

## Transmission Price Control Review: Initial Proposals

'Measuring risk and accounting for tax'

On behalf of:

BG Group  
BP Gas Marketing  
Centrica,  
Centrica Storage  
Shell Gas Direct Ltd  
Statoil

### 1. Introduction

The above shippers support this contribution to Ofgem's consultation in respect of the 'Transmission Price Control Review: Initial Proposals' and are happy for this non-confidential response to be placed in the Ofgem library. The analysis in this response, whilst in part dependent on information relating to National Grid (NG) at a group level, relates to National Grid Gas (NGG). However, the principles in this response are equally applicable to electricity transmission in Great Britain.

The cost of capital is one of the most important factors that regulators and companies have to estimate. Regulated transmission companies have asset bases valued in their £billions and therefore a small change in the allowed return can have a significant impact on customers' bills. We have seen, during the TPCR debate, arguments presented by NG which propose that allowed returns on a fully post-tax basis should be as high as 4.8% real post tax WACC and we note that Ofgem has adopted a working assumption of 4.2% post tax. We believe that both of these may be excessive and the assumptions that underpin such analysis do not reflect a central view of the current evidence.

This response focuses on two key financial issues which have a significant impact on the appropriate level of return that transmission companies should be allowed in the forthcoming control period; the first is measuring risk and the second is tax.

Whilst we acknowledge that both these may have a significant impact on the allowed return the regulators deem appropriate, this response does not set out to propose an actual cost of capital but only aims to provide observations and comments which will inform this element of the control. We believe that the issue of returns that reflect an appropriate balance of risk and reward is one for Ofgem to determine.

To preface our response, a key principle we adhere to is that of regulatory consistency. In particular we believe that consistency in the way common

components, which are used in determining allowed returns, are measured is essential in minimising regulatory risk. However, it should be recognised that consistency of approach does not necessarily provide consistency of results.

With regard to measuring risk, we believe that Ofgem should reflect investors' expectations that network companies are low risk investments and with respect to tax, we believe that Ofgem should not adopt an approach that, in effect, will result in customers paying tax twice.

First we outline our views on risk and then we outline our concerns regarding Ofgem's approach to tax.

## **2. Risk**

With regard to risk, we first looked at the historical market evidence and in particular the beta parameter of NG and then considered the issues which inform investors on risk and attempt to quantify how these might impact future expectations.

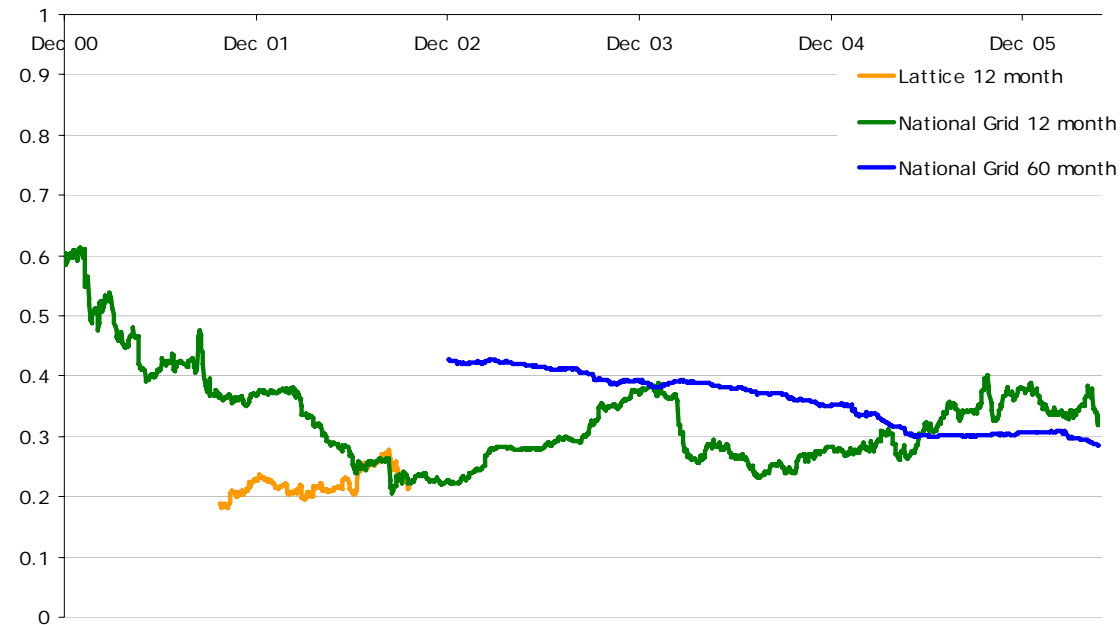
Beta is an asset market risk parameter and is a measure of covariance between the returns on a stock and the overall market portfolio, represented by a stock market index such as the FTSE All Share. It is calculated using historical data taken over a year or more. The beta measures the relative sensitivity of the market's valuations of a stock, compared to the overall market, to new information that came to the market in the past. It is therefore an indicator of the market's perception of relative exposure to market risk. The central insight of the capital asset pricing model is that it is only market-covariant risk that requires a risk premium. Other risk is, by definition, diversified away in a market portfolio and an investor cannot expect an additional premium for such risk – any expectations of an additional premium have to be disappointed, on average.

### **2.1 Historical evidence**

We have reviewed NG beta statistics provided by the London Business School's Risk Management Service and calculations carried out by Ian Rowson, presented in the TPCR workshop on 5 July 2006. The following graph is particularly revealing:

**Figure 1**

Daily asset beta values



Source data: Perfect Information, Lattice and NG accounts & preliminary results, NG press releases; calculations: IMR

It shows that the one year asset beta statistic has remained below 0.4 continuously for over five years. The figure of 0.4 is equivalent to an equity beta of 1.0 at a gearing level of 60%. A central estimate of 0.3 translates to an equity beta of 0.75 at a gearing level of 60%. This marked difference represents a very substantial cost impact for users.

The initial proposals included a cost of equity assumption of 7.0%, equal to Ofgem's estimate of the total market return of 7.0%, "based on evidence that the long term arithmetic average of total equity market returns is between 6.5% and 7.5%". Although this implies an equity beta of 1.0, we recognise that Ofgem included a beta estimate of 0.9 in its table 9.2 presentation of the cost of capital. We welcome this acknowledgement that the beta for a transmission business is liable to be less than one.

## 2.2 Is it reasonable to use the past to predict the future?

We recognise that the past is not necessarily a reliable predictor for the future. The beta statistic reflects the responses of investors to new information, responses which are informed by perceptions about the business and regulation of NG and hence NGG. Perceptions can change – in particular if new information, perhaps from the regulator, sheds new light on the business and regulation of NG. In order to be confident that the past is, indeed, a fair reflection of the future, we would need to be confident that investors' perceptions of the low risk character of NG are reasonable and are likely to be robust to new information, whether revealed by the TPCR process itself or otherwise.

We have therefore looked at the nature of risks that would have an impact on the prospects for investor cash flows for transmission companies, specifically for NGG:

- Demand risks
- Cost risks, including opex, capex and pensions
- Regulatory risks

We considered these risk areas in the light of NGG's monopoly status and its regulatory regime, with especially careful consideration of the effects of the arrangements for releasing new entry and offtake capacity. Our analysis can only be conceptual, but we concluded that NGG is substantially protected from the sort of demand risks that affect the generality of companies on the stock market. It is exposed to relatively little demand volatility in any event and is substantially protected from the direct consequences of demand uncertainty through the operation of the price control and user commitment regimes. The company is significantly less exposed to operating cost risks than most companies on account of its cost structure. The company is exposed to some risks in capital expenditure, which is a very significant activity for NGG, but we were unclear as to why there should be a significant component of systematic risk in capital expenditure costs. We considered that, in some respects, NGG may benefit from counter-cyclical effects as a major purchaser from the construction industry.

We were however struck by the importance of regulatory risk. We recognised that there might have been scope for the regulator to be influenced by levels of profitability in the generality of companies in the market, for example a fall in market profitability leading to regulatory expectations of reduced returns for price controlled companies, which could have led to a systematic component of regulatory risk. However, we consider that progressively increasing clarity in the methodologies used by regulators to determine the cost of capital means that this possibility, if it existed in the past, is now limited.

### **2.3 Further risks**

The importance of regulation in risk goes beyond beta. As users, we are concerned that there is scope for significant asymmetries in the regulatory regime. There is, of course, scope for unintended bias in regulatory judgements, as there is scope for bias in the way the company presents information. There is scope for undue weight to be given to base case or centre-line estimates without careful consideration of asymmetric risks either side of those estimates. There is also scope for the design of the regime itself to build in asymmetry, for example penalty-only mechanisms such as one-sided ex post disallowances for expenditure considered to be inefficiently incurred.

It would seem that there are significant risk issues that could have the effect of changing the perception of risk and the allowance for profits that would be acceptable to investors. These risk issues may need to be considered carefully, and preferably analysed transparently, before reaching a final conclusion on the allowance for the cost of capital. We believe the cost of capital allowance could be presented in two components: the base cost of capital and a further adjustment for asymmetry. In this way, Ofgem can transparently focus on minimising the latter.

### 3. Tax

We are concerned about some of the implications of the policy change to a post-tax definition of the cost of capital (i.e. exclusion of tax costs from the cost of capital measure, and allow for projected tax payments) at a time when tax payments are projected to increase. The immediate effect is illustrated in the following presentation of the required revenue calculation in the Initial Proposals:

**Figure 2**  
**NGG NTS:**

<i><b>Required revenues per initial proposals</b></i> <i>(averages weighted by discount factor)</i>	<i>Post-tax</i> <i>£m</i>	<i>Pre-tax</i> <i>£m</i>
Required IRR	4.84%	6.72%
Equivalent accounting return	4.73%	6.51%
Average RAV	3,167.3	3,166.6
Rate of return on average RAV	4.73%	6.51%
Allowed return	149.7	206.0
Opex	161.4	161.4
Depreciation	103.7	103.6
Tax allowance (after tax shelter)	56.2	0.0
Unknown rounding and methodology errors	0.0	0.0
Total allowed revenues	471.1	471.1

*NB: averages are affected by discount rates used*

*Source: Ofgem Initial Proposals, IMR calculations*

The calculation in figure 2 above shows that Ofgem is proposing a pre-tax return of some 6.72%, a significant increase on both the pre-tax return allowed for at the last review and the headline Ofgem calculation of a pre-tax return of 6.0%. The implied rate of tax in Ofgem's proposals, before tax shelter, is about 43.6% (see the Appendix to this note).

We understand the reasons for an increase in tax payments, arising from changes in the tax allowances for expenditure treated as revenue expenditure for tax purposes but as capital expenditure for accounts and regulatory purposes.

However, we are concerned that Ofgem proposes, in effect, simply to ask users to pay twice for tax. This is explained further below.

Tax payments have gone up because the company is receiving revenue for depreciation on old assets (capitalised revenue expenditure), but is not getting tax relief on that depreciation. The reason it is not getting tax relief on that depreciation is because it has already received tax relief in full for the expenditure when it was incurred. The company was able, in this way, to defer its tax liabilities on its profits, tax that customers have paid for through the tax wedge in the pre-tax profits allowance at previous reviews. The company would have recognised deferred tax liabilities and those liabilities are, in effect, now unwinding.

We include in an appendix to this note a more detailed analysis of the interaction between tax and the cost of capital measured on a real-terms basis. The analysis indicates that the underlying rate of tax on real profits may be close to the headline rate of 30%. It also indicates that, taking all years together, the value of tax payments in excess of the headline rate of tax going forward is liable to be smaller than the value of reduced tax payments, made by NGG in the past. On a cash basis, the company has been paying less tax than its cost of capital allowance, in effect, under-funding its tax liabilities, and now appears to be required to reverse some of that under-funding.

There are a number of approaches to address tax issues.

One approach, is to disregard the previous under-funding of tax and to fully allow for an estimate of the future tax liabilities, i.e. along the lines of the approach proposed in the Initial Proposals document. However, this would appear to ignore the inequity of requiring customers to pay for tax twice.

A second approach relies on an analysis that indicates that the transitional costs associated with a change from one tax treatment to another may represent no more than the effective unwinding of deferred tax payments, payment of tax that has already been charged to customers. Additionally, that the enterprise tax rate of 38.25% calculated is equivalent to our prudent long term estimate of the overall tax rate. In this case, using an equity beta of 0.75 in line with the central estimate would produce a cost of capital for NGG of 5.33% pre-tax. This compares with the 6.72% with a tax rate of 43.6% apparent from Ofgem's proposals. However, as the approach relies on a series of estimates of tax, including the historical under-funding of tax broadly cancelling out the transitional effects of a change in tax treatment, it may mean that the vanilla post-tax approach may not be capable of being introduced at this time.

A third approach would be to adjust the proposed tax rates to reflect the accumulated over or under funding of tax calculated for the date of moving to the revised cost of capital methodology. The benefit of this approach is that it would

be less reliant on estimates, would allow the move to a vanilla post tax approach and the benefits that that would bring, as well as ensuring that customers did not pay for the same tax twice. The reversal of previous under funding, in this respect, is consistent with Ofgem's proposed treatment of pensions.

## 4. Overall conclusions

### 4.1 Risk

We consider that the underlying cost of capital for NGG, on a comparable basis to the headline Ofgem calculations, is likely to be close to 5.3% pre-tax, as calculated in the following table<sup>1</sup>.

**Figure 3**

**WACC estimate: adjustment for beta = 0.75**

*Based on Ofgem TPCR initial proposals*

	<u>Equity beta = 1</u>	<u>Equity beta = 0.75</u>	
<b>Gearing</b>	60.00%	60.00%	
<b>Cost of debt</b>			
Pre-tax cost of debt	3.40%	3.40%	
Headline rate	30.00%	30.00%	
Post-tax real cost of debt	2.38%	2.38%	
<b>Cost of equity</b>			
Post-tax MRP	5.00%	5.00%	
Equity beta	1.000	0.750	
Risk premium	5.00%	3.75%	
Risk-free rate	2.00%	2.00%	
Post-tax cost of equity	7.00%	5.75%	
<b>Vanilla post-tax</b> (pre-tax debt)	4.84%	4.34%	Vanilla post-tax
<b>WACCs</b>			
Post-tax WACC	4.23%	3.73%	Full post-tax
Effective enterprise tax rate	30.00%	30.00%	
Pre-tax enterprise WACC	<b>6.04%</b>	<b>5.33%</b>	Pre-tax cost of capital

*Source: IMR calculations*

We recognise that there are complex issues relating to risk that Ofgem should analyse carefully before reaching a final conclusion on the allowance. Additionally, Ofgem needs to balance the funding issues for tax with the need to avoid double charging users. Our pre-tax cost of capital estimate of about 5.3% is therefore not intended to be a proposal for use directly in the required revenue

<sup>1</sup> All the cost of capital calculations interpret Ofgem's cost of capital estimate on the basis of information in the text of the Initial Proposals rather than information in table 9.2. In particular, the text indicates an assumption for the total market return of 7.0%, equal to the assumed cost of equity and thus implying an equity beta of 1.0. Table 9.2 indicates a beta of 0.9, although with a different assumption for the total market return. We have assumed, for illustration, that Ofgem's total market return assumption of 7.0% is made up of a risk-free rate of 2% and a market premium of 5.0%.

calculation but a reference point for a clearer analysis of the risk and return and before consideration of tax funding issues for NGG. Whilst we recognise that the Initial Proposals paper referenced an equity beta of 0.9, we believe that there is a strong case for the application of an equity beta significantly lower than 1.0, commensurate with the low risk of NGG.

#### **4.2 Tax**

We propose an adjustment to the proposed tax rates to reflect the accumulated over or under funding of tax calculated for the date of moving to the revised vanilla post tax approach. This will to ensure that customers do not pay for tax twice.



## Tax and the cost of capital

This appendix sets out analysis of the underlying real tax costs that would be incurred by a business such as NGG. It considers the relationship between the underlying tax costs and the real returns provided for in the cost of capital assessment. It recognises that the effective rate of tax on real returns is liable to be different, and structured differently, to the effective rate of tax on historical cost accounting profits. It analyses the real effective rate of tax for a business such as NGG experiencing a transition from one tax allowance method to another, considering the underlying (long term) cost of tax going forward, the value of tax payments deferred in the past from accelerated tax allowances and the value of additional, transitional, tax payments as the deferred tax unwinds. It concludes that the underlying (long term) effective rate of tax may not be any greater than the headline rate (30%) and that the value of transitional tax payments is unlikely to exceed the value of payments deferred in the past.

There are two factors that drive the effective rate of tax on a real return. These are:

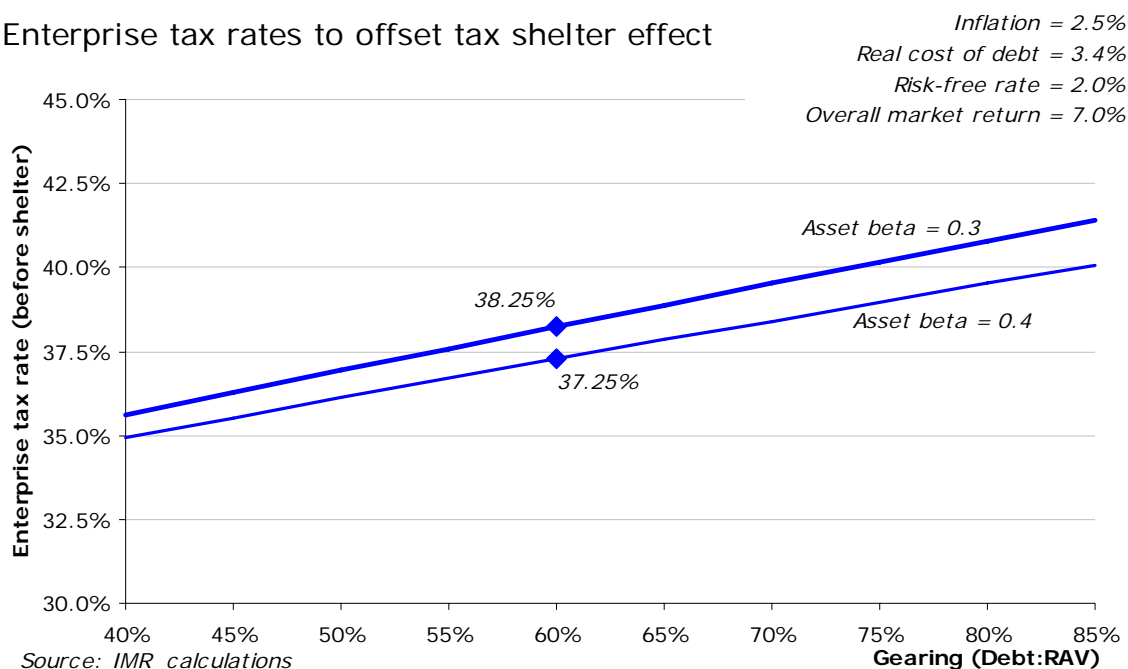
- the relationship between regulatory depreciation and allowances for capitalised expenditure (whether, in tax terms, capital expenditure or capitalised revenue expenditure)
- the effect of inflation on the tax shelter on debt interest.

The impact on the effective rate of tax of depreciation and capital allowances is well understood in statutory accounting terms. In real-terms, the relevant measure of depreciation is regulatory depreciation, which is indexed and will tend to be larger than historical cost accounting depreciation. This means that the effective rate of tax on regulatory profits, before interest, will be higher than it is on historical cost profits. The other side of this inflation coin is the tax shelter effect. A company benefits from a tax shelter not only on the real cost of debt but also on the inflation component of nominal interest. This will have an offsetting effect, reducing the effective rate of tax on real returns. The size of the effect will depend on the level of gearing.

The following chart shows the minimum effective tax rate for the enterprise, before tax shelter, that is needed to ensure that the overall tax rate on real returns remains at the headline rate (i.e. 30%) after taking account of the inflation effect on the tax shelter:

**Figure 4**

Enterprise tax rates to offset tax shelter effect



This shows that the effective rate of tax, at the enterprise level, needs to be close to 40% to raise the overall effective rate of tax beyond 30% at the levels of gearing projected for NGG.

The following calculations show

- the cost of capital on a comparable basis to the headline Ofgem calculations, where using an effective enterprise tax rate of 30% produces a pre-tax enterprise WACC of 6.04%;
- the effect of including inflation in the tax shelter calculation, whilst maintaining the pre-tax enterprise WACC at Ofgem's headline rate of 6.04%. This produces an effective enterprise tax rate of 37.25% identified in figure 4 above; and
- how when the analysis is amended to include the actual return from Ofgem's proposals, i.e. a proposed pre-tax return of 6.72%<sup>2</sup>, this indicates that the effective tax rate in Ofgem's proposals is 43.6%.

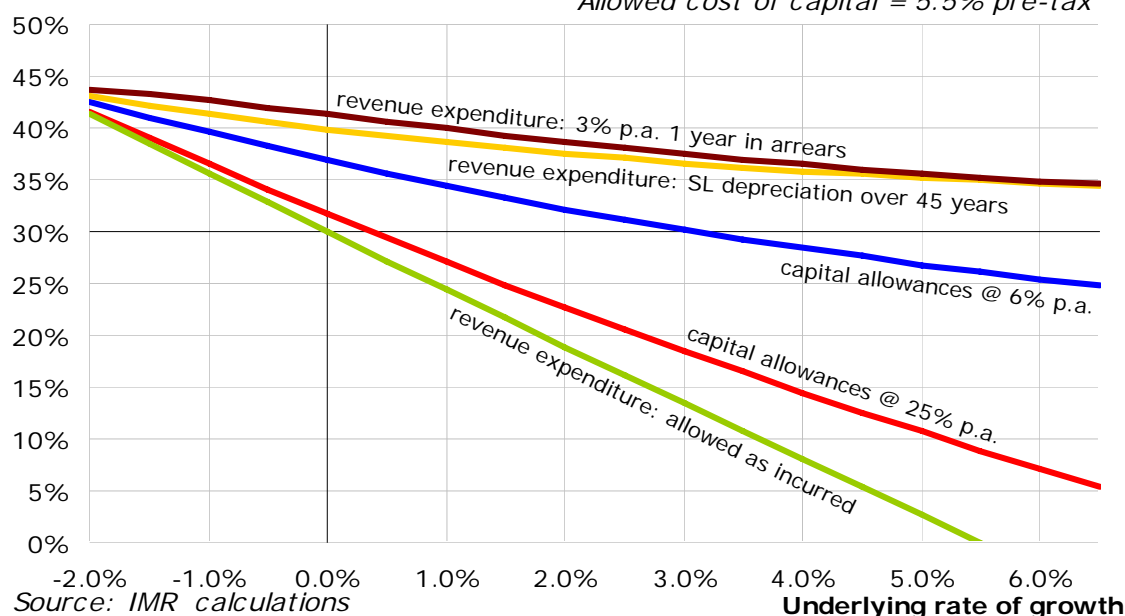
<sup>2</sup> From calculation in Figure 2, NGG NTS in section 3 of the main body of this response.

**Figure 5****WACC estimate: tax analysis***Based on Ofgem TPCR initial proposals*

	Equity beta = 1		
	No inflation headline tax	With inflation 37.25% 43.6% tax	
<b>Gearing</b>	60.00%	60.00%	60.00%
<b>Cost of debt</b>			
Pre-tax cost of debt	3.40%	3.40%	3.40%
Inflation		2.50%	2.50%
Nominal pre-tax cost of debt	3.40%	5.99%	5.99%
Headline rate	30.00%	30.00%	30.00%
Post-tax nominal cost of debt	2.38%	4.19%	4.19%
Inflation		2.50%	2.50%
Post-tax real cost of debt	2.38%	1.65%	1.65%
<b>Cost of equity</b>			
Post-tax MRP	5.00%	5.00%	5.00%
Equity beta	1.000	1.000	1.000
Risk premium	5.00%	5.00%	5.00%
Risk-free rate	2.00%	2.00%	2.00%
Post-tax cost of equity	7.00%	7.00%	7.00%
<b>Vanilla post-tax</b> (pre-tax debt)	4.84%	4.84%	4.84%
<b>WACCs</b>			
Post-tax WACC	4.23%	3.79%	3.79%
Effective enterprise tax rate	30.00%	37.25%	43.60%
Pre-tax enterprise WACC	<b>6.04%</b>	<b>6.04%</b>	<b>6.72%</b>

*Source: IMR calculations***What is the effective rate of tax?**

In the longer-run, the effective rate of tax should converge to reasonably stable levels, depending on prevailing inflation rates, depreciation rates, rates of growth in capitalised expenditure and the eligibility for different tax allowances. The following graph shows the longer-run effective rates under fairly central assumptions.

**Figure 6****Long-run effective tax rates***Before tax shelter on debt interest**Inflation = 2.5%**Regulatory depreciation = 45 years**Allowed cost of capital = 5.5% pre-tax*

A key insight from this graph is that, because tax allowances are given in nominal terms, a steady state in nominal terms (i.e. where negative real growth exactly cancels out the effects of inflation in nominal terms) would mean there is no longer-run distinction in the levels of different types of tax allowances. The graph therefore radiates out from a point of -2.5% growth, where growth cancels out inflation. It is nominal growth that causes systematic, longer-term, differences in the effects of different types of tax allowances. The effective rate is potentially higher than 30% because regulatory depreciation is indexed, while tax allowances are not, which means that tax profits (before interest) are liable to be higher than real-terms profits (returns).

In the longer-run, this graph suggests we would expect effective rates of tax (before tax shelter) to be between 30-40% for a modestly growing utility such as NG if it is not able to benefit significantly from the more accelerated allowances. In the absence of detailed information about NGG's projected tax calculations, around 38% would seem a prudent, long term, estimate of the overall tax rate.

In the shorter term, there could be rather more dramatic effects caused by changes in the balance between different types of tax allowances.

The tax position of NGG has changed markedly, due mainly to a new basis for giving tax allowances for deferred revenue expenditure since 2005, signalled in the 2001 Tax Bulletin Issue 53. The effect of this is to transform a significantly accelerated basis for tax allowances for a significant component of capitalised expenditure to a basis that reflects the company's own accounting. We do not

know how this has been modelled by Ofgem, but the recently published model for NGET suggests an assumption of allowances at 3% per annum one year in arrears.

The following chart shows the transition of the effective rate of tax payments (as a percent of regulatory profits) that would emerge from a steady growth business if there was a stark change from full allowance of capitalised expenditure in the year expenditure is incurred to an allowance of 3% one year in arrears. This shows a dramatic increase in the effective rate of tax to some 50% (for this one category of expenditure). However, it also shows that the company would have benefited significantly in previous years from a relatively low effective rate of tax.

**Figure 7**

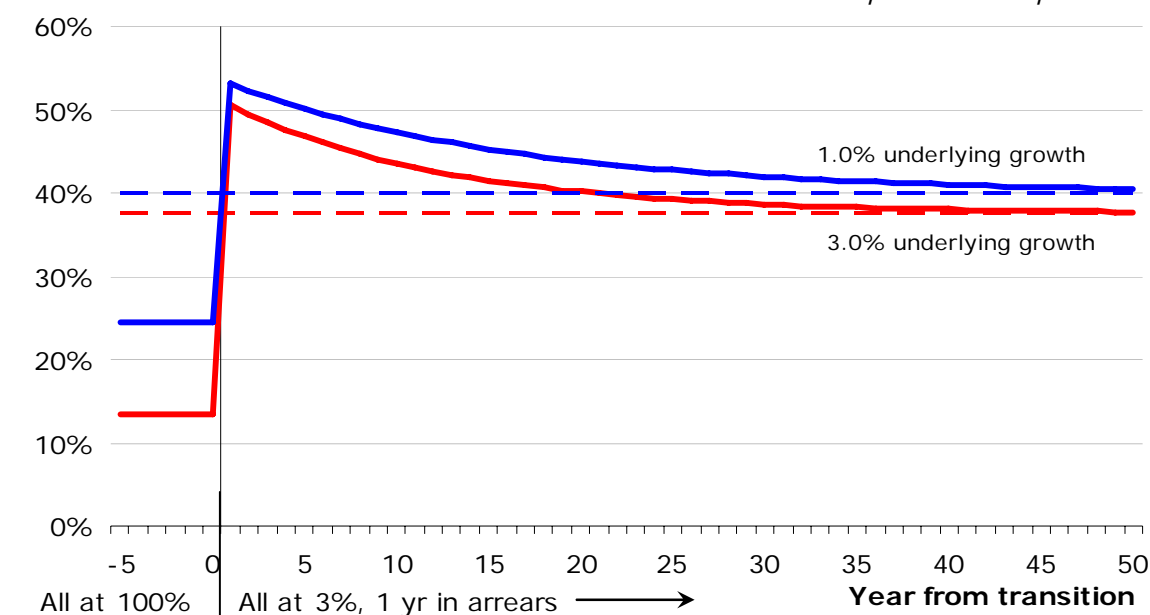
### Effective tax rates

*Before tax shelter on debt interest*

*Inflation = 2.5%*

*Asset lives = 45 years*

*Allowed cost of capital = 5.5% pre-tax*



*Source: IMR calculations*

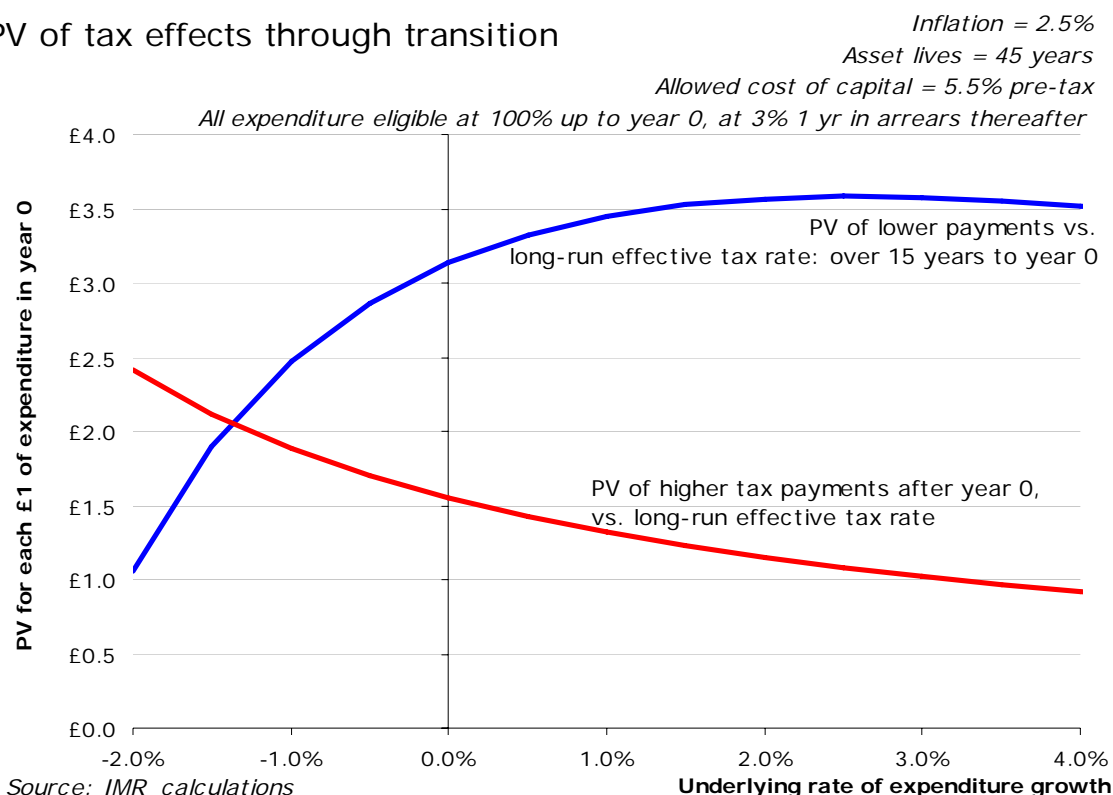
Figure 7 above helps distinguish between the **transitional** (short term) effects of a change in tax treatment – the areas above the dotted lines – and the **permanent** (long term) effect of the change – the difference between the solid and dotted lines to the left of the y-axis. The underlying effective rate of tax will have permanently increased, but not necessarily to a level that offsets the benefits of including the effects of the tax shelter on debt interest within the cost of capital calculations, as illustrated in figure 5 above.

The value of past tax benefits (the area between solid and dotted to the left of the axis) and of the exceptional extra rate of tax payments (the area between solid and dotted to the right of the axis), i.e. transitional effects, can be calculated,

assuming steady rates of growth. The following chart shows the effects for this one category of expenditure, calculated using a 100 year model:

**Figure 8**

PV of tax effects through transition



The graph shows that the transitional cost, the red line above (which values the area above the dotted lines in the previous graph), is liable to be lower than the value of reduced tax payments made over the period since privatisation. Even on an undiscounted basis, the difference is to the company's advantage at any level of growth greater than 2%.

It therefore appears that the transitional costs associated with a change from one tax treatment to another may represent no more than the effective unwinding of deferred tax payments, payments of tax that has already been charged to customers.

This analysis suggests that, depending on the balance of different expenditure categories, it could remain appropriate to assume an enterprise rate of tax within the range 30-40% taking all years together.

The following calculations show

- the cost of capital on a comparable basis to the headline Ofgem calculations, where using an effective enterprise tax rate of 30% produces a pre-tax enterprise WACC of 6.04%;

- the effect of using an equity beta of 0.75 producing a pre-tax WACC of 5.33%; and
- the effect of including inflation in the tax shelter calculation, whilst maintaining the pre-tax enterprise WACC at 5.33%. This indicates that the effective tax rate would be 38.25%, within the 30-40% longer term tax range noted above, and consistent with our prudent long term estimate of the overall tax rate.

**Figure 9****WACC estimate: tax analysis***Based on Ofgem TPCR initial proposals*

	Equity beta = 1	Equity beta = 0.75	
	No inflation headline tax	No inflation headline tax	With inflation 38.25% tax
<b>Gearing</b>	60.00%	60.00%	60.00%
<b>Cost of debt</b>			
Pre-tax cost of debt	3.40%	3.40%	3.40%
Inflation			2.50%
Nominal pre-tax cost of debt	3.40%	3.40%	5.99%
Headline rate	30.00%	30.00%	30.00%
Post-tax nominal cost of debt	2.38%	2.38%	4.19%
Inflation			2.50%
Post-tax real cost of debt	2.38%	2.38%	1.65%
<b>Cost of equity</b>			
Post-tax MRP	5.00%	5.00%	5.00%
Equity beta	1.000	0.750	0.750
Risk premium	5.00%	3.75%	3.75%
Risk-free rate	2.00%	2.00%	2.00%
Post-tax cost of equity	7.00%	5.75%	5.75%
<b>Vanilla post-tax (pre-tax debt)</b>	4.84%	4.34%	4.34%
<b>WACCs</b>			
Post-tax WACC	4.23%	3.73%	3.29%
Effective enterprise tax rate	30.00%	30.00%	38.25%
Pre-tax enterprise WACC	6.04%	5.33%	5.33%

*Source: IMR calculations*