5: Time-based re-opener for the reasons set out previously.

Option 3: Introduce CoD trigger mechanism

As should be evident from our discussion of this option in Section 3.3, while the debt trigger compares favourably to some of the options in terms of transparency and proportionality, the introduction of a debt trigger mechanism would require Ofgem to make a number of difficult decisions around the exact design of the trigger. Some of these decisions⁹ would be avoided entirely if an alternative option (for example, the substantial effect clause) was selected, without undermining the ability of the mechanism to address the issues at hand. Yet each of these decisions, if misjudged, could undermine the DNOs' incentives and lead to unintended adverse consequences for electricity customers and the DNOs themselves. The CoD trigger would therefore risk introducing an additional layer of regulatory complexity without clear offsetting benefits when compared against some of the other options considered in this paper.

The mechanistic nature of the trigger and its focus solely on the CoD also mean that, under certain circumstances, an upward revenue adjustment could be triggered even if the DNOs were to enjoy offsetting cost reductions elsewhere such that the overall financeability of the DNOs was not affected.

⁹ For example, around the choice of the appropriate CoD benchmark, the applicability of the trigger to all or part of the DNOs' debt and so forth.

This would appear particularly counterintuitive in cases where the offsetting cost savings were not attributable to prudent management. For that reason, it could be argued, the trigger mechanism would not be as well targeted a response to Ofgem's wider concerns as some of the alternative approaches considered here.

Option 4: Introduce a substantial effect clause

In comparison to Option 3, the substantial effect clause represents much less of a departure from the framework already in place (and specifically the disapplication mechanism). The design of the substantial effect clause is by no means a simple exercise and requires careful consideration of various options. Nevertheless, on balance, the substantial effect clause approach is significantly less complex than the CoD trigger mechanism.

Another key advantage of this approach lies in its focus on the financeability of the individual DNOs and, accordingly, its broad assessment of the DNOs' circumstances. Since the DNOs may be required to demonstrate that their financeability (assuming a notional gearing structure) is under threat, it is less likely that a revenue adjustment would be granted following a significant CoD increase where the DNOs were to benefit from offsetting reductions in other costs¹⁰.

It is important to recognise that this holistic approach could potentially have a negative impact on the DNOs' incentives. If the substantial effect mechanism did not distinguish between those offsetting cost savings that arise as a result of strong managerial performance and those which lie outside of the companies' control and so cannot be attributed to prudent management, then it may be argued that the substantial effect clause would tend to provide a greater degree of protection to poorer operational performers and thus dampen the DNOs' incentives. Similarly, strong performers might find themselves penalised. In practice, the impact on the DNOs' incentives should be limited: the shipwreck clause is only intended to apply *in extremis* and therefore should have a minimal impact on the DNOs' behaviour under "normal" conditions.

¹⁰ It is not eliminated altogether however: to the extent that the DNOs' gearing is below the notional gearing assumption used by the regulator, it is possible, in principle, for the substantial effect clause to be activated without the DNOs' actual credit ratios being significantly stretched. In spite of these observations, in our view it is very important for all of the options considered in this paper to focus on notional, rather than actual, gearing. Otherwise, each of the five options could potentially encourage the DNOs to adopt sub-optimal gearing, e.g. gear up beyond the level that might be considered prudent.

4 Conclusion and recommendations

In light of the arguments presented in Section 3, on balance, Option 1: Retain the existing framework and Option 4: Introduce a substantial effect clause appear to be the most practical approaches to managing significant CoD fluctuations during DPCR5.

In our view, the key principles underlying the existing approach remain valid and appropriate for the purposes of determining the CoD allowance. The disapplication clauses embedded in the DNOs' licenses can, in principle, be invoked if the high market CoD should persist over a prolonged period of time or if there was to be a further tightening of the credit markets such that the DNOs' ability to finance their obligations and deliver the proposed DPCR5 programme were jeopardised. We do however recognise that the disapplication mechanism remains untested and could benefit from a number of refinements to make it more transparent to the DNOs and debt providers. Our analysis of the substantial effect clause should provide useful guidance on the steps that could be taken to re-model the disapplication clause.

Option 4 can be viewed as an extension or a refinement to Ofgem's existing approach to setting the allowed CoD. It draws on the substantial effect clause already in place in the UK water sector (and certain elements of the equivalent mechanism in the rail sector) and as such is a tried-and-tested approach to dealing with unexpected and unavoidable changes in the regulated companies' circumstances. Its key advantage compared to the CoD trigger mechanism is in its focus on financeability and its holistic approach to assessing the need for an intervention. It should minimise the likelihood that a price adjustment will be made in circumstances where it is not strictly necessary. The substantial effect clause is also likely to be significantly easier to design, implement and monitor than a CoD trigger.

These recommendations are based on our understanding of Ofgem's concerns and are premised on the assumption that the broader RPI-X framework remains in place. The assessment of the benefits and the risks associated with each of the options and their appropriate design might change dramatically if other aspects of the regulatory framework were to be altered.

5 Appendix

5.1 Additional evidence on recent credit market conditions

Here we present additional evidence on recent credit market conditions to support our discussion in Section 2.

5.1.1 Spreads

During 2006 and 2007 utilities have been able to raise finances within a spread range of 1.07 - 1.27. However since then spreads have increased significantly to 1.4 - 3.28, a range that is much wider and substantially higher compared to that observed over the previous two years. However, it is important to note that since January 2009, the spreads appear to have narrowed. For example, whereas the spread on the GDF Suez bond issued in January was 3.28%, the spread on the bond of the same credit rating and tenor issued one month later was 2.05%.

Parent	Date of Issuance	Maturity	Tenor (years)	Total Value Issued	Launch Rating	Current Rating	Spread to Benchmark
National Grid	19-Jul-06	01-Aug-16	10.00	797,259,508	A-	BBB+	1.270
Eon	21-Sep-07	02-Oct-17	10.00	3,500,000,000	А	А	1.198
Eon	18-Oct-07	30-Oct-19	12.00	2,150,537,634	А	А	1.070
National Grid	18-Feb-08	03-Mar-20	12.00	396,432,713	A-	A-	1.700
Severn Trent	04-Mar-08	11-Mar-16	8.00	700,000,000	А	А	1.586
Eon	23-Apr-08	07-May-20	12.00	2,500,000,000	А	А	1.681
Eon	05-Jun-08	07-May-20	11.00	400,000,000	А	А	1.383
National Grid	08-Jul-08	03-Mar-20	11.00	74,684,400	А	А	1.400
GDF Suez	07-Jan-09	18-Jan-21	12.00	4,232,655,000	A+	A+	3.279
Severn Trent	13-Jan-09	22-Jan-18	9.00	447,552,448	А	А	2.850
GDF Suez	03-Feb-09	11-Feb-21	12.00	788,514,694	A+	A+	2.050

Table 3: Launch spreads on selected utilities (8-12 year maturities)

Source: DealLogic

5.1.2 Tenor

Recent bond issuances have had relatively short maturities. Such a shortening in issuance maturities may indicate a reluctance to issue long-term debt at the prevailing spreads, though it may also reflect an increased use of capital market funding as a substitute for bank borrowing.



Table 4: Average tenor of bonds issued by selected utilities

Source: DeaLogic, PwC calculations

5.2 Disapplication mechanism

We discuss here the disapplication clauses embedded in the DNOs' licenses and provide a more detailed exposition of the arguments outlined in Section 3.1 (Option 1: Continue with the existing framework and approach).

The existing framework includes a "disapplication" mechanism that allows the DNOs to request Ofgem to lift or disapply the regulated revenue restrictions. The disapplication provisions are embedded in the DNOs' licenses. They are general in the sense that they do not set out the specific conditions under which disapplication requests can be made. Therefore in principle they would allow for disapplication requests to be lodged by the individual DNOs in the event that the CoD were to increase significantly.

Unlike the substantial effect clause (also known as the "shipwreck" clause) in the UK water sector, the disapplication provisions do not specify any threshold which, if breached, would justify a disapplication request to be made. As such the clauses offer little clarity to the DNOs as to when disapplication requests may be appropriate.

In a recent position paper¹¹, Ofgem clarified that it will be "minded to consider" requests for disapplication of the price control in circumstances where:

- "The cause of financial distress is largely due to factors beyond the company's control. These might include ... a material change in financial market conditions relative to those prevailing at the time a price control was set such that that an efficient company with an investment grade

¹¹ Ofgem: Arrangements for responding in the event that a network company experiences deteriorating financial health, December 2008.

credit rating would no longer be able to finance its activities. It would be for the applicant company to set out the evidence and to persuade us that the causes of financial distress were beyond its control; and

- Re-opening the settlement could reasonably be expected to relieve the financial distress in a timely manner. We do not consider it would be appropriate to re-open a control unless there is a realistic prospect of reaching a definitive conclusion within the timeframe necessary to address the declining financial position of the licensee. To do otherwise may mislead investors and creditors and ultimately increase the risk to consumers in the event of insolvency."¹²

Disapplication is likely to be a time-consuming process. The DNOs can request a specific disapplication date, that is, the date from which the price control ceases to apply. However, under the DPCR4 special license conditions, unless a separate agreement has been reached with Ofgem, no disapplication request can be brought into effect earlier than the date which is the later of:

- 6 months after delivery of the disapplication request; or
- Before 1 April 2010 (the end of the DPCR4 price control period)¹³.

Once the disapplication request has been submitted, Ofgem may refer it to the Competition Commission (CC). The disapplication of the price control becomes effective:

- On the disapplication date or a later date if Ofgem has not given the licensee notice that it intends to make a reference to the CC within the later of three months of receiving the request or six months before the requested disapplication date, or if Ofgem failed to make a reference to the CC within six months of serving this notice;
- On the disapplication date or later if the CC found that disapplication of the price control conditions would not act against public interest; or otherwise
- On the date agreed by Ofgem.

This *a priori* lack of clarity with respect to how quickly and by what means the re-settlement may become effective contributes to regulatory uncertainty. Another concern about the disapplication mechanism in its current form is that neither the clauses, nor Ofgem's clarifications on how it intends to apply them, explicitly quantify what constitutes a "material" change (whether in credit market conditions or other factors) or how far the DNOs' financeability ratios have to deteriorate before its request for the re-opening of the price control is likely to be successful.

Nevertheless, in our view these drawbacks can potentially be overcome. We recommend that through a combination of revisions to the DNOs' licenses and additional guidance Ofgem clarifies:

- · When it considers a disapplication request to be appropriate; and
- What would happen if a disapplication request is upheld whether by Ofgem or by the CC.

Here we briefly discuss the key principles which could be used to inform Ofgem's approach to addressing these questions.

When is a disapplication request appropriate?

In our view, the most transparent approach would be to establish a clear materiality threshold: the change in the DNOs' revenues and costs would have to exceed a certain level before a disapplication request would be considered. The threshold could be expressed, for example, in terms of the PV of the net financial impact of the change in the circumstances as a percentage of the DNOs' allowed revenue or the

¹² Ibid. p.11.

¹³ Central Network East distribution license. Available from <u>http://epr.ofgem.gov.uk/document_fetch.php?documentid=9767</u>.

RAV. An alternative approach is to establish a set of credit ratio thresholds (such as, for example, a particular cut off point of cash interest cover and/or cashfow / debt ratio and/or other ratios commonly used by credit rating agencies).

The exact parameters of the threshold would be informed through modelling and in consultation with debt providers and credit rating agencies. We envisage that the thresholds would be set such that if an average notionally geared DNO were subject to an adverse effect of that magnitude, *ceteris paribus* it would likely find its financeability threatened (for example, it would be likely to be at risk of, or even to experience, a significant¹⁴ credit rating downgrade resulting in a step up in the costs of servicing its debts).

What happens if a disapplication request is upheld?

This guidance should encompass the process that Ofgem will undertake to re-determine the price control conditions as well as the timing thereof.

It would also specify the methodology and principles used to determine the control moving forward.

5.3 Parameters of a Cost of Debt trigger mechanism

Here we present a more detailed discussion of the key parameters of a potential CoD trigger mechanism to supplement the brief overview provided in Section 3.3 above. Our discussion is structured as follows:

- 5.3.1 When should a revenue adjustment be triggered?
- 5.3.2 When should the allowed revenue be adjusted?
- 5.3.3 What is the appropriate benchmark to use?
- 5.3.4 Should the trigger apply to existing and new debt?
- 5.3.5 When should new debt become embedded?
- 5.3.6 Symmetric or asymmetric trigger?

Finally, Section 5.3.7 provides an illustration as to how the CoD trigger mechanism described in Section 3.3 could operate in practice.

5.3.1 When should a revenue adjustment be triggered?

There are three main options to consider:

- 1. A narrow tolerance band (for example, +/- 25bps or +/- 10bps around the allowed CoD) applicable to all DNOs.
- 2. A broad tolerance (applicable to all DNOs) set such that an average notionally geared DNO would find its financeability jeopardised if the market CoD measure were to move above the threshold for a period of time.
- 3. Individual tolerance bands for each of the DNOs, with the width of each band set such that the particular DNO in question (assuming the notional gearing assumption) would find its financeability threatened if the market CoD index were to move outside of the band.

Approach 1 would shift the risk of fluctuations in the market CoD from DNOs to electricity customers. How closely the CoD allowance would follow the market CoD trends would depend on the exact parameters of the tolerance band. Figure 4 illustrates how a debt trigger mechanism with a tolerance band of +/- 25 bps

¹⁴ Significant in this context could be interpreted as either below investment grade or below what Ofgem considers to be "comfortably within investment grade".

and +/- 10 bps would have applied over a four year period between April 2005 and May 2009. If a 3month tolerance period was chosen, the trigger would have resulted in 8 and 22 adjustments to the CoD allowance over the course of DPCR4 respectively. Given these relatively frequent adjustments (often several over the course of one year) the process of calculating the corresponding allowed revenue adjustments could prove challenging, notwithstanding the ongoing impact frequent changes would have on suppliers and ultimately end consumers (although this could be mitigated as discussed in Section 5.3.2 below). [Is it possible to mark trigger events in the diagram without making it look too messy?]



Figure 4 Retrospective application of the CoD trigger mechanism – varying the width of the tolerance band and the duration of the tolerance period

Source: Datastream, PwC analysis.

Explanatory note. Total real CoD is calculated as follows. The bond spreads are estimated with reference to ML benchmark BBB bond index and the nominal 10-year government bond yields data from the BOE. The spread is added to the real risk-free rates based on yields on 10-year index-linked gilts. The new CoD allowance is set at the level of the average CoD which prevailed over the three- or six-month period of the breach. Each step movement in the red line indicates a change in the allowed cost of debt.

In our view, Approach 1 is fundamentally at odds with the intentions of RPI-X regulation which relies on fixed price allowances to mimic the incentive effects of competition and thereby incentivise the DNOs to operate efficiently.

The key consideration with Approach 2 is whether in practice it would provide sufficient protection to all DNOs. The focus on a "representative" DNO overlooks the range of potential outcomes across the sector, and DNOs with below-average cashflow ratios (for example, due to the size or the timing of their capex) may find their financeability under pressure without the sector-wide materiality threshold being breached.

Approach 3 avoids this problem but requires Ofgem to commit to 14 separate tolerance bands at the start of the price control period, which makes monitoring the trigger and implementation of any subsequent revenue adjustments more complicated.

Ultimately, the choice between Approach 2 and Approach 3 would need to be informed through financial modelling and scenario analysis. Broadly speaking, the wider the divergence among the companies in terms of their expected financial performance in any one year, the less likely it is that the focus on a "representative" DNO implicit in Approach 2 would be appropriate.

5.3.2 When should the allowed revenue be adjusted?

There are two main options to be considered:

- Re-openers with immediate effect In this scenario, the price control is re-opened as soon as the CoD threshold is considered to have been breached and the prices for the rest of the control period are re-calculated.
- Adjustment in the following price control Under this option, the prices in the current price control period remain unchanged even if the threshold is considered to have been breached. Instead the allowed revenue in the following price control period is adjusted appropriately (including any accrued interest).

The first option could prove disruptive and time-consuming. It would lead to greater price uncertainty for consumers, which, particularly if combined with a relatively narrow tolerance band, would not always be justified in terms of the DNOs' financeability concerns. DNOs are also constrained to a degree in terms of how often they can change their distribution charges¹⁵ potentially undermining the effectiveness of this option to alleviate financeability concerns. In addition, the price volatility and thus cost of debt risk will be passed to electricity suppliers who may not be the best placed parties to manage that risk given (i) the Industrial and Commercial customer base invariably prefer fixed rate contracts, and (ii) the general tendency is to avoid frequent and material changes to domestic consumer rates.

The second approach has the benefit of providing the DNOs with confidence that their revenues would be adjusted in line with the market CoD at the time of the following price control (compensating them for the delay by adding accrued interest), without increasing price uncertainty for consumers. In normal credit market conditions, the DNOs should face little difficulty in securing interim financing to alleviate their cashflow requirements in the short term. However, since the CoD trigger is intended to come into play specifically when credit market conditions are extreme, it may be appropriate to include a back-stop provision to allow the DNOs to request an earlier re-opener if they can demonstrate to Ofgem that alternative sources of short-term finance are insufficient or not available, notwithstanding the promise of an adjustment in the next price control period.

5.3.3 What is the appropriate benchmark to use?

In this section we discuss the possible measures of the market CoD which could form the basis of the

http://www.dcusa.co.uk/Public/ViewDocument.aspx?id=1391

¹⁵ The DNOs' distribution contracts specify that they shall use reasonable endeavours to vary distribution no more than twice a year (1st April and 1st October).

Further, Standard License Condition 14.20 specifies that the DNOs must notify Ofgem and their customers of any proposed changes to distribution charges no less than three months before the date on which they amended charges are due to take effect.

trigger mechanism. It is imperative that the chosen CoD measure has the following characteristics:

- Transparency: it must be readily observable to Ofgem, the DNOs and their investors.
- Non-controllability: it must not be susceptible to manipulation by the DNOs or their investors.

Three options are considered:

Option 1. Real risk-free rate. Broadly speaking, there are two potential approaches to measuring the real RFR. One is to use real RFRs published by the BOE based on yields on zero-coupon index-linked gilts. Another approach would be to make an inflation adjustment to nominal RFRs.

Option 2. Debt premium. The debt premium can be estimated as the difference between the nominal benchmark bond yield and the nominal RFR. In principle, debt premia should not be correlated with inflation so no further inflation adjustments are required.

Option 3. Total cost of debt. Data on the nominal benchmark bond yields for various credit ratings is readily available from sources such as Bloomberg and Datastream. This data needs to be adjusted for inflation since Ofgem's price controls are based on the real WACC.

Option 1. Real risk-free rate

We discuss the strengths and weaknesses of various approaches of measuring the real RFR in the accompanying paper entitled *Advice on the cost of capital analysis for DPCR5*. We conclude that on balance, despite concerns around demand and supply conditions, real risk-free rates calculated with reference to index-linked gilts are the most practical approach to benchmarking the real RFR.

Option 2. Debt premium

Option 2 does not require any inflation adjustments to be made and as such avoids the potential issues identified under Option 1. The key decision here is to select an appropriate benchmark for estimating the debt premia. There is a wide array of corporate bond indices available from recognised sources such as Bloomberg and Datastream.

Broad benchmark bond indices (e.g. BBB or A market-wide sterling bond indices) offer an insight into the average spreads across all industries for bonds with a particular credit rating (and sometimes of a particular tenor). Since the DNOs' bonds comprise only a very small proportion of such indices, such indices could not be influenced by the DNOs. However, the spreads on non-industry specific indices may not be representative of the debt premia actually faced by the DNOs specifically and utilities more generally. For example, Figure 5 shows that historically spreads on utilities bonds¹⁶ followed the spreads on other A/BBB bonds reasonably closely. Since the onset of the credit crisis, however, spreads on utilities bonds have widened, but to a much lesser extent than the spreads on A/BBB-rated bonds generally, possibly as a result of the utilities' sector defensive characteristics. Over that period, a trigger mechanism based on a broad bond benchmark may have over compensated the DNOs for the changes in the CoD.

¹⁶ The IBOXX Utilities Benchmark Index includes all qualifying sterling bonds (i.e. bonds maturing in 1 year or more, have more than £100m in issue etc) without focussing on bonds with any particular credit rating. In practice, all bonds included in the IBOXX Utilities Benchmark Index are rated BBB to A. It is therefore comparable to the non-industry specific BBB/A benchmark bonds.



Figure 5: Estimated spreads of BBB, A, AA and utilities benchmark bonds

Source: IBOXX, Datastream

A further point to note on broad benchmark indices is that data from different sources may produce very different pictures of the underlying market conditions and thus impact the operation of the debt trigger mechanism. An alternative approach to estimating debt premia is to focus on narrower benchmarks, for example, ones including bonds issued by utility companies only¹⁷. In principle, debt premia calculated in this way should better reflect the CoD faced by the DNOs. However, if a narrower benchmark is chosen then there is a risk that the DNOs would be able to influence the movements in the benchmark through their gearing decisions¹⁸. This may distort the DNOs' financing incentives and result in windfall gains for their shareholders. To understand why this may happen, consider the following situation where DNOs can substantially influence the index on which the trigger mechanism is based.

According to the latest regulatory accounts, all but one DNO maintain gearing substantially below Ofgem's notional gearing assumptions. In principle, Ofgem's revenue allowances would permit the DNOs to increase their gearing significantly while comfortably maintaining their investment grade credit ratings. If this occurs, then spreads on the DNOs' bonds would be expected to widen, which would in turn result in increasing debt premia calculated with reference to a utility benchmark bond index. If this triggers a change in the allowed revenue, then DNOs would get compensated for changes in the CoD induced through their own actions rather than any deterioration in credit market conditions, which the debt trigger mechanism is intended to counteract. The relative importance of this potential concern is likely to increase over time if Ofgem introduces similar debt trigger mechanisms for other regulated companies and/or other utility regulators follow suit.

Accordingly, in choosing the appropriate benchmark for calculating the debt premium there is a tension between:

¹⁷ Utility benchmark bond indices are available both for bonds with a specific rating (for example, Merrill Lynch A Utilities Bond Index or Merrill Lynch BBB Utilities Bond Index available from Datastream and Bloomberg) and non-rating specific bonds (for example, IBOXX Utilities and Merrill Lynch Utilities indices). We note that Merrill Lynch A/BBB indices often produce negative bond premia estimates if calculated with reference to nominal 10-year government bonds. This is likely to be due to a maturity mis-match between the bonds included in the utilities index and the bonds used to estimate the risk-free rate. Non-rating specific bonds only contain BBB-A rated bonds in practice, but do not result in negative-spread estimates. For that reason, a benchmark based on a non-rating specific index may be preferable. ¹⁸ For example, bonds issued directly by DNOs account for 9 out of 50 bond issues included in the IBOXX Utilities Benchmark

Index.

- Selecting a benchmark which reflects credit terms faced by the DNOs; and
- Selecting a benchmark which is not controllable by the regulated companies.

An approach to overcome this tension may be to use an adjusted yield curve. Empirical analysis could be carried out to explore the relative historic relationship between different yield curves (i.e. the market-wide and utility-specific yield curves) and use this to inform an adjusted (or weighted) market-wide curve. This would reduce the ability of the DNOs to directly influence the operation of the CoD trigger.

A further alternative to explore is whether it may be appropriate to base the trigger mechanism on the yields for bonds issued by US utilities. Given the limited overlap between US and European utility sectors, the spreads on bonds issued by US utilities would not be subject to manipulation by the DNOs. We note, however, that US utilities are subject to a different regulatory regime and market conditions and their CoD may not be an appropriate proxy for the DNOs' CoD.

Option 3. Real total cost of debt

Controllability issues aside, both Option 1 and Option 2 suffer from the same flaw: individually they capture only one component of the cost of raising debt faced by the DNOs. In our view focussing on a single component may misestimate the actual movements in the cost of debt. The real RFR and the debt premia calculated on the basis of broad benchmark bonds appear to be negatively correlated (see Table 5). The most likely explanation for this is that both debt premia and the real RFR are individually correlated with GDP growth. When GDP growth is under pressure, the BOE stimulates the economy by lowering interest rates which feeds through to lower real RFRs. Lower growth expectations also cause the rate of time preference to fall since people are more prepared to decrease consumption today in favour of consumption tomorrow, potentially reducing the real RFR. At the same time, the risk of default would tend to increase, which in turn increases debt premia. As the two measures tend to move in opposite directions, focussing on the debt premium alone would tend to overstate the fluctuations in the cost of debt. Conversely, the RFR would tend to decrease precisely at those times when the companies face a higher overall cost of debt. The relationship between spreads on utilities' sector defensive characteristics.

	Benchmark us	Benchmark used for calculating debt spreads							
	BBB	А	AA	ΑΑΑ	IBOXX Utilities				
Coefficient on real risk-free rate	-0.73	-0.57	-0.40	-0.11	-0.01				
Standard error	0.05	0.04	0.03	0.02	0.02				
t-statistic	15.12	14.22	13.65	4.72	0.53				
Statistically significant?	Yes	Yes	Yes	Yes	No				

Table 5: Regressing bond spreads on the real risk-free rate (calculated with reference to yields on 10-year index linked gilts)

Source: Datastream, BOE, PwC analysis.

Option 3 avoids this concern by taking both the movements in the real RFR and the changes in debt premia into account. An estimate of the total real cost of debt can be obtained by adding the spread on a benchmark bond to a measure of the real RFR. Refer to Options 1 and 2 above for a discussion of key issues in estimating the two components of the real total cost of debt.

5.3.4 Should the trigger apply to existing and new debt?

As discussed in Section 3.3, in designing the debt trigger mechanism Ofgem would need to make a decision on whether the debt trigger mechanism should apply to all notional debt or just some portion of it. This decision not only impacts upon the magnitude of the potential changes in the regulated prices arising as a result of the debt trigger, but can also have an effect on the DNOs' incentives.

Option 1. Existing and incremental notional debt are subject to the trigger

In this scenario, the DNOs' prices would be adjusted in a way which reflects the change in the CoD as applied to the whole notional debt (i.e. RAV x notional gearing). This could potentially result in very large variations in prices for electricity customers (within or across price control periods depending on the chosen adjustment mechanism) which may or may not reflect the CoD actually faced by the companies.

To illustrate this point we note that according to the DNOs' regulatory accounts around 70% of the outstanding debt (by value) issued directly by the DNOs is fixed rate¹⁹ and therefore would not be affected by the changes in credit market conditions. A relatively small portion (around 10%) of the DNOs' existing debt is due to be refinanced over the course of DPCR5. Nevertheless, under Option 1, in the event that the market CoD were to increase, and the trigger were to be breached, the DNOs would receive higher revenues to compensate them for the "increased" cost of servicing this debt.

In view of these considerations we consider Option 1 to be inappropriate.

Option 2. Only incremental notional debt is subject to the trigger.

In this scenario, only the notional debt for financing the DPCR5 capex programme would be subject to the trigger. Compared to Option 1, confining the trigger to incremental debt would limit the potential price volatility faced by consumers, while ensuring that the DNOs could finance their capex programme. The limitation of this approach is that in its simplest form it does not take into account the DNOs' refinancing needs. As a result, the DNOs may see their financeability threatened despite the trigger being breached. For that reason, in our view, some allowance for refinancing existing debt would be appropriate.

Option 3. Incremental notional debt and refinancing requirements are subject to the trigger

This approach extends the trigger to include a refinancing allowance as well as an incremental allowance to ensure that the DNOs can refinance their existing debt when it falls due as well as fund their capex programmes.

The practical question with Option 3 is how to calculate what the DNOs' refinancing needs are. One methodology is to look at the likely financing requirements of a notionally geared DNO. Over the long term we would expect the debt maturity profile of such a company to be broadly consistent with the average life of its assets²⁰. In the DPCR4 final proposals, Ofgem suggested that the appropriate asset life assumption is around 20 years. Therefore the corresponding average debt maturity should reasonably be around 20 years. Given this average debt maturity it is reasonable to make an allowance for around 5% (or one twentieth) of the outstanding debt to be refinanced every year or, equivalently, 25% over the course of a price control period.

This notional company approach would avoid the need for Ofgem to track the individual DNOs' financing arrangements. However, actual refinancing requirements in any one year or any one price control period may be very different from what may be expected on average as Figure 6 demonstrates. These discrepancies between actual and average financing requirements might put the DNOs' financeability under pressure even if the trigger mechanism were in place. This approach might also encourage regulated companies to take on shorter-tenor debt, potentially inefficiently, to avoid spikes in refinancing in the future.

¹⁹ For the purposes of calculating what proportion of debt is floating, we assume that any short term (that is, due within one year) bank overdrafts, money market borrowings and working capital loans are subject to a floating rate interest payments.
²⁰ This is consistent with finance theory: matching assets to liabilities.

Figure 6: DNOs' outstanding debt issues by maturity



Source: PwC analysis of DNOs' 2008 regulatory accounts. Current borrowings (i.e. short term borrowings and any borrowings which were due to be refinanced in 2009) are excluded from the chart above.

An obvious alternative which would avoid these concerns would be to calculate refinancing allowances separately for each DNO based on their individual financial arrangements. For example, if 10% of a DNO's debt were due for refinancing in a particular year, then that year's refinancing allowance (which would be subject to the trigger) could be set equal to 10% of the DNO's notional debt. The main practical issue with this approach concerns the treatment of debt which is payable on demand (much debt provided to the DNOs by their parent companies takes this form). All or none of this debt could be called up in any one year, so how should a refinancing allowance on this debt be set? Ofgem could evaluate how much of the debt was actually refinanced ex-post. However, this might encourage the DNOs' parent companies to call up the debt when the market CoD rises (and when a prudent DNO would have avoided refinancing), so as to take advantage of the additional revenue arising as a result of the trigger mechanism.

On balance, given that relying on actual refinancing requirements may provide opportunities for the DNOs to "game" the mechanism at the expense of consumers, the approach which focuses on a notional refinancing allowance appears preferable.

5.3.5 When should new debt become embedded?

There is a further practical issue to consider which is common to Options 2 and 3 discussed in Section 5.3.4 – when should "new" debt which is subject to the CoD trigger become embedded (i.e. treated as "existing")? Implicitly, there are two separate questions which should be addressed:

- 1. How long does new debt remain subject to the trigger mechanism? That is, how long after the new debt is raised can the CoD allowance associated with that debt be affected by the trigger mechanism?
- 2. In the event that the CoD adjustment mechanism is triggered and the CoD allowance is revised, for how long does the relevant new debt remain subject to the adjusted CoD?

We address these questions in turn.

How long does new debt remain subject to the trigger mechanism?

To take an example, should the revenue allowance on notional debt "issued" at the beginning of DPCR5 be subject to review if the market CoD were to increase at the end of the price control period? In our view, the answer to this question is "no" for the reasons we excluded embedded debt from being subject to the trigger (see Section 5.3.4). In the event that the CoD were to rise dramatically over the course of the price control period and the CoD allowances were to be increased, the DNOs might enjoy windfall gains on fixed rate debt raised at the lower CoD prevalent at the beginning of the period. Conversely, if the CoD

were to decline and the allowance was reduced accordingly, the DNOs may find their ability to service debt issued earlier at a high cost threatened.

Accordingly, we believe that new debt should remain subject to the trigger mechanism for only a limited period. Therefore we propose notional "new debt" is forecast on an annual basis at the start of the price control period.

In the event that the mechanism is triggered, for how long does the revised CoD allowance apply?

At an extreme, the revised CoD allowance could remain in place for the (notional) tenor of the "new" debt. However, allowing the adjusted CoD rates to apply over long time periods:

- Overlooks the fact that the DNOs may be able to refinance their debt if credit market conditions improve (for example, by issuing callable bonds); and
- May blunt the DNOs' incentives to seek out opportunities to issue debt on attractive terms, since they
 can be sure that under certain conditions they would be compensated for the higher costs of servicing
 debt for the entire life of a bond. The potential significance of this concern can be reduced by setting a
 wider tolerance band.

An alternative approach is to specify some period (for example one year or five years) over which the revised CoD applies before it reverts to the long-term estimate of the CoD applied to the embedded debt. So irrespective of whether the revenue adjustment were to happen in the first year or in the last year of DPCR5, the DNOs would be subject to the revised CoD allowance for the same limited period. The longer this period, the less likely it would be that the DNOs would find their financeability threatened were the current market conditions to persist or deteriorate further. By limiting the period over which the adjustment would apply, this approach would help to alleviate the concerns identified above. Its practical implementation might create complexity, particularly if the modified allowances needed to be rolled across price control periods. Furthermore, if Ofgem were to commit to applying differential CoD allowances to different tranches of debt beyond DPCR5, then it might prevent the withdrawal of the debt trigger mechanism beyond DPCR5, even were credit market conditions to normalise and the need for a formal debt trigger mechanism to reduce.

The final alternative, and our preferred approach, is to allow the revised CoD allowances to apply until the end of DPCR5, irrespective of when they come into effect across the price control period. This option is simpler in its application and would allow Ofgem to withdraw the mechanism at the start of DPCR6 should conditions allow. However, it does mean that the DNOs (or consumers) can expect varying degrees of protection from the trigger mechanism depending on whether the notional debt is "raised" early or late in DPCR5. To the extent that the DNOs expect the current market conditions to persist, this might encourage them to bring forward their capex plans and thereby increase the new notional debt which is subject to the trigger early in the price control period. Based on our conversations with Ofgem, we understand that the DNOs' ability to do so at this stage of the process is likely to be limited.

5.3.6 Symmetric or asymmetric trigger?

A symmetric trigger may be perceived as being fairer and better meeting Ofgem's duty to protect consumers: why should consumers be responsible for safeguarding the DNOs' financeability at the times when the CoD is high without sharing in the gains when it is low? As we discussed in Section 5.3.1, the upper limit of the tolerance band could be set with reference to the DNOs' credit ratios. The lower limit could be made symmetric around the allowed CoD²¹.

The key implication of choosing a symmetric trigger for the DNOs' incentives is that it encourages them to take on floating rate debt. To illustrate why this happens, consider two scenarios. First, if a DNO were to issue fixed rate debt and the market CoD were then to decrease, then it would be left with higher interest repayments than it would have incurred had it issued floating rate debt instead – an opportunity cost. The

²¹ If the upper limit of the tolerance band is X% above the allowed CoD, then the lower limit would be X% below the allowed CoD. It is important to validate through modelling and scenario analysis that the lower CoD allowance which would result if the trigger were breached when the market CoD declines would not put pressure on the DNOs' financeability ratios.

implied cost to the DNO would increase even further if it were subject to a debt trigger which then resulted in lower allowed revenues. Second, if the DNO issued fixed rate debt and subsequently the market CoD increased then it would benefit from below-market interest payments. If the DNO was subject to a CoD trigger then it would also benefit from higher allowed revenues as a result. In other words, presence of a debt trigger amplifies the risks and opportunities of issuing fixed-rate debt. Under a symmetric CoD trigger mechanism, a risk averse-DNO would therefore tend to prefer the less risky floating rate debt.

An asymmetric trigger would respond either to upward or to downward movements in the CoD. Given the recent credit market conditions and Ofgem's concerns for the DNOs financeability, considering a trigger which is asymmetric upwards seems more relevant. An asymmetric trigger may also potentially alter incentives to issue fixed as opposed to floating rate debt. Consider a company which issues fixed rate debt. In the event that the market CoD rises, the DNO benefits from paying below-market rate interest payments. A debt trigger would increase the upside even further, since the DNO may also benefit from higher allowed revenues. The opportunity costs incurred in the event that the market CoD declines are not affected by the presence of a trigger mechanism. An asymmetric trigger mechanism would therefore tend to increase attractiveness of fixed-rate debt. At the same time, an asymmetric trigger makes issuing floating rate debt more attractive, since it effectively caps the losses that the DNOs can incur in the event of the CoD going up. The balance of these two effects is unclear *a priori* and the DNOs' propensity to issue fixed or floating debt would depend on their expectations of credit market conditions.

Notwithstanding this, the degree of distortion introduced by a symmetric or an asymmetric trigger into the DNOs' choice of debt instruments would also depend on other parameters of the trigger. For example, the wider the tolerance band, the less likely there would be any revenue adjustment and thus the smaller the bias introduced by the mechanism.

A bias towards floating rate debt introduced by a symmetric debt trigger mechanism should not necessarily be a cause for concern. If markets are efficient, then over the long term there should be no persistent differences between fixed and floating rate debt in terms of its attractiveness to issuers and investors. At any given point in time, the choice between issuing fixed and floating rate debt depends on the issuer's appetite for risk and its CoD expectations over the tenor of the bond or a loan relative to market expectations. It is not clear why the DNOs should be consistently better than the rest of the market at predicting the movements in the CoD or spotting the opportunities to issue debt on more attractive terms. If this argument holds then there is no particular reason why the bias towards floating rate debt should, over the long term, impact consumer prices.

The more important issued raised by considering the options around this parameter of the mechanism is that by introducing a trigger mechanism Ofgem will directly or indirectly affect the behaviour of the DNOs but not clearly in an optimally efficient way.

5.3.7 A model debt trigger mechanism

In this section we present a high level illustration of how a CoD trigger structured in the way described in Section 3.3 might work in practice. As discussed in Section 3.3, some parameters of the trigger (for example, the width of the tolerance band or the period of the tolerance breach required before the revenue adjustment is triggered) cannot be determined without considering empirical analysis and evidence of market behaviour. Accordingly, this illustration is based on a purely hypothetical scenario and trigger parameters. The mechanics of the trigger are illustrated in Figure 7 and below.

- 1. At the beginning of DPCR5, Ofgem sets a CoD allowance in line with its long-term view of credit market conditions CoD_a in Figure 7. At the same time, Ofgem specifies a symmetric tolerance band around the allowed CoD (CoD_a).
- 2. In our example, market conditions deteriorate significantly in the third year of the price control period and the CoD rises sharply and breaches the tolerance band.
- 3. The CoD remains consistently above the tolerance band beyond the "acceptable" duration of breach (pre-determined by Ofgem *ex-ante*, e.g. 6 months or more) such that the CoD adjustment

is triggered and a new allowance (CoD_b) is set for all notional incremental debt and notional refinanced debt from the point of first breach²².

- A new symmetric tolerance band is established around CoD_b (for simplicity, with the same width 4. as the original tolerance band).
- 5. In the fourth year the CoD increases again, breaching the new tolerance band and leading to another adjustment to the CoD allowance (CoD_c).
- At the end of DPCR5. Ofgem reassesses its view of what the long-run CoD is in light of the 6. market conditions over the course of DPCR% and prior periods, and a new CoD allowance is determined (CoD'_a) for the next price control period, DPCR 6.



Figure 7: Rising cost of debt scenario



Figure 8 illustrates which CoD allowance would be applied to which tranche of the notional debt portfolio over the course of DPCR5. At the beginning of the price control period, the company is presumed to have notional embedded debt (Em1 in Figure 8) equal to:

starting RAV x notional gearing x (1- % notional debt refinanced in DPCR5)²³

This notional embedded debt is subject to the initial CoD allowance (CoD_a) and the allowed CoD for this

²² Because the first breach was part way through the third year a pro-rata amount of the incremental and refinanced debt in that year is logged up to the start of the next price control period applying the revised cost of debt. ²³ Notional debt refinanced in DPCR5 = (RAV) x (notional gearing) x 1/(average asset life) x 5.

portion of notional debt does not change irrespective of the movements in the debt markets in DPCR5.

In each year of the price control period two elements of "new" notional debt are subject to the CoD trigger:

- 1. Notional debt on incremental investment in the RAV (Ic_n), calculated as the product of capex in that year and notional gearing.
- 2. A refinancing allowance (Rf_n), equal to starting (RAV) x (notional gearing) x 1 / (average asset life).

Until the debt trigger is activated, this "new" notional debt remains subject to the initial CoD allowance (CoD_a).





I		
	Em₁ Rfn ICn Em₂	Embedded debt at start of DPCR5 not due to be refinanced in period Notional debt refinanced in period Incremental notional debt raised in n th year of price control Embedded debt at start of DPCR6 not due to be refinanced in period
		Notional embedded debt – CoD allowance calculated on the basis of \ensuremath{CoD}_a
		Notional Incremental debt and refinanced debt in Year 4 – CoD allowance calculated on the basis of $\text{CoD}_{\rm b}$
		Notional incremental debt and refinanced debt in year 5 – CoD allowance calculated on the basis of ${\rm CoD}_{\rm c}$
		Notional embedded debt in DPCR6 plus notional incremental and refinanced (until trigger breached subsequently) – CoD allowance calculated on the basis of CoD' _a

Source: PwC analysis

Once the CoD trigger is activated all subsequent "new" debt is affected. In this example, CoD_b applies to all "new" debt in Year 4 (Ic₄ and Rf₄ in Figure 8) as well as the *pro-rated* portion of "new" notional debt "raised" in Year 3. Similarly, because CoD_c is triggered part way through the fourth year the new higher allowance applies to all debt deemed "new" in Year 5 (Ic₅ and Rf₅) and a portion of Year 4 "new" notional debt. Note that the revised CoD allowances do not apply retrospectively to any other notional debt "raised" earlier in the price control period.

If Ofgem were to choose to retain the debt trigger mechanism for the following price control period, then at the end of DPCR5 all notional debt (except a portion of it that is "refinanced" in DPCR6) becomes embedded and subject to the new CoD'_a allowance and associated tolerance band.

5.4 Designing a substantial effect clause

In this section we briefly outline the variants of the substantial effect clause already in place in the UK water and rail sectors. We also discuss the key principles that should form the basis of the substantial effect clause were it to be introduced into the DNOs' licenses.

5.4.1 Precedence

England and Wales water sector

The substantial effect clause (also known as the "shipwreck" clause), included in the England and Wales water companies' licences, allows the regulator (Ofwat) to reset the regulated prices between the periodic price control reviews if there is a substantial change in a company's circumstances. In particular, a water company (or Ofwat) may request a re-opener if the company:

- suffers a substantial adverse effect which could not have been avoided by prudent management action; or
- enjoys a substantial favourable effect which is not attributable to prudent management action.

"Substantial" is quantified as an effect of at least 20% of the previous year's turnover. This is calculated as the Net Present Value (NPV) of the change in operating costs (or revenue losses) measured over a 15-year period and the NPV of the change in capital costs in the five years of the price control²⁴. What constitutes "prudent management action" is assessed by Ofwat with reference to the circumstances which were known or which ought reasonably to have been expected by the company at the relevant time.

Satisfying the 20% materiality threshold does not guarantee a re-opener: the "shipwreck" clause in the water companies' licenses confers substantial flexibility and discretion on Ofwat to consider what, if any, change in a company's price limits it needs to make when the substantial effect conditions are met. For example, in its most recent decision on a substantial effect clause application, Ofwat took a holistic approach to assessing the need for a re-opener and rejected the request arguing that cost increases, though "substantial", did not impact the applicant company's overall ability to finance its operations²⁵. Ofwat has argued that this approach is consistent with its duty to ensure financeability of water companies while protecting the interests of consumers.

The water industry substantial effect clause is symmetric²⁶. It allows Ofwat to claw back any substantial unexpected cost savings which are not attributable to prudent management. It also allows consideration of cost increases net of any savings. However, so far Ofwat has not used the clause to reduce, rather than increase, the regulated prices relative to the levels agreed at the time of the price control.

²⁴ The percentage threshold is calculated with reference to the water companies' revenues in part because originally the regulatory settlement was set with reference to prices. This left the water companies exposed to demand risk and therefore left open the possibility of under-recovery in terms of revenues relative to the regulator's assumption.

²⁵ Ofwat rejected the request for a re-opener by Sutton and East Surrey Water (SES) on the basis of a significant increase in electricity cost and a reduction in revenue, arguing that the company was still able to finance its functions until the next price review. SES's request for the re-opening of the price control was referred to the Competition Commission which has provisionally upheld Ofwat's decision.

²⁶ The symmetric substantial effect clause has been in all water companies' licenses since 2005.

There are no restrictions on when the water companies can request an interim price review under the substantial effect clause. Once a request has been received, Ofwat must make a decision within 3 months or refer it to the Competition Commission. If the company disputes the regulator's determination then it must refer the case to the Competition Commission within 4 months of making the reference or within 2 months of Ofwat having made its decision.

UK rail

The Office of the Rail Regulator (ORR) notes that its determinations are intended to provide Network Rail with a revenue stream that is sufficient for it to deliver all its regulatory outputs provided that it operates efficiently. It is not the intention, however, that the allowed revenues are sufficient to absorb significant external cost shocks or other material changes in circumstances. The ORR specifies four sets of circumstances when an interim review may be appropriate:

- 1. **Material change in circumstances**. A re-opener may be requested where there has been a material change in the circumstances of Network Rail and/or in relevant financial markets or any part of such markets.
- 2. **Unable to finance itself efficiently**. A re-opener may be requested by Network Rail at the point at which it is unable, or expects to be unable, to finance itself efficiently over the next 18 months.
- 3. Quantified financeability metric. Network Rail may request a re-opener if an externally verified forward-looking average adjusted interest cover ratio (AICR) in any "review period" is less than or equal to a specified multiple (1.4x). The "review period" is defined as either the period of three years from the point at which the interim review is requested or the remainder of the price control period, whichever is shorter.
- 4. **Expenditure limit Scotland only**. This re-opener may be requested where Network Rail projects its forward three-year average total net expenditure in Scotland to be more than 15% greater than that assumed in the regulatory determination. If triggered, the review process applies to Scotland only²⁷.

Unlike the "shipwreck" clause in the water sector, these provisions are asymmetric in that they focus only on the potential adverse effects on Network Rail and do not give the regulator the option to intervene in the event of substantial favourable changes in circumstances.

If Network Rail believes that it has satisfied conditions for one or more of the re-opener provisions, then it may submit a request for an interim determination to the ORR. Among other things, Network Rail is expected to submit evidence on the extent to which its efficient costs have been impacted and the actions it has taken to mitigate the adverse changes in its circumstances.

Upon receiving a request for a re-opener, the ORR will consider the evidence submitted before it and assess whether an interim review is necessary and appropriate in light of its regulatory duties (in particular its duties to promote efficiency and economy, to protect the interests of consumers and to act in a manner which will not render it unduly difficult for Network Rail to finance its activities). The ORR is committed to deciding whether a re-opener is appropriate in no more than two months (the "initiation stage"). If an interim review is undertaken then the terms of the new settlement should be finalised within 9 months of completing the initiation stage.

The interim review provisions used by the ORR embody a whole range of potential intervention options. These differ significantly in terms of the balance they strike between being non-specific and therefore allowing the ORR to step in under a broad array of circumstances, and being prescriptive and transparent to all stakeholders:

1. Material change in circumstances re-opener provision: this is very vague about the types of adverse circumstances and magnitude of their impact which may be expected to lead to an

²⁷ ORR: *Procedural approach to conducting an interim review in CP4*, December 2008.

interim determination. Given the lack of clarity, this provision may therefore offer limited comfort to Network Rail's investors and other stakeholders. The key drawback of this provision is also its main advantage – it is very flexible and can be invoked in a wide range of unforeseen scenarios.

- 2. Unable to finance itself efficiently re-opener: this makes an explicit reference to Network Rail's ability to finance itself but again does not specify any thresholds (for example, in terms of cashflow ratios) which must be met before an interim review may be appropriate.
- 3. Quantified financeability metric: this is more detailed than Provisions 1 and 2 in terms of the magnitude of the adverse effect required before a re-opener can be requested. As such, it sends a clear message to Network Rail, its investors and other stakeholders about the conditions under which ORR may intervene and the type of evidence that should be submitted in support of a re-opener request. However, it focuses on a single credit ratio which may not, under certain circumstances, act as a suitable indicator of Network Rail's impending difficulties. In such a case a broader assessment of the changing circumstances may be more appropriate.
- 4. Expenditure limit Scotland only: this does not explicitly address financeability although it may indirectly. This could be considered more as a parameter in the substantial effect test.

Recognising the pros and cons of various approaches to re-opening the price control, the ORR has chosen to adopt a range of different provisions and allow Network Rail to apply for an interim determination under one or more provisions.

5.4.2 Discussion of key principles

Any substantial effect clause introduced into the DNOs' licenses would need to address the following questions clearly:

- Under what circumstances would the clause result in the re-opening of the price control?
- What are the procedures for assessing the DNOs' requests for re-openers: when can the requests be lodged, how quickly can the companies expect a decision from the regulator and what are the procedures for resolving disputes?
- What principled actions would be taken if the referral was upheld?

In designing a substantial effect clause which addresses these questions, Ofgem would need to find a balance between making the clause sufficiently prescriptive to ensure that the DNOs would have clarity around when and how it may be expected to operate while leaving sufficient flexibility to allow the regulator to intervene in a range of unforeseen circumstances.

When would an interim review be appropriate?

In our view, the substantial effect clause should explicitly quantify (at least indicatively) what constitutes a "material" change in circumstances that would lead Ofgem to consider re-opening the price control. Given the nature of Ofgem's concerns which have led it to consider the introduction of a formal mechanism for dealing with CoD fluctuations, we expect that the substantial effect clause would only be operated *in extremis*, such as when unanticipated shocks threaten the DNOs' ability to finance their obligations. As such, we would expect Ofgem's materiality test to reference a notionally geared DNO's financeability. Broadly speaking, there are two approaches to defining materiality:

- 1. Estimate the NPV impact of the change relative to the DNOs' revenues or their RAVs.
- 2. Explicitly specify a set of thresholds based on the DNOs credit ratios which would typically be used by rating agencies to assess financeability or credit worthiness.

The choice of the "trigger" event for the substantial effect clause should be informed through empirical analysis.

We envisage that if the conditions specified in the "shipwreck" clause were met, the DNOs would be given

an *opportunity* to request a re-opener. In other words, meeting the thresholds would result in a review by the regulator of the circumstances of the case rather than an automatic interim determination. In assessing the DNOs' requests we would expect Ofgem to adopt the same approach and assumptions as in setting the initial price allowance (for example, notional gearing and prudent management).

In our view and in line with the approach adopted by Ofwat²⁸, the trigger for an interim review implicit in the substantial effect clause should focus on the change in the DNOs' circumstances (for example, credit market conditions) over a continuous period of time rather than at a particular discrete event. This would ensure that interim reviews, which are typically disruptive and time-consuming for both the DNOs and the regulator, are not triggered by one-off shocks which may be expected to unwind later in the price control period. Consequently, if an Ofwat-style threshold is adopted which attempts to specify an absolute amount of the impact of a shock then it should do so in NPV terms. If, instead, the substantial effect clause is defined in terms of the impact of a shock on the DNOs' financeability and specifically their credit ratios (akin to the ORR's financeability metric), then the threshold credit ratios should be defined in terms of their averages over a period of time.

Further, we believe that the substantial effect clause should be made symmetric and allow for the price control to be re-opened at the request of Ofgem (and possibly electricity customers) in the event that a DNO experiences a substantial favourable effect which cannot be attributed to prudent management. This would be consistent with Ofgem's duty to further consumer interests.

Case-making and determination

It should be to the responsibility of the DNOs to present robust evidence in support of any request for an interim determination. The company should also be obliged to include, with supporting justification, their view as to the appropriate remedial action.

Ofgem should clearly indicate how long it would expect to need to consider the evidence. The period should be sufficiently long to allow Ofgem to examine the evidence and undertake its own analysis but short enough to allow for a timely intervention. In the water sector the requests based on the substantial effects clause take three months to consider and we are not aware of any feedback from the regulated companies, their investors or other stakeholders to suggest that this was perceived as unduly long or short. However, we are aware that one respondent to the ORR's Periodic Review consultation commented that a two-month period to decide whether a re-opener is appropriate (albeit without deciding what steps should be taken to remedy the substantial change) may be too short to allow adequate consultation with stakeholders. On balance, a three-month decision period on whether a re-opener is appropriate followed by a subsequent three-month period to determine the corresponding remedy (e.g. revenue adjustment or de-scoping of companies' regulatory targets) appears appropriate.

In our view, there should be no restrictions in terms of when the DNOs would be allowed to make an application under the substantial effect clause (for example, six months before the start of the financial year when the requested revenue adjustment is due to come into effect). By design, the substantial effect clause is only supposed to be relied on in extreme circumstances and the requirement to make a submission by a certain date may delay a much-needed intervention and potentially undermine the DNOs' ability to finance their obligations.

Once Ofgem takes its decision on the re-opener, in the event that a DNO were not satisfied with the regulator's decision, it should be given an opportunity to appeal that decision within a specified timeframe to the Competition Commission.

5.4.3 Substantial effect clause - key principles

In summary, our view on the key principles to be adopted when designing a substantial effect clause is as follows:

• The substantial effect clause should only be operated *in extremis* when unanticipated shocks threaten

²⁸ And by the ORR in its Network Rail financeability re-opener, quantified re-opener and Scotland re-opener provisions. These three provisions specify thresholds with reference to a continuous period of time rather than a discrete point in time.

the DNOs' ability to finance their obligations;

- It should focus on the change in the DNOs' circumstances over a continuous/sustained period of time;
- The clause should be symmetric;
- There should be a maximum three-month decision period on whether a re-opener is appropriate followed by a subsequent maximum three-month period to determine the corresponding remedy;
- Clear guidance on how long Ofgem would take to consider applications under the substantial effect clause should be given;
- There should be no restrictions on when the DNOs can request a re-opener under the clause; and
- The DNOs should be given an opportunity to appeal Ofgem's decisions to the Competition Commission.

5.5 Comparing the options

Key

 $\checkmark\checkmark\checkmark\checkmark\sim$ x xx

Diminishing appropriateness

		Consumer benefit	Incentivisation	Complexity	Transparency	Targeted approach	Proportionality	Consistency
Option		Does the mechanism benefit the consumer (risk v. prices)?	Does the mechanism preserve the DNOs' incentives?	Simple and user friendly approach?	Clear when/how the regulator is likely to intervene?	Does the mechanism apply when an intervention is needed?	Is intervention proportionate to the issue?	Does the mechanism align with the broader reg. framework and its previous application?
Option 1	Continue with the existing approach	✓✓ DNOs retain most of the CoD risk.	✓✓ Single RPI – X cap for 5 years encourages DNOs to operate efficiently.	✓ ✓ No incremental changes to the existing framework.	★★ Currently not entirely clear when a disapplication request may be appropriate or what intervention can be expected if it is approved.	~ Unclear as disapplication mechanism remains untested.	~ Unclear as disapplication mechanism remains untested.	✓ ✓ There is no change from the existing regime.
Option 1*	Option 1 + disapplication clause review	✓✓ DNOs retain most of the CoD risk.	✓✓ Single RPI – X cap for 5 years encourages DNOs to operate efficiently.	Vo incremental change to existing framework, rather a clarification of existing approach.	✓ Explicit thresholds should ensure clarity. Residual uncertainty remains since disapplication leads to a review by Ofgem rather than a mechanistic adjustment.	Focus on financeability – DNOs can expect an intervention if their financeability is jeopardised by unexpected changes in circumstances.	✓ Implicitly results in re- opening of whole price control rather than a discrete adjustment.	VV DNOs retain most of the CoD risk. Existing disapplication clauses are amended instead of introducing a new and untested mechanism.

		Consumer benefit	Incentivisation	Complexity	Transparency	Targeted approach	Proportionality	Consistency
Option 2	Introduce CoD headroom	x x DNOs retain most of the CoD risk but higher headroom = higher prices for consumers.	✓ Single RPI – X cap for 5 years encourages DNOs to operate efficiently. Greater headroom may dampen management incentives.	✓✓ No complex new mechanisms are put in place.	X X Option 2 assumes no changes to the disapplication clauses. It is not clear how and when these may be expected to apply.	~ Unclear as disapplication mechanism remains untested.	X Not proportional since the headroom may not be needed ex- post.	x x Focus on short-term credit market conditions. Imposes a cost on consumers.
Option 3	CoD trigger mechanism	✓ DNOs retain most of the CoD risk. However, there is a risk that the trigger may be breached when financeability is not affected, resulting in higher prices for consumers.	~ Mechanism remains untested. May result in unintended adverse effects on DNOs incentives (e.g. financing, timing of capex etc).	 ×× Decisions need to be made on the appropriate CoD benchmark, what debt is subject to the trigger Some decisions are likely to be somewhat arbitrary. 	✓✓ Transparent - mechanistic adjustment to the revenue allowance once the trigger is breached.	✓ Given subjectivity in design, potentially the mechanism may not provide sufficient protection.	✓ Sole focus on the CoD. Potentially an adjustment to the CoD allowance may triggered even if financeability is not threatened	~ Approach to setting CoD allowance is retained. However a significantly different approach to the existing disapplication clauses. A step away from taking a holistic approach to assess financeability.
Option 4	Substantial effect clause	 ✓ ✓ DNOs retain most of the CoD risk. 	 ✓ ✓ Single RPI – X cap for 5 years encourages DNOs to operate efficiently. 	✓ Introduction of additional license condition and new, untested mechanism. Subject to design could introduce complexity around calculating materiality.	✓ Explicit thresholds should ensure clarity. Residual uncertainty remains since disapplication leads to a review by Ofgem rather than a mechanistic adjustment.	Focus on financeability – DNOs can expect an intervention if their financeability is jeopardised by unexpected changes in circumstances.	 ✓✓ Focus on financeability – DNOs can expect a review only if their financeability is threatened. 	 ✓✓ In spirit, the substantial effect clause is similar to the disapplication clause already in place. Similar arrangements are already in place in Water and rail sectors in the UK.

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