

9 Cost of capital and financial projections

Contents

	<i>Page</i>
Introduction.....	161
Cost of capital.....	162
The DG's and NIE's estimates of the WACC.....	162
Risk-free rate.....	164
Equity risk premium.....	164
Beta.....	166
Gearing.....	166
Debt premium.....	166
Taxation.....	166
The dividend growth model.....	168
Illustrative ranges of the WACC in recent MMC reports.....	168
An illustrative range of NIE's WACC.....	169
Office of National Statistics data on rates of return.....	170
Regulatory asset base.....	170
Introduction.....	170
Initial market value.....	170
Uplift.....	172
The flotation process.....	172
The perceived risks attached to NIE.....	173
Novelty.....	178
Unanticipated efficiency savings.....	180
Financing future activities.....	181
Initial price control values.....	181
The CCA approach.....	182
Allocation of the initial market value to NIE's T&D and Supply Businesses.....	182
PPB.....	183
Supply Business.....	184
Retail Business.....	184
Depreciation.....	185
NIE's financial projections.....	187
The DG's proposals for the T&D Business price controls and NIE's response.....	195
The DG's proposal.....	195
NIE's submission to the MMC.....	198
Supply Business price control.....	203

Introduction

9.1. This chapter looks at the cost of capital, the RAB, depreciation, financial projections and NIE's Supply Business price control for the forthcoming regulatory period.

Cost of capital

9.2. The cost of capital is an important part of the method used by the DG in formulating his price proposals for NIE's T&D Business and by NIE in its response. A company's cost of capital is a weighted average of the costs of debt and equity (WACC). The DG's and NIE's estimates of the WACC were based mainly on the results obtained from the CAPM (see Appendix 9.1).

9.3. In the CAPM the WACC depends on the real risk-free rate of return, the premium required by equity holders to compensate for risk (equity risk premium), an individual company's equity beta, that is the specific riskiness of investments in the company's shares, and a premium for the insolvency risk on debt (debt premium). Estimates of these factors cannot be precise, depending as they do on the period over which returns are calculated, whether arithmetic or geometric returns are calculated, the precise way in which betas are estimated and the allowance made for the possibility of insolvency. In addition, some commentators have questioned the extent to which past data can be reliably used as an indication of future outcomes. Moreover the CAPM is not the only method which can be used to estimate a company's cost of capital. Another method is to use the DGM (see Appendix 9.1).

9.4. In this section we look at the evidence submitted to us by the DG and NIE and their advisers on the cost of capital, show illustrative ranges of the WACC in previous MMC reports and then set out what we consider to be an illustrative range of the WACC for NIE.

The DG's and NIE's estimates of the WACC

9.5. Prior to the MMC's inquiry, the DG's initial estimate of NIE's real pre-tax WACC was in the range of 5.7 to 6.6 per cent. Based on his view of the relative risks faced by NIE's T&D and Supply Businesses, he proposed an allowed return of 6 per cent and 6.5 per cent for NIE's T&D and Supply Business respectively. Table 9.1 shows the DG's initial estimates of NIE's real pre-tax WACC.

TABLE 9.1 The DG's initial estimate of NIE's cost of capital

	<i>per cent</i>	
	<i>Low</i>	<i>High</i>
Real risk-free rate	3.60	3.60
Equity premium	3.50	4.50
Equity beta*	0.60	0.70
Cost of equity (post-tax)	5.70	6.75
Taxation adjustment	16.25	16.25
Pre-tax return on equity	6.81	8.06
Gearing	40.00	40.00
Debt premium	0.50	0.80
Cost of debt	4.10	4.40
Pre-tax WACC	5.72	6.60
Post-tax WACC	5.06	5.81

Source: OFREG.

*Not a percentage figure.

9.6. Following a meeting with NIE, the DG revised his view on some of the variables he had used in the CAPM and increased his estimate of NIE's real pre-tax cost of capital to between 6.9 and 8.4 per cent (see Table 9.2). As the DG regarded NIE's T&D Business as less risky than the company as a whole, he proposed a 7 per cent cost of capital for it, and as he regarded NIE's Supply Business as being more risky than its T&D Business he proposed a cost of capital for the Supply Business of 7.5 per cent. The DG submitted these estimates to the MMC. He told us that he believed his estimates were in line with the rates of return allowed by other regulators.

9.7. NIE told us that although the CAPM provided a basis for calculating the cost of capital of a company such as NIE, it was, even at best, only capable of producing a range of figures within which the true cost of

capital would fall. NIE said that it was necessary to look at other factors to determine what figure within the range represented the market's required rate of return. These other factors included the additional risks faced by NIE, such as the political situation in Northern Ireland. This and other risks are discussed in paragraphs 9.52 to 9.68.

9.8. In its initial submission to the MMC, dated 17 October 1996, NIE estimated its pre-tax WACC as falling in the range 7.5 to 9.3 per cent (see Table 9.2) and its proposals for its T&D Business were based on what it called an acceptable rate of return of 7.5 per cent. Professor Ashton's work, which was part of NIE's initial submission, estimated NIE's pre-tax WACC as 8.4 to 11.2 per cent (see Table 9.2).¹ Professor Ashton's estimates were therefore higher than those of NIE and the DG.

9.9. Table 9.2 shows the different estimates of the WACC for NIE and the components used in reaching these estimates.

TABLE 9.2 Estimates of NIE's cost of capital

	<i>per cent</i>					
	<i>OFREG</i>		<i>NIE</i>		<i>Ashton</i>	
	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>
Real risk-free rate	3.60	3.80	3.50	3.90	3.50	3.90
Equity premium	4.00	5.00	5.00	6.00	5.50	7.20
Equity beta*	0.60	0.70	0.60	0.70	1.07	1.25
Cost of equity (post-tax)	6.00	7.30	6.50	8.10	9.39	12.90
Taxation adjustment	16.25	16.25	16.25	16.25	16.25	16.25
Pre-tax return on equity	7.16	8.72	7.76	9.67	11.21	15.40
Gearing	8.00	8.00	8.00	8.00	40.00	40.00
Debt premium	0.50	0.80	0.80	1.00	0.80	1.00
Cost of debt	4.10	4.60	4.30	4.90	4.30	4.90
Pre-tax WACC	6.92	8.39	7.48	9.29	8.43	11.20
Post-tax WACC	5.85	7.08	6.32	7.84	7.35	9.70

Source: NIE and OFREG.

*Not a percentage figure.

9.10. In a subsequent submission to the MMC, dated 16 December 1996, NIE said that its pre-tax WACC was in a range of 8.5 to 13.3 per cent and that an estimate of at least 9 per cent should be used. NIE told us that its initial estimate of 7.5 per cent was reached as a compromise between a range of potential outcomes. It said that the 9 per cent put forward in its later submission was a best estimate based on all of the available information. NIE gave three reasons for increasing its estimate of its cost of capital. First, since its initial submission the 1996 Budget had proposed a reduction in certain capital allowances which would result in it paying more tax over the forthcoming regulatory period (see paragraphs 9.24 to 9.28). Secondly, it had identified evidence which indicated a relationship between its cost of capital and the level of unrest in Northern Ireland [†]. Thirdly, new work by BZW had estimated a higher pre-tax WACC for NIE (see Table 9.3). NIE also said that its higher figure was consistent with the estimate derived from the DGM (see paragraph 9.29).

9.11. The DG told us that in formulating his original views as to the appropriate rate of return for NIE, he had discussed his estimation of the cost of capital with Dr Jenkinson.² On 17 December 1996 the DG provided us with a paper on NIE's cost of capital by Dr Jenkinson which provided further details behind Dr Jenkinson's estimation of the cost of capital. In his paper Dr Jenkinson stated that NIE's pre-tax WACC was between 6 and 8.5 per cent (see Table 9.3).

¹Professor Ashton, Professor of Accounting and Finance at the University of Bristol, was commissioned by NIE to produce a paper on its cost of capital.

²Dr Tim Jenkinson, fellow and Tutor in Economics at Keble College Oxford, advised the DG on NIE's appropriate cost of capital.

†Details omitted. See note on page iv.

TABLE 9.3 Further estimates of NIE's cost of capital

	<i>per cent</i>			
	<i>BZW</i>		<i>Jenkinson</i>	
	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>
Real risk-free rate	3.81	3.81	3.66	3.71*
Equity premium	5.00	8.00	3.00	5.00
Equity beta†	0.97	0.97	0.50	0.75
Cost of equity (post-tax)	8.66	11.57	5.16	7.46
Taxation adjustment	16.25	16.25	16.25	16.25
Pre-tax return on equity	10.34	13.81	6.16	8.91
Gearing	6.00	6.00	8.00	8.00
Debt premium	0.98	0.98	0.50	0.80
Cost of debt	4.79	4.79	4.16	4.51
Pre-tax WACC	10.01	13.27	6.00	8.56†
Post-tax WACC	8.43	11.16	5.08	7.22

Source: NIE and OFREG.

*In his paper Dr Jenkinson stated that NIE's pre-tax WACC was 6 to 8.5 per cent which is based on a risk-free rate of 3.66 per cent. He also referred to a higher risk-free rate (3.71 per cent) which is the average of the yields for 1995. Table 9.3 uses Dr Jenkinson's low and high estimate of the risk-free rate (3.66 to 3.71 per cent).

†Not a percentage figure.

9.12. We now look at each of the components used by NIE and the DG and their advisers in their estimates of the WACC.

Risk-free rate

9.13. The various estimates of the risk-free rate are broadly similar (3.5 to 3.9 per cent)-see Tables 9.1 to 9.3. The differences in the estimates are due to the different periods covered and the different assumptions on the future rates of inflation. For example, the yield on the 2.5 per cent 2001 index-linked gilt (used by the DG in his estimates) was 3.6 per cent assuming a future inflation rate of 5 per cent, 3.8 per cent assuming an inflation rate of 4 per cent and 3.9 per cent assuming an inflation rate of 2.5 per cent. Dr Jenkinson suggested that the appropriate future inflation rate could be addressed by using the Bank of England's estimates of the yield curve¹ (for conventional and index-linked government securities) which estimated inflation expectations direct from the bond market. Dr Jenkinson said that the most recent estimates² suggested a value for the risk-free rate of 3.66 per cent and that if the average of the yields for 1995 was taken, the estimate would be 3.71 per cent.

Equity risk premium

9.14. There are more substantial differences in the estimates of the equity risk premium. Dr Jenkinson's estimate is the lowest (3 to 5 per cent) and BZW's is the highest (5 to 8 per cent).

9.15. In his evidence the DG stated that the estimation of a forward-looking equity risk premium was complex and that there was no commonly accepted methodology which might be used to calculate it. He told us that historical evidence on the size of the equity risk premium was of little value in the estimation of a forward-looking rate: historical estimates were likely to have been affected by unanticipated inflation in the 1970s and by other structural changes to the economy, such as the lifting of exchange controls and the introduction of index-linked gilts. The DG said that his estimate was consistent with estimates used by British Gas, OFGAS and the MMC.

¹The redemption yields observed for different maturity bonds.

²End of 1995.

9.16. Dr Jenkinson estimated the equity risk premium using a number of different time periods and approaches-ex-post, semi-ex-ante¹ and ex-ante. His results using ex-post and semi-ex-ante approaches are shown in Table 9.4. For results based on ex-post data Dr Jenkinson agreed with Professor Ashton that a fairly short time period should be used to calculate gilt returns: both used 1986 as their starting date as it was only from this date that index-linked gilts formed a significant part of investors' portfolios.² Dr Jenkinson pointed out that his ex-post figures measured gilt returns as being the returns on a portfolio of conventional (not index-linked) gilts. He said that if treasury bills were used to estimate the risk-free rate, the resultant equity risk premium was slightly higher as out-turn treasury bill returns over the period 1986 to 1995 had averaged 5.26 per cent using a geometric mean and 5.28 per cent using an arithmetic mean, producing ex-post estimates of the equity risk premium ranging from 4.37 to 5.08 per cent. Dr Jenkinson concluded that, when the equity risk premium was estimated by comparing out-turn (ex-post) equity and bond returns, the evidence of the last decade suggested a risk premium of between 3 and 5 per cent.

TABLE 9.4 **Real ex-post and semi-ex-ante returns on UK equities and gilts, 1919 to 1995**

	<i>per cent</i>			
	<i>1919-95</i>	<i>1946-95</i>	<i>1963-95</i>	<i>1986-95</i>
<i>Real ex-post estimates</i>				
<i>Geometric means</i>				
Equity returns	7.8	6.6	6.4	9.6
Gilt returns	2.0	0.1	1.8	6.5
Ex-post equity risk premium	5.7	6.5	4.5	3.1
<i>Arithmetic means</i>				
Equity returns	10.1	9.1	9.4	10.4
Gilt returns	3.0	0.8	2.6	7.0
Ex-post equity risk premium	7.1	8.3	6.7	3.4
<i>Semi-ex-ante estimates</i>				
<i>Geometric means</i>				
Ex-post equity returns	7.8	6.6	6.4	9.6
Ex-ante gilt returns	3.8	3.8	3.8	3.8
Semi-ex-ante equity risk premium	4.0	2.8	2.6	5.8

Source: OFREG.

9.17. For results based on ex-post data (equity returns) and ex-ante data (gilt returns) Dr Jenkinson stated that there was no inconsistency in comparing out-turn equity returns over a long period with the expected redemption yields on index-linked gilts over a more recent period. He favoured using a long period for calculating ex-post equity returns for three reasons. First, equities have been traded for a long time. Secondly, there was no reason why the introduction of index-linked gilts should in any way have changed investors' expectations regarding equity returns. Thirdly, a longer time period would produce smaller statistical errors. Using a semi-ex-ante approach over a long period he suggested an equity premium of 2.5 to 4 per cent.

9.18. Using an ex-ante approach,³ Dr Jenkinson suggested a range of 4 to 5 per cent. He concluded that the evidence from the three methods suggested an equity risk premium in the range of 3 to 5 per cent.

9.19. In its initial submission NIE told us that its estimate of the equity risk premium (5 to 6 per cent) was consistent with that used by OFTEL.⁴ Using different time periods¹ Professor Ashton estimated a range for the

¹Uses out-turn equity returns but forward-looking redemption yields on index-linked bonds.

²Dr Jenkinson stated that the real watershed was 1979 when exchange controls were lifted and the Government was no longer able to generate negative real interest rates via inflation.

³Dr Jenkinson produced estimates of ex-ante equity premium by building on the DGM. He estimated the unknown components-inflation rate and dividend growth rate-in the following two ways: first, investors were able to predict perfectly the future long-run rates (rational expectations); and second, investors formed expectations by looking back at recent out-turns for these two variables (adaptive expectations). Dr Jenkinson acknowledged that results from his rational expectations approach were hypothetical but said that the results served as a bench-mark against which to compare the implications of employing alternative assumptions.

⁴*Pricing of Telecommunications Services from 1997*, statement issued by the Director General of Telecommunications, June 1996.

equity risk premium of between 5.5 and 7.2 per cent. In its later submission, NIE told us that the majority of empirical research concluded that the equity risk premium was around 8 per cent. It said that, even though some academics and financial commentators regarded these estimates of the equity risk premium as being too high, in assessing the returns offered by new investment opportunities companies measured those opportunities against such empirical estimates of the equity risk premium because they knew that their own shareholders would do so. On the question of whether to use geometric or arithmetic means,² NIE supplied various academic papers.³ From these papers it concluded that a reasonable approach would be to use a weighted average of geometric and arithmetic historical means but with the main emphasis on arithmetic means. This approach produced a range for the equity risk premium of 5 to 8 per cent.

Beta

9.20. The DG's estimate of NIE's beta and the estimate in NIE's initial submission are the same. The DG derived his estimate (0.6 to 0.7) from regression analysis using daily data.⁴ He told us that he did not consider that the published London Business School (LBS) estimate⁵ was robust as it was based on too few observations. Professor Ashton agreed with the DG that monthly data were unsuitable in estimating NIE's beta. Using historical weekly data he estimated that NIE's beta was in the range of 0.7 to 0.83 with a best estimate of 0.76. However, Professor Ashton stated that the estimate of beta should be forward looking and that adjusting beta for the intended higher level of gearing (40 per cent as opposed to the current level of 8 per cent) resulted in a higher beta estimate of 1.07 to 1.25. This view assumes that the lower cost of debt is offset by a higher cost of equity as gearing increases. Therefore using forward-looking estimates of gearing and beta or using historical estimates of beta and gearing produces similar estimates of NIE's pre-tax WACC.

Gearing

9.21. The estimates of NIE's historical gearing are similar. Professor Ashton's use of a forward-looking level makes very little difference to the estimate of the pre-tax WACC (see paragraph 9.20).

Debt premium

9.22. The DG's estimate of the debt premium was the lowest (0.5 to 0.8 per cent). The estimates of the DG, NIE and Professor Ashton took account of a recent debt issue by SWALEC, the smallest REC, which had issued £150 million traded debt in October 1995, due in 2020, at 80 basis points (0.8 per cent) over the relevant gilt. The DG used this as his upper estimate whilst NIE and Professor Ashton argued that the greater risks of NIE, a much smaller company than SWALEC, suggested that 0.8 per cent should form the lower estimate. NIE told us that its estimate was also based on competing quotes from three banks.

9.23. The DG also provided us with a further 17 examples of debt premia for other utilities (see Appendix 9.3). The debt premia in these examples ranged from 20 to 110 basis points but 16 of the 17 examples had a debt premium between 20 and 80 basis points.

Taxation

¹1981 to 1996, 1986 to 1996 and 1993 to 1996.

²Arithmetic means sum over n years and divide by n whereas geometric means multiply over n years and take the n th root. The use of arithmetic means will always produce higher figures than using geometric means. In calculating the equity risk premium, using arithmetic means can produce estimates two percentage points higher than using geometric means; differences vary depending on the period chosen.

³The debate revolves around the appropriate characteristics of the period-by-period returns to a share, in particular, whether the return in any one period is independent of its value in other periods.

⁴Using weekly data, the DG's estimate of NIE's beta was about 0.75.

⁵The LBS risk management service publishes estimates of betas for a range of companies, including NIE, using monthly data.

9.24. NIE told us that the proposed change to the tax treatment of capital allowances on assets having a life of more than 25 years, announced in the 1996 Budget, would mean that it would have to pay about £34 million (at out-turn prices) more in tax over the forthcoming regulatory period. This would increase its cost of capital by 0.5 percentage points.

9.25. Professor Ashton stated that taxation adjustments might play a role in determining the WACC but that such adjustments were relatively minor and in his view could probably be ignored. He gave three reasons for this. First, the UK operated an imputation tax system which considerably reduced the tax advantage to debt. Secondly, the simple textbook formulae over-estimated the value of future tax shields and hence the tax advantage of debt because any tax shields are predicated on the future (risky) income stream of the firm: taking account of the associated riskiness of tax shields is likely roughly to halve any tax advantage computed from the textbook formulae. Thirdly, any tax advantages of debt were likely in any event to be exploited and ultimately exhausted for any financial structure.

9.26. The DG told us that the change to capital allowances had not yet become law and that he could not take account of something that was not and might not become law. However, he said that a simplified calculation suggested that the effect of the proposed change was small and insignificant given the range from which the allowed rate of return was established. He told us that in the extreme, assuming that NIE was totally equity financed, the proposed change would increase the cost of capital from 7 to 7.1 per cent.¹ The DG said that given that the proposed change only applied to new investment this higher figure would not be reached for at least 20 years, that is, until all existing capital stock was fully depreciated and only new investment remained.

9.27. ScottishPower provided us with a paper in which it set out its views on the effects of the 1996 Budget proposals relating to capital allowances on utilities' WACC. It estimated that the change might increase the tax charge by five percentage points. Using the data recently published by the DGES in the price determination for NGG, ScottishPower estimated that such a tax increase (which it illustrated by using an increase in taxation from 33 to 38 per cent)² would increase the pre-tax WACC from 7.5 to 8.1 per cent (0.6 percentage points). For the purpose of an overview it assumed that an increase in tax rates of five percentage points would lead to a 0.5 per cent rise in the cost of capital.

9.28. The tables setting out the WACC in this chapter incorporate the simplifying assumptions, used in previous MMC inquiries, that companies pay corporation tax at the current rate and that all profits are distributed as dividends (dividend cover of 1). An increase in corporation tax increases the cost of capital in the CAPM unless there are changes in the other variables used in the model (risk-free rate, equity premium, beta, gearing and debt premium).³ NIE's average effective tax rate was 21 per cent, in HCA terms, over the period 1992/93 to 1995/96 (see Table 5.7 for NIE's effective tax rate in each of these years). In CCA terms NIE's average effective tax rate for the same period was 29 per cent. In the last of these years it was 23 per cent. The effect of the reduced capital allowances will move NIE's effective tax rate closer to that used in the various estimates of NIE's WACC in this chapter.

¹The DG said that this calculation assumed that all investment counted for the new capital allowances by having an asset life in excess of 25 years.

²38 per cent is higher than the current rate of mainstream corporation tax.

³This is a mechanical relationship in the CAPM. The pre-tax cost of equity in the CAPM is derived by dividing the post-tax cost of equity by (1-taxation adjustment) where the taxation adjustment is derived by ((corporation tax-advanced corporation tax)/(1-advanced corporation tax)). The increase in corporation tax increases the taxation adjustment which reduces the denominator in the pre-tax cost of equity calculation which increases the pre-tax cost of equity which increases the pre-tax WACC. The relationship is shown by the following example: the post-tax cost of equity is 5.6 per cent; corporation tax increases from 33 to 40 per cent and advanced corporation tax is 20 per cent. In the lower tax case, the taxation adjustment is 0.1625 (33-20)/(1-20) and the pre-tax cost of equity is 6.69 per cent (5.6/(1-0.1625)). In the higher tax case, the taxation adjustment is 0.25 (40-20)/(1-20) and the pre-tax cost of equity is 7.47 per cent (5.6/(1-0.25)). The effect of taxation on the cost of capital can be derived in other ways but the same relationship holds.

The dividend growth model

9.29. Using estimated annual real dividend growth for NIE of 5 per cent,¹ a dividend of 19p for 1995/96 and a share price of 420p² the DG estimated NIE's cost of equity at 9.5 per cent, higher than his estimate using the CAPM. He told us that using a dividend growth of 2.5 to 3 per cent,³ NIE's cost of capital was 7 to 7.5 per cent, broadly consistent with his CAPM estimates. NIE said that assuming a share price of 450p and real dividend growth of 4 per cent gave a cost of capital of 9 per cent. NIE told us that 450p was the correct share price to use since it was the price derived by adding back the discount which represented the appropriation of shareholder value implicit in the DG's price proposals.

Illustrative ranges of the WACC in recent MMC reports

9.30. Since November 1994 the MMC have carried out four price determination inquiries: SHE,⁴ South West Water Services Ltd, Portsmouth Water plc,⁵ and BAA plc.⁶ Table 9.5 shows the ranges of the WACC used by the MMC in their inquiries concerning SHE and BAA.

TABLE 9.5 **MMC's illustrative estimates of the cost of capital in the SHE and BAA inquiries**

	<i>per cent</i>			
	<i>SHE</i>		<i>BAA</i>	
	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>
Real risk-free rate	3.50	3.80	3.50	3.80
Equity premium	3.50	4.50	4.00	5.00
Equity beta*	0.50	0.65	0.70	0.90
Cost of equity (post-tax)	5.25	6.73	6.30	8.30
Taxation adjustment	16.25	16.25	16.25	16.25
Pre-tax return on equity	6.27	8.03	7.52	9.91
Gearing	8.00	8.00	30.00	30.00
Debt premium	0.30	0.70	0.30	0.80
Cost of debt	3.80	4.50	3.80	4.60
Pre-tax WACC	6.07	7.75	6.41	8.32
Post-tax WACC	5.13	6.55	5.55	7.19

Source: MMC.

*Not a percentage figure.

9.31. In the SHE and BAA inquiries the MMC used an illustrative pre-tax WACC of 6.07 to 7.75 and 6.41 to 8.32 per cent respectively. In their inquiries into South West Water and Portsmouth Water the MMC said that they regarded the pre-tax cost of capital in the range of 6 to 8 per cent as appropriate for the water and sewerage industry as a whole.

¹Based on Union Bank of Switzerland (UBS) Global Research, *Utilities Monthly*, July 1994 and SBC Warburg estimates in March 1996.

²June 1996.

³The DG said that this estimate was based on estimates used by the MMC (2.5 to 3 per cent) in their reports on SHE, dated May 1995, and BAA, dated June 1996.

⁴Referred to the MMC on 14 November 1994 and the MMC's report was published in May 1995.

⁵The South West Water case and the Portsmouth Water case were referred to the MMC on 29 September 1994 and the MMC's reports were published in June 1995.

⁶Referred to the MMC on 11 December 1995 and the MMC's report was published in June 1996.

An illustrative range of NIE's WACC

9.32. As noted in paragraph 9.3, estimating the cost of capital requires a degree of judgment. The way in which estimates of the cost of capital can change can be seen by the different estimates put forward by the DG and NIE since they began their work on NIE's price determination.

9.33. Table 9.6 shows an illustrative range for NIE's WACC, with the pre-tax WACC itself at 6.46 to 8.66 per cent. We have used this illustrative range in determining the appropriate cost of capital for NIE (see paragraphs 2.59 to 2.63).

TABLE 9.6 NIE: illustrative range of the cost of capital

	<i>per cent</i>	
	<i>Low</i>	<i>High</i>
Real risk-free rate	3.50	3.80
Equity premium	3.50	5.00
Equity beta*	0.60	0.75
Cost of equity (post-tax)	5.60	7.55
Taxation adjustment	16.25	16.25
Pre-tax return on equity	6.69	9.01
Gearing	8.00	8.00
Debt premium	0.30	0.80
Cost of debt	3.80	4.60
Pre-tax WACC	6.46	8.66
Post-tax WACC	5.46	7.31

Source: MMC.

*Not a percentage figure.

9.34. The evidence presented to us shows broad agreement on the size of the risk-free rate. The illustrative ranges are based on the real redemption yields on five-year index-linked gilts using a range of inflation assumptions.

9.35. The estimates of the equity risk premium in the illustration are based on geometric means of ex-post returns over the last decade or so, on semi-ex-ante estimates over the last 30 years or so and on ex-ante estimates. Using ex-post returns alone for a period longer than ten years could produce excessively high estimates of equity risk premium. One of the main reasons for these high estimates is that there have been significant periods when the returns on gilts have been low or even negative, possibly reflecting unanticipated inflation, which may be less likely to occur in the future with the liberalization of financial markets and the introduction of new financial instruments.

9.36. Both the MMC and the regulators have regarded the choice of arithmetic or geometric means as an issue of some importance. The academic literature on these matters argues that, if returns are the same each period, then arithmetic and geometric averaging will give the same result. If, however, returns each year are statistically independent from each other, then the arithmetic mean is always higher than the geometric mean. Whether it is then appropriate to use the arithmetic mean is still the subject of debate, reflecting views on the extent to which it is or is not appropriate to characterize the streams of returns as statistically independent. Another issue concerns how far into the future the return is contemplated. Regulators are required to look at periods of several years, rather than at an annual figure, and for this purpose geometric means may be more appropriate. It has also been argued that, as redemption yields on index-linked gilts are calculated with the use of geometric means, the use in the CAPM of an equity premium derived from an arithmetic mean would lack consistency. NIE disputed this point. It said that there was no inconsistency. It told us that as the eventual redemption value of gilts was known with certainty, the arithmetic mean would be exactly equal to the geometric mean.

9.37. The range for beta is based on estimates using daily and weekly data: there is an insufficient number of monthly observations.

9.38. The illustrated range for the cost of debt uses the same risk-free rate as for the calculation of the cost of equity and adds a premium of 0.3 to 0.8 per cent in recognition of the insolvency risk.

Office of National Statistics data on rates of return

9.39. The Office of National Statistics (ONS) publishes data on net rates of return in the UK economy. The net rate of return is defined by the ONS as the ratio of operating surplus (net of depreciation) to capital stock employed. Capital stock is the value of fixed assets on a replacement cost basis (excluding land, but including assets held on finance leases) plus the value of stocks and work in progress. The most recent data are those for 1995 and these together with those for the preceding five years are shown in Table 9.7.

TABLE 9.7 ONS: profitability of UK companies*

	<i>per cent</i>			
	<i>All</i>	<i>UK continental shelf (UKCS)</i>	<i>Non-UKCS</i>	<i>Manufacturing</i>
1990	8.4	16.4	8.0	6.8
1991	7.4	12.5	7.2	4.4
1992	7.5	13.5	7.3	5.1
1993	8.5	16.5	8.1	6.2
1994	9.5	20.1	9.0	7.7
1995	9.0	21.2	8.5	†

Source: ONS.

*Net rates of return of industrial and commercial companies.

†There were no provisional 1995 results for manufacturing companies at the time of first release of the statistics, since disaggregated data of sufficient quality were unavailable.

9.40. The use of aggregated national data is not wholly reliable for application to the circumstances of an individual company. The average rates of return in Table 9.7 over the six years to 1995 are 8.38 per cent (all companies) and 8.02 per cent (non-UKCS). The ONS average of 8.38 per cent for all companies is towards the bottom end of the illustrative range of the WACC (see Table 9.6) after adjustment for the use of an equity beta of 1.0 to represent the market as a whole (7.99 to 10.03 per cent).

Regulatory asset base

Introduction

9.41. Like the cost of capital, the valuation of the RAB is an important part of the method used by the DG in formulating his price proposals for NIE's T&D Business. He derived the RAB by estimating the value of NIE at the time of privatization (see paragraphs 9.43 to 9.48) and then rolling this value forward to the beginning of the forthcoming regulatory period (see paragraph 9.148).

9.42. NIE's value at flotation can be estimated in a number of ways: the IMV, the IPCV and the CCA book value of its assets (CCA valuation). The DG used the IMV approach and NIE used the IMV and the IPCV approaches. We look at each of these two approaches in turn and briefly at the CCA approach.

Initial market value

9.43. In calculating the IMV of NIE the DG used the value of NIE's share price at the close of its first day of trading less any cash held plus any borrowings undertaken by NIE (see Table 9.8). The DG told us that he used market-based information since the revealed views of investors were seen to be more valid than either book values or the Government's flotation valuation.

9.44. At the close of its first trading day, NIE's partly-paid share price¹ was 126.5p, a 26.5 per cent increase on the first instalment price, equivalent to an increase of 12 per cent on the undiscounted fully paid price (12.4 per cent on the discounted fully paid price).

9.45. In his initial submission to us the DG's estimate of NIE's IMV was £373 million at 1993/94 prices. This estimate was based on NIE's share price at the close of its first trading day and the discounted value² of the second instalment of the share price. The DG told us that this value represented an MAR—that is, the ratio between market valuation and the CCA book value of the assets—of about 78 per cent which compares with an MAR of 75 per cent for the RECs in England and Wales at the beginning of their second distribution price control period. The DG said that NIE's MAR rolled forward to the end of the forthcoming regulatory period would be 95 per cent which was higher than the equivalent figure for the RECs in England and Wales (90 per cent).

9.46. NIE rejected this method of estimating its IMV. It told us that, irrespective of the validity of the method, the DG's calculations contained errors. NIE said that the DG had failed to take into account its dividend payment (£16.5 million) which it paid to the Government on 1 June 1993. It told us that the dividend payment should be treated in the same way as the Government debenture.³ NIE also stated that the DG had applied the wrong discount rate to the second instalment of the share price.⁴ Correcting for these two errors, NIE's estimate of its value based on its share price at the close of its first trading day (£396 million at 1993/94 prices) was £23 million higher (£396 million-£373 million) than the DG's initial estimate (see Table 9.8).

9.47. We put NIE's views on the treatment of its dividend payment and on the discount rate to the DG. The DG told us that his initial calculation of the IMV (£373 million) was made in the light of discussions with NIE, and at the time his proposals were published he believed there was no disagreement with NIE regarding the calculation of the IMV. The DG accepted NIE's argument regarding the dividend payment.

9.48. On the appropriate discount rate to apply to the second instalment of NIE's share price, the DG told us that during his review he had suggested to NIE using a discount rate of just under 6 per cent but that NIE favoured using a rate of 10 per cent. The DG said that if he had used a discount rate of just under 6 per cent, he would also have taken into account the benefit to NIE of the increase in cash which might be assumed to have occurred as a result of profits earned between 31 March and 21 June 1993 (accounting year end and flotation date). Using the lower discount rate for the second instalment and taking into account the increased cash and the dividend payment, the DG estimated that the IMV of NIE was £381 million, £8 million higher than his initial estimate (see Table 9.8).

¹The Offer Price at flotation was 220p, of which 100p was payable on application and 120p was payable on 28 June 1994.

²The DG used a discount rate of 10 per cent.

³On 14 May 1993 NIE issued to the DED a debenture for £70 million for which no proceeds were received. This debenture was interest bearing from 2 June 1993 and was repaid at par on 24 June 1993.

⁴NIE discounted the second instalment share price over 251 trading days at the one year LIBOR rate of 5.9375 per cent on 21 June 1993.

TABLE 9.8 The market value of NIE based on its share price and its net debt at the close of its first trading day

£ million, 1993/94 prices

	<i>NIE</i>	<i>OFREG initial</i>	<i>OFREG revise</i>
Equity:*			
First instalment	208.2	208.2	208.2
Second instalment	<u>186.5</u>	<u>179.6</u>	<u>186.5</u>
Total (a)	394.7	387.8	394.7
Less:†			
Investments	84.8	84.8	68.3‡
Cash	<u>0.9</u>	<u>0.9</u>	15.9§
Total (b)	85.7	85.7	84.2
Plus:†			
Government debenture¶	70.3		
Short-term borrowing	0.3		
Long-term borrowing	0.2		
Dividend⊞	<u>16.5</u>		
Total (c)	87.3	70.7	70.7
Total ((a)-(b)+ (c))	396.3	372.8	381.2

Source: NIE and OFREG.

*Equity value represents the value of NIE derived from the closing price of NIE's shares at the end of its first day's trading. NIE and OFREG revise have discounted the second instalment price at an annual rate of 5.9375 per cent (one year LIBOR rate on 21 June 1993) and OFREG initial used a 10 per cent discount rate.

†Derived from the balance sheet of NIE at 31 March 1993, as reproduced in the flotation prospectus.

‡Investment of £84.8 million less NIE's dividend of £16.5 million paid at 1 June 1993.

§OFREG's estimate of the cash generated by NIE in the period from 1 April to 21 June 1993.

¶£0.3 million is interest on the debenture.

⊞Paid 1 June 1993.

Uplift

9.49. NIE rejected the approach of using its share price at the close of its first day of trading (adjusted for cash and borrowings). It said that, if such an approach was used, the resulting valuation should be increased by an uplift factor. NIE favoured using its share price at the close of a time period substantially longer than the first day. It told us that it favoured such an approach in order to take account of the unwinding of the discounts it believed arose from the nature of the flotation process and the unwinding of the perceived risks attached to NIE at the time of its flotation. We look at each of these factors in turn. NIE also told us that another factor which should be taken into account was the prospect of rising dividends held by investors when they bought their shares in NIE. NIE said that its proposals were not dependent on this factor.

The flotation process

9.50. NIE told us that discounts were included in the flotation process because the Government attached importance to attracting individual investors to acquire shares at the time of flotation. The NIAO report, published 26 October 1994 (see paragraphs 5.53 and 5.80 to 5.83), refers to the Government's target premium of 5 and 10 per cent in the immediate after-market.¹

9.51. NIE said that there was a delay in individual investors, who had been allocated a large proportion of the shares, selling their shares in the short term because they were uncertain how many shares they had been allocated, the flotation having been over-subscribed by four times. It told us that this lack of activity was compounded by institutional shareholders taking some time to build up their desired holdings of the shares

¹NIAO: *The privatisation of NIE*, 26 October 1994, paragraph 4.42.

because they already held shares in a number of other companies in the electricity sector within their portfolios and their practice was to buy shares at fixed intervals.

The perceived risks attached to NIE

9.52. NIE told us that investors applied a discount to the value they placed on NIE to reflect the uncertainty as to whether it would be able to deliver projected returns. It said that such uncertainty was due to concerns about:

- the competence of NIE's new management team;
- the effect of the novel business structure (NIE had no supply franchise, there was considerable uncertainty about the operation of the PPAs and the PPB price control, and NIE's appliance retailing and international contracting businesses were widely regarded as loss-making activities);
- the Northern Ireland factor (NIE's prospects in the face of political, economic and social uncertainty in Northern Ireland); and
- regulatory risk (NIE said that the regulator was given unprecedented power to introduce further competition and the fact that the DG was independent of the DGES meant that there would have been greater perceived risks owing to the potential for inconsistent treatment).

9.53. NIE pointed out that the importance of these risks was not whether they were real but whether they were perceived to be important by investors.

9.54. NIE said that the publication of its first post-flotation interim results on 6 December 1993 provided assurance to investors on the competence of its new management team against the background of a novel business structure. The increase in its share price at that time reflected some unwinding of the risks associated with NIE at flotation.

9.55. NIE provided us with data (see Appendix 9.4) which it said showed that its out-turn financial results¹ were in line with analysts' expectations. NIE said that as analysts had accurately predicted its results, the increase in its share price could not be attributed to the market's reaction to unexpectedly good results. The DG, however, told us that NIE's interim results were better than anticipated. No examples of analysts' forecasts of NIE's interim financial results were provided to us but NIE provided us with material which it said demonstrated that after the publication of its interim results, the vast majority of analysts chose not to alter their full year projections. The DG supported his view by referring to a statement in *The Financial Times*, dated 7 December 1993, which stated that 'NIE yesterday pleased the markets in its first results ... the company's performance was helped by a 7.3 per cent reduction in controllable operating costs ... the shares have considerably out-performed the market in spite of the renewed political problems in Northern Ireland'. In the same article we noted the following statement: 'management has also played its part in vindicating the shares' out-performance by tackling costs more effectively than expected'.

9.56. We asked 12 analysts how their forecasts of NIE's interim results compared with NIE's actual performance and whether they changed their forecasts of NIE's full year results based on NIE's actual interim results. We received replies from six analysts, of which three said that they had no information available. The findings from the three remaining analysts were as follows:

- One told us that its forecast of NIE's interim results was significantly lower than NIE's actual interim results and that it subsequently increased its forecast for NIE's full year (year ending March 1994) pre-tax profits by over 10 per cent.
- One told us that answers to our questions on their own would not explain the change in perception of NIE's financial performance that occurred over the period. It said that investors underestimated the split of NIE's profits between the first and second half of the year; whereas they had expected NIE to achieve around one-third of profits in the first half of the year, similar to the RECs, NIE actually

¹1992/93, 1993/94 and 1994/95.

achieved around half. The analyst said that this actual pattern could perhaps have been understood from the prospectus. It said that as a result of the actual pattern of profits being different to that expected, NIE's share price responded positively to apparent increased first half results and estimates of the full year were increased, but the full year estimates were subsequently reduced again, following the final results in June.

- One told us that its reaction to NIE's interim results was published in its overnight research note in which it described NIE's results as 'well ahead of our expectations'. It said that it increased its full year pre-tax profit forecasts for NIE by over 4 per cent for the year ending March 1994 and by over 11 per cent for the year ending March 1995.

9.57. NIE provided us with data which it said demonstrated the influence of the Northern Ireland factor-its share price increasing after good news, for example the IRA ceasefire, and falling after bad news, for example the Canary Wharf bomb and the end of the IRA ceasefire [*]. It said that this relationship was further demonstrated by the 4.3 per cent fall in its share price following the recent bombings in Belfast. NIE also provided us with a study by Mike Smyth¹ which it said suggested that investors were very sensitive to the level of terrorist violence. NIE said that the paper concluded that there were significant additional Northern Ireland-specific risks which impacted on the cost of finance.

9.58. The DG did not accept NIE's view. He told us that even though Northern Ireland had faced decades of instability, it was currently the fastest-growing part of the UK economy. Government insurance against the effects of terrorist actions was better developed in Northern Ireland than in other parts of the UK and risks associated with Northern Ireland were diversifiable in terms of the cost of capital. The DG provided us with movements in share prices which he said showed that there was no Northern Ireland factor [*].

9.59. NIE told us that most of the increase in its share price between flotation and the close of trading on the 200th day was attributable to the unwinding of the risks it had identified. It said that it was impossible to settle on a precise figure which would fully add back the relevant discounts but submitted that the MMC should use a figure of at least £600 million. NIE told us that if the MMC decided to disallow any part of its suggested uplift, this decision should be reflected in a higher cost of capital during the forthcoming regulatory period.

9.60. NIE said that the risks it had identified were reflected in analysts' comments before flotation. We have examined the analysts' reports provided to us by NIE and some other reports. Whilst it is the case that these reports do identify some potential risks, they also contain favourable comments on NIE (see Appendix 9.5).

9.61. NIE used three time periods in its estimate of its IMV: 100 days, 129 days and 200 days. NIE pointed out that regulatory bodies had used 100 and 200 days in the past² and said that 129 days (the day of the Downing Street declaration on Northern Ireland) could be seen as a culmination of the unwinding of risks associated with unrest in Northern Ireland. Using these time periods, NIE estimated its IMV at £510 million (day 100), £641 million (day 129) and £631 million (day 200).³ NIE said that these values should be set into context. It considered that investors' initial investment in its T&D Business should be valued, for regulatory purposes, at £458 million (see paragraphs 9.80 to 9.84). NIE told us that the purpose of examining market values was to show that the price which investors paid for NIE could be reconciled with that value.

¹University of Ulster. NIE told us that his study entitled *Estimating the Northern Ireland Risk Factor Effect* was to be published in the Policy Review Section of *Regional Studies*.

²The DGES and the MMC used a 100-day average share price in their assessment of the price controls for SHE, the DGES used a 100-day average share price for his assessment of the price controls for ScottishPower, and the Director General of Water Services used a 200-day average in his price reviews of the water companies. NIE's average share price over 100 days (280p) is about 10 per cent less than its share price on day 100 (310p).

³The value of the second instalment was discounted over 251 days at the one year LIBOR rate of 5.9375 per cent on 21 June 1993.

*Details omitted. See note on page iv.

9.62. NIE's estimate of its corporate IMV implies an uplift of 52 per cent (£600 million/£396 million)¹ of its value at the end of its first day's trading. NIE told us that this increase compared with 15 per cent used by the DGES in the second distribution price review and 20 per cent used in the second NGG review; 60 per cent used by the Director General of Gas Supply in his first review of British Gas; and 65 per cent used by the Director General of Water Services in his first review when he used a ten-year glidepath (NIE estimated that the uplift was 40 per cent with the five-year glidepath recommended by the MMC).

9.63. We have compared the movements in NIE's share price over its first 177 trading days (21 June 1993 to 28 February 1994) with the movements in the PESs' share prices, the FT All Share index and the FTSE 100 index. We also asked NIE to provide us with an estimate of an average index for companies in Northern Ireland. It told us that it was not possible to construct a meaningful average for companies in Northern Ireland because there were only four listed plcs² in Northern Ireland and these companies had disparate activities in international markets.

9.64. Our analysis showed a strong relationship between the movements in NIE's share price and the (unweighted) average for the PESs (see Figure 9.1).³ The figures show that relative movements in the share prices were broadly similar up to day 119. On day 120 (the date of publication of NIE's interim results-6 December 1993) NIE's share price showed a larger increase than the average for the PESs. Three days later (day 123) NIE's share price fell by about 4 per cent but it was still about 12 per cent higher than its level before the publication of the interim results (day 119). Over the whole period to day 129 NIE's share price had risen by 13 per cent more than the average of the PESs but virtually all of this differential seems to be associated with the release of NIE's interim results (see Figure 9.2). After NIE's first 100 trading days its share price had grown by 5 per cent more than the average share price for the PESs.

9.65. NIE said that the evidence of NIE's relative share price movements, in particular the fact that NIE's share price moved broadly in line with the RECs in the equivalent periods following their privatizations, demonstrated that there was no basis for adopting an uplift on its first day trading value of any less than the 15 per cent awarded to the RECs in their distribution price review: this uplift factor being consistent with its proposed valuation of £458 million for its T&D Business (see paragraphs 9.80 to 9.84).

9.66. In its paper (see paragraph 9.27) ScottishPower stated that NIE's first interim results following privatization highlighted cost-cutting potential above expectations. It said that in the week following the announcement of NIE's interim results, there was a significant rise in the share price of NIE relative to the RECs of approximately 8 per cent.⁴ ScottishPower said it could be argued that much of this exceptional 8 per cent share price rise was attributable to a better understanding of the cost-cutting potential in NIE's core business and that it could be concluded that the potential within NIE's core business was not fully recognized on flotation. It said that if this was the case then much of the share price increase could have been realized at flotation if there had been a better understanding at that time. On these grounds, ScottishPower suggested that an uplift of 8 per cent might be appropriate for NIE.

9.67. The DG told us that movements in share prices after flotation should not be used to set the RAB. He said that such a procedure would mean that analysts' expectations and investors' share trading would themselves determine the returns to shareholders by determining the RAB on which NIE was permitted to recover its cost of capital. The DG said that the timing of the increase in NIE's share price coincided with the publication of NIE's interim results, the announcement of the postponement of the building of the Scottish interconnector and the fact of NIE's Retail Business moving into profit.

¹NIE's uplift based on its estimate of the value of its T&D Business, for regulatory purposes, was 16 per cent (£458 million/£396 million).

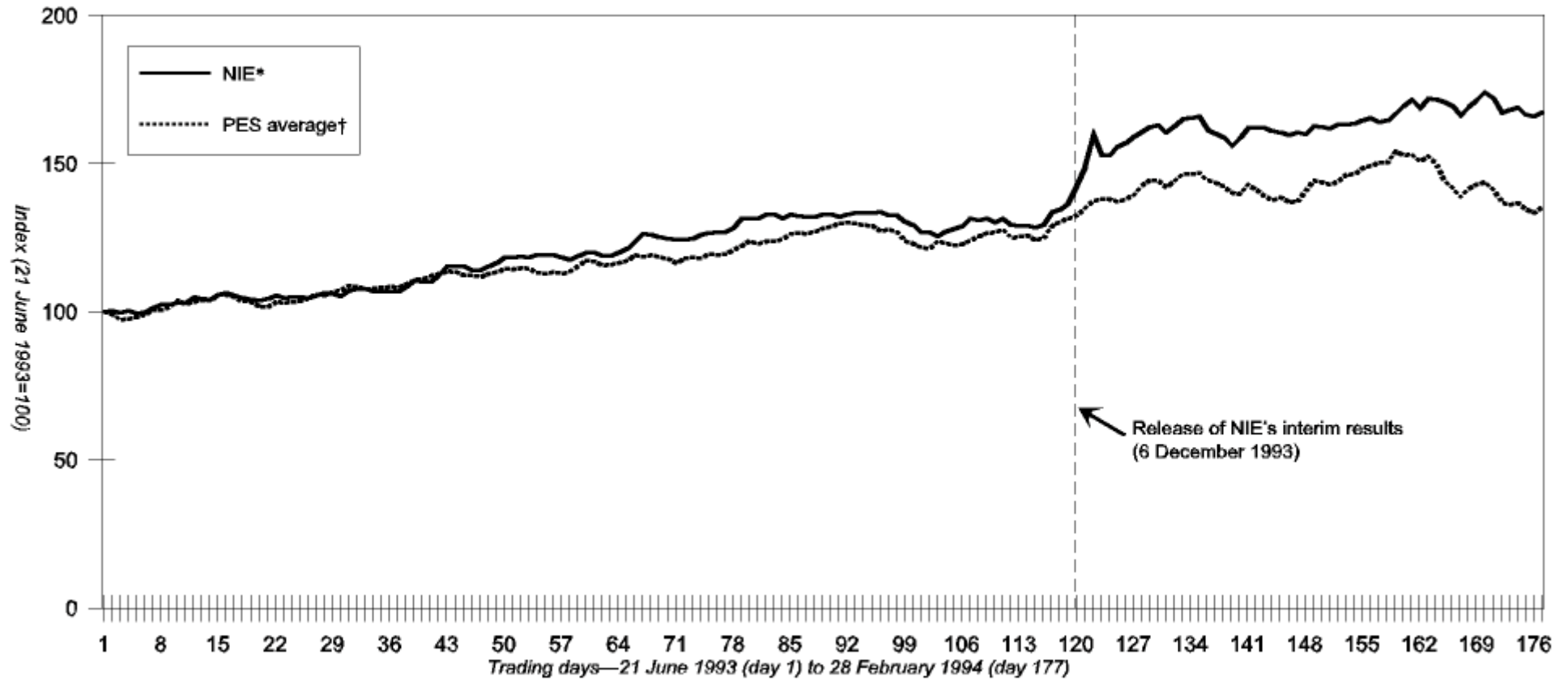
²Boxmore International, Lamont Holdings, Powerscreen International and UTV. The DG identified a small number of other quoted companies in Northern Ireland-Ewart, Mackie and Hampden.

³NIE told us that there was very little difference between an unweighted and a weighted average share price for the PESs.

⁴ScottishPower told us that NIE's share price on Friday 3 December 1993 was 331p and by the end of the week following publication of the interim results (Friday 17 December 1993) had risen to 393p, an increase of 18.7 per cent. It said that on Friday 3 December 1993 the UK Datastream REC price index stood at 267.35 and by Friday 17 December 1993 had risen to 293.24, an increase of 9.7 per cent. It told us that the relative increase in NIE's price by the end of the week following the interim announcement was therefore 8.2 per cent (1.187/1.097 per cent).

FIGURE 9.1

Share price movements of NIE* and the PESs,† 21 June 1993 to 28 February 1994



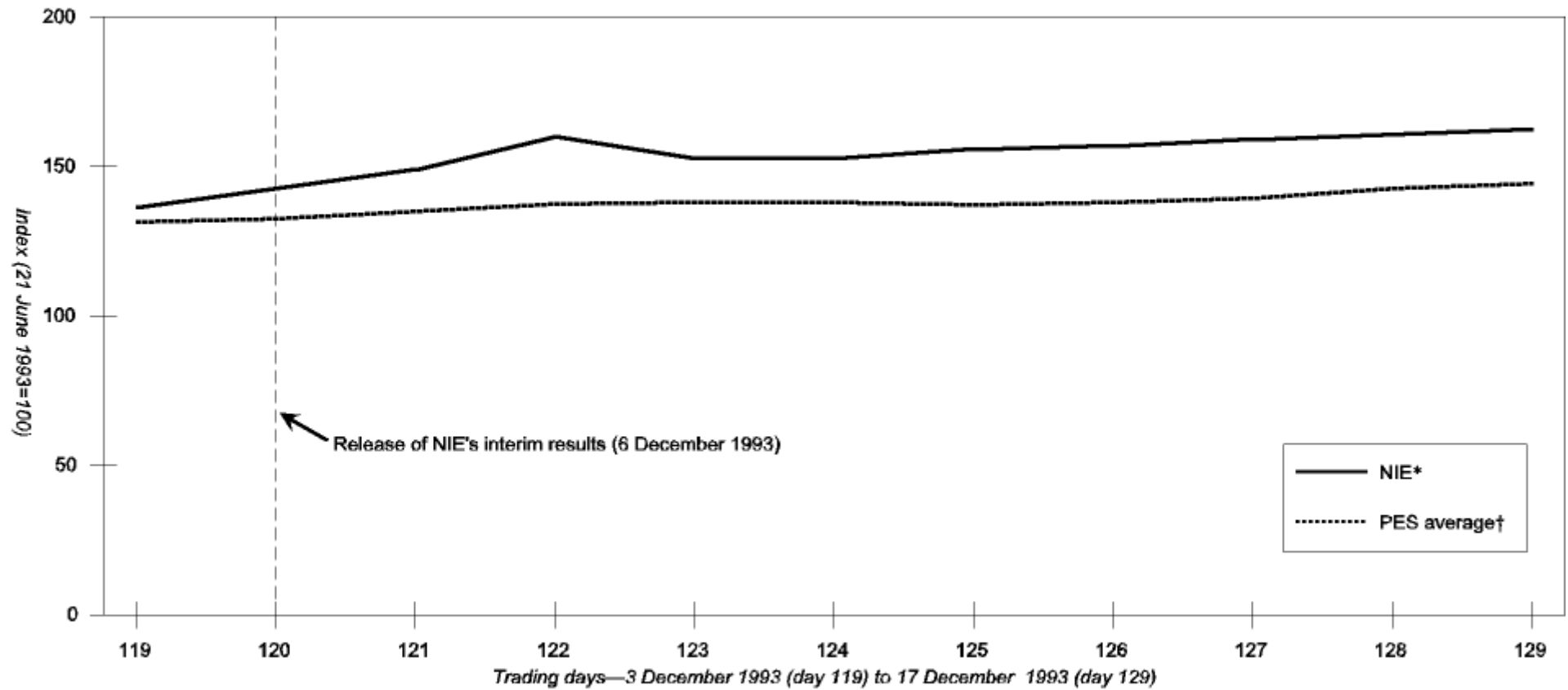
Source: NIE.

*Second payment discounted.

†Unweighted average.

FIGURE 9.2

Share price movements of NIE* and the PESs,† 3 December 1993 to 17 December 1993



Source: MMC calculations on data provided by NIE.

*Second payment discounted.

†Unweighted average.

9.68. The DG told us that he saw no need for an uplift factor or for using a period longer than the close of NIE's first trading day. He said he recognized that every flotation, whether it was a privatization or a private company coming to the market, was associated with an initial underpricing designed to attract investors. By choosing the close of the first trading day he was capturing the true market value of the equity rather than the artificially low figure that would be found if the flotation price was used. He argued that the potential justification for any further uplift could be split into two broad areas, neither of which applied to NIE: first, the novelty of the sector, and secondly, the size of unanticipated efficiency savings. He also told us that NIE's inability to finance its future activities could justify an uplift. We look at each of these arguments in turn.

Novelty

9.69. The DG told us that an argument could be sustained about the novelty of the sector when investors were relatively unaware of the type of company that they were buying and no obvious comparable company existed. He said that this argument applied to the water and sewerage companies when they were privatized but did not apply to NIE. The DG told us that an indication of the expected level of market knowledge (that is, lack of novelty) could be ascertained from the relative underpricing¹ of previous electricity sector privatizations (see Table 9.9).

TABLE 9.9 An estimate of underpricing* in the sale of electricity assets in the UK

<i>Sector</i>	<i>Sale date</i>	<i>Underpricing %</i>
Electricity distribution England and Wales	1990	21.9
Electricity generation England and Wales	1991	21.4
Scottish electricity	1991	8.2
Electricity generation Northern Ireland	1993	N/A
NIE	1993	11.4

Source: OFREG (based on *Utility Finance*, July 1993).

*The underpricing that is listed here takes into account the movement of the market on the day and so is a measure of the abnormal increase during the first day of trading rather than the simple movement in the share price. If a simple measure is adopted (that is, not taking account of the movements in the market) figures ranging from 12 per cent, on a fully-paid basis, to 26.5 per cent, on a partly-paid basis, are found for NIE. The figure associated with the discounted second instalment approach lies between the other two measures.

9.70. The DG said that there was less underpricing in the NIE sale than was seen in the sale of distribution and generation businesses in England and Wales but that the level of underpricing was greater than that seen for the Scottish electricity companies. He told us that this evidence could suggest that investors were becoming better informed but that they still had some uncertainty about NIE or its market.

9.71. The DG told us that it was difficult to give any credence to the idea that investors did not understand the electricity industry when there had been three public sales of shares in electricity companies in the UK prior to the flotation of NIE. The DG accepted that there were differences in the way that the Northern Ireland electricity system worked but he said that these differences did not affect NIE's ability to operate its T&D and Supply Businesses.

9.72. We analysed the trend in the premia of the close of first day share prices for a number of privatizations (see Table 9.10). The table shows that after the first part of the sale of National Power and PowerGen in March 1991, these premia were much smaller than before these sales. NIE said that since the privatization of Railtrack and British Energy their share prices had risen very substantially. It also told us that the sale of the remaining 40 per cent of shares in National Power and PowerGen was fundamentally different from a new flotation. We also looked at the difference between the share prices used or implied in determinations of price controls and those at the close of the first trading day and at flotation, and at the uplift factors used or implied (see Table 9.11). The table shows that, on the basis of the close of the first trading day price, the RECs, NGG and British Gas received uplift factors of between 15 and 26 per cent but that the Scottish

¹Measured by comparison of the share price on the close of the first day of trading with the offer price.

electricity companies had no such uplift.¹ The uplifts are higher when expressed as a proportion of the flotation price, for example the uplift factor implied from the first MMC price determination of British Gas was 37 per cent, and the equivalent figures for the second assessment of the REC distribution price controls (July 1995) and for the recent NGG price controls (October 1996) were over 30 per cent in each case.

TABLE 9.10 The premium of the close of first day share price

Date of flotation	Company	Premium on:	
		Fully-paid discounted	Fully-paid undiscounted
8 December 1986	British Gas	9.9	9.3
12 December 1989	Anglian*	22.1	20.2
12 December 1989	North West*	16.0	14.6
12 December 1989	Northumbrian*	26.0	23.8
12 December 1989	Severn Trent*	14.2	12.9
12 December 1989	Southern*	18.7	17.1
12 December 1989	South West*	21.5	19.6
12 December 1989	Thames*	16.4	15.0
12 December 1989	Welsh*	18.7	17.1
12 December 1989	Wessex*	24.7	22.5
12 December 1989	Yorkshire*	22.4	20.4
11 December 1990	Eastern†	22.1	20.0
11 December 1990	East Midlands†	23.2	21.0
11 December 1990	London†	19.3	17.5
11 December 1990	Manweb†	30.3	27.5
11 December 1990	Midlands†	20.2	18.3
11 December 1990	Northern†	19.5	17.7
11 December 1990	NORWEB†	23.9	21.7
11 December 1990	Seaboard†	19.3	17.5
11 December 1990	Southern†	23.0	20.8
11 December 1990	SWALEC†	29.4	26.7
11 December 1990	SWEB†	23.0	20.8
11 December 1990	Yorkshire†	27.3	24.8
12 March 1991	National Power	22.4	21.4
12 March 1991	PowerGen	22.1	21.1
18 June 1991	SHE	9.9	9.2
18 June 1991	ScottishPower	6.8	6.3
21 June 1993	NIE	12.4	12.0
1 March 1995	National Power-remaining 40%	3.6	3.5
1 March 1995	PowerGen-remaining 40%	6.3	6.0
11 December 1995	NGG‡	N/A	N/A
15 May 1996	Railtrack	8.3	8.0
10 July 1996	British Energy	-3.1	-3.0

Source: MMC calculations on data provided by FT, HM Treasury, OFFER, OFWAT and National Audit Office reports.

*Water and sewerage companies.

†RECs.

‡Owned by the RECs until its flotation. The flotation, unlike the privatizations, did not include an offer price or partly-paid shares.

¹The difference in the share prices used in the estimation of the RAB and those at the close of the first trading day are used as a proxy for an uplift factor. The share prices used in estimating the RAB were the 100-day averages, which were lower than the share prices at the close of the first trading day.

TABLE 9.11 Estimated uplifts in regulatory utilities

per cent

	Uplift over:	
	Full offer price undiscounted*	Fully-paid close of first day undiscounted
<i>Water and sewerage companies</i>		
Anglian	26.3	5.0
North West	22.9	7.3
Northumbrian	28.8	4.0
Severn Trent	17.1	3.7
Southern	17.1	0.0
South West	27.9	7.0
Thames	21.7	5.8
Welsh	27.9	9.3
Wessex	24.6	1.7
Yorkshire	28.8	6.9
<i>Companies in energy industry</i>		
SHE	5.4	-3.4
ScottishPower	2.9	-3.1
RECs Distribution Business	First assessment: 50% uplift on close of first trading day. Second assessment: 15% uplift on close of first trading day.	
NGG	20% uplift on close of first trading day.	
British Gas-first MMC price determination inquiry	26% uplift on close of first trading day.	

Source: OFFER and MMC calculations on data from MMC reports, FT, OFWAT and OFFER.

*Based on share prices only-does not include net debt. Water and sewerage companies are based on a comparison of their average share prices over 200 days with their offer prices and their close of first day prices (undiscounted). SHE and ScottishPower are based on a comparison of their average share prices over 100 days with their offer prices and their close of first day prices (undiscounted).

9.73. NIE told us that our calculation for British Gas made no allowance for the different treatment of depreciation (making such an allowance gave an uplift of 60 per cent) or the gradual phase-out of excess returns in the water case (making such an allowance gave an uplift of 65 per cent). It said that although the Scottish electricity companies appeared to have been given no uplift, this was based on the assumption that all the privatization discount was attributable to generation and supply. NIE stated that in the MMC's report on SHE, the MMC noted that use of CCA asset value for the distribution price control review might have been on the generous side, given that SHE was privatized at a substantial discount to its overall value.

Unanticipated efficiency savings

9.74. The DG said that some commentators had suggested that a longer period than the close of the first day of trading should be allowed since investors were unaware of the level of efficiency savings that was possible for NIE: once the actual level of savings that could be achieved had been revealed, investors were able to reflect fully the possible future savings. For this reason some had argued that a period that included at least one announcement of results should be taken so that the market value of the company fully reflected information about the future likely performance.

9.75. The DG told us that the argument about unanticipated efficiency savings did not apply to NIE. He said that investors were well aware of the level of efficiency savings that could be achieved and would have assessed NIE in the light of what had been learned from earlier privatizations. Whereas in the case of the RECs only six months had elapsed between reorganization (vesting) and flotation, the corresponding period was 15 months in the case of NIE, with the result that more information was in the public domain.

9.76. In response to this argument NIE told us that after this time many uncertainties still remained. It gave the following examples:

- it remained uncertain how competition would develop in supply and what the future was for the WETS;
- it was not clear that NIE could meet efficiency targets implicit in its initial price controls (NIE set targets for its manpower reductions during the second year); and
- during this time some of the risks to be taken into account by investors related to contingent liabilities (such as lease termination payments and lender of last resort) which had not crystallized during the first 15 months after the restructuring of the industry.

9.77. The DG told us that to include a set of NIE's financial results within the estimation period would introduce a form of circularity. If the initial regulatory regime had been set too lightly, the financial results would allow investors to determine this fact and adjust the share price accordingly: so the failure of the initial price regime would become entrenched through a higher IMV, allowing shareholders to benefit on a permanent basis.

Financing future activities

9.78. The DG told us that an uprating of the IMV would be required where NIE could not adequately finance its future activities from the cash flow generated from the assumed starting IMV rolled forward to the start of the new price control period. He said that at the extreme, this would occur where interest cover fell below 1. The DG stated that he considered it advisable to continue to allow for reasonable dividend payments in order to ensure that NIE also had the option to raise finance from equity. In this way he said that at a minimum he considered it appropriate to allow NIE to earn its cost of capital on investments made since flotation. The DG told us that some additional return on pre-flotation investment made by shareholders was also appropriate to maintain the cost of capital but not strictly necessary to ensure that NIE could finance its activities. He said that an uprating might be considered if the impact on the interest cover and the share price was such that NIE's ability to raise finance from the capital markets was threatened. The DG also told us that his sole duty to investors was to set prices that enabled NIE to finance its licensed activities. That duty was forward-looking and he was under no obligation to satisfy the expectations of investors in 1993. He was clear that his proposals represented a proper balance between the interests of consumers and shareholders.

9.79. NIE said that it was not sufficient to consider shareholder interests only in terms of the company's ability to raise finance, nor to argue that an uprating might be considered only if the impact on interest cover and the share price was such that NIE's ability to raise finance from the capital markets was threatened. NIE told us that to focus entirely on such a narrow definition of shareholder interests would not be in the long-term interests of customers if it violated legitimate investor expectations, thereby adding to perceived regulatory risk and increasing the cost of capital.

Initial price control values

9.80. NIE told us that the expectations of the Government at the time of NIE's privatization were communicated to NIE in the form of financial models exchanged following flotation. NIE said that these models used a CCA approach which gave a value for its T&D Business of £458 million at 31 March 1993 (at 1993/94 prices). In its financial modelling for this inquiry, NIE adopted an RAB of £429 million (at 1993/94 prices) in April 1993 (see paragraph 9.148). We noted that page 99 of the prospectus showed the accounts of NIE on a CCA basis which gave a value for NIE's group net assets of £509.1 million at 31 March 1993. Deducting the Government debenture (£70 million) would leave NIE's group net assets at £439.1 million.

9.81. NIE said that although the T&D asset value in the Government's financial models was not disclosed to investors, the Government's and the then DG's signals to investors would have meant that investors would have expected to continue to be allowed to earn a rate of return on the initial CCA asset value of £458 million. NIE told us that the Government's signals were its statement in the prospectus that, following a period of subsidy, prices were intended to move towards a long-run sustainable price, and its use of an X factor of

+ 3.5 per cent. NIE said that the then DG had clearly signalled in the prospectus his intention at future price reviews to allow a market rate of return on current cost assets by stating that 'I shall have regard to the rate of return that the market will then require'.

9.82. NIE told us that its own privatization was unusual in that the Government's expectations were made available to the regulator in addition to information provided to investors which was sufficient to enable them to place a value on its T&D Business which would correspond to its IPCV. Based on information in the prospectus and in its 1992/93 accounts, investors would have valued the T&D Business (at 1992/93 prices) at between £446 million and £482 million using a 9 per cent discount rate, and between £477 million and £527 million using a 7 per cent discount rate. These values were consistent with the value (£458 million) used by the Government at the time of privatization. Appendix 9.6 sets out NIE's assumptions and method.

9.83. We asked the DED whether it believed that reasonable investors could at the time of privatization have inferred from information in the public domain the prospective cash flows of NIE which they could then use to value the company. The DED told us that investors would have known what was in the prospectus and nothing more. The prospectus stated right at the beginning that nothing other than that which was contained in the document, or in the mini prospectus taken together with the prospectus, should be relied upon.

9.84. The DG told us that any values derived by investors using this approach would have been subject to considerable uncertainty. In any event, he said that if investors did use this approach then the IPCV would have been reflected in their calculations of the appropriate share price by the end of the close of the first trading day: estimates of the IPCV which were higher than the value at the close of the first trading day used assumptions which did not reflect those of the investors at that time.

The CCA approach

9.85. An alternative approach to estimating asset value is to use the CCA asset value in the current year. Both the DG and NIE accept that NIE's prices should in principle be based on the CCA value of NIE's assets, as such prices would fully reflect the costs of NIE's operations. The dispute between the DG and NIE concerned the speed at which NIE's prices should move to this basis. NIE said that the Government envisaged that NIE's prices would give a market return on its CCA value by the end of the first regulatory period which was reflected in the initial price control components, whereas the DG said that NIE's prices should be fully cost-reflective by the early years of the next century. The NIAO report (see paragraphs 5.53 and 5.80 to 5.83) states that 'The tariff path agreed between DED and HM Treasury is intended to achieve the long-run sustainable price in the year 2012-13 with tariff increases synchronized to those points in time at which substantial capital investment is required, for example, to meet more stringent environmental standards or to introduce additional or replacement generating capacity.'¹

9.86. NIE told us that recent advice from its engineering consultants indicated that the CCA values in its accounts understated the modern equivalent replacement cost of its T&D assets. NIE said that following a detailed investigation, it believed that the understatement in 1996/97 was at least £190 million. It told us that this understatement would have to be corrected if asset valuation was to be based on the CCA approach. NIE said that using the modern equivalent replacement cost approach to value its assets would lead to an MAR much lower than that estimated by the DG (see paragraph 9.45).

Allocation of the initial market value to NIE's T&D and Supply Businesses

9.87. The DG allocated his estimate of NIE's IMV to the T&D and Supply Businesses in the light of CCA values at March 1993. Table 9.12 shows the DG's allocation and NIE's allocation based on its estimate of its IPCV.

¹NIAO: *The privatisation of NIE*, 26 October 1994, paragraph 10.

TABLE 9.12 IMV of NIE and each of its businesses

£ million, 1993/94 prices

	<i>Allocated market valuation</i>		
	<i>CCA values</i>	<i>OFREG's estimate of IMV</i>	<i>NIE's estimate of IMV</i>
T&D	421.7	331.8	458.0
Supply	50.8	40.0	
PPB	1.0	1.0	{ [*]
Other	(27.5)	0.0	
NIE plc	446.0	372.8†	[*]

Source: OFREG and MMC calculations based on data provided by OFREG and NIE.

[*Details omitted. See note on page iv.*]

†Based on OFREG's initial estimate-see Tabel 9.8.

[*Details omitted. See note on page iv.*]

9.88. NIE rejected the DG's allocation method. It said that there were two possible approaches to the apportionment of the value of NIE between T&D and its other businesses. The first was to allocate the IMV, as the DG had done, by reference to the CCA value shown in NIE's accounts as at 31 March 1993. On this basis NIE estimated that its T&D Business represented about 95 per cent of the value of NIE.

9.89. NIE said that it favoured the second approach to allocation, namely that based on the concept of a 'well-informed investor'. It told us that such an investor would look at each of NIE's businesses and try to value a number of aspects, for example the level of risk, the potential to lose money, the unique industry structure, the potential for increased competition and potential exit costs. NIE said that these risks were reflected in analysts' comments. It told us that using such an approach a well-informed investor would allocate virtually the whole of NIE's value to its T&D Business as all of its other businesses were subject to sizeable risks. NIE's estimate of the value of its T&D Business (£458 million) was 38 per cent higher than the DG's estimate. We look at the valuations placed on each of its businesses by NIE.

PPB

9.90. NIE told us that when estimating the value of the PPB, the well-informed investor would have taken account of the following risks: the introduction of competition, the pass-through element in the PPB price control, the PPB's role as a lender of last resort and its obligation to meet certain landbank liabilities. We look at each of these areas in turn.

9.91. NIE said that the DG faced two options when considering how to introduce competition into the electricity supply industry in Northern Ireland. First, he could leave the PPB in place as a monopoly wholesaler of generation, leaving competition to develop in supply alone. Secondly, he could allow competitive procurement of generation by competing suppliers, thereby introducing competition in the wholesale purchasing as well as the supply of electricity. NIE stated that the uncertainty as to which option the DG would choose exposed investors to the risk that the regime governing the PPB would be substantially modified, leaving the PPB with some electricity purchase contracts on potentially onerous terms. In the light of these considerations, NIE said that a well-informed investor would have judged the PPB to provide, at most, a profit stream for up to three years (up to 1996) and, at worst, to be exposed to losses which, after three years, could be very substantial.

9.92. NIE told us that as a result of it only being able to pass through 90 per cent of its electricity purchase costs, it faced the prospect of recouping less than its actual electricity purchase costs via the Bulk Supply Tariff.

*Figures omitted. See note on page iv.

9.93. It stated that its role as lender of last resort-if no other finance was available, NIE undertook to lend money to generators to adapt their plant to comply with new legal requirements-could affect its costs of raising finance for other purposes and, in the Supply Business, increasing its exposure to bad debts.

9.94. NIE told us that the obligation it carried to meet certain landbank liabilities, for example claims arising from contamination of land, increased the risks of bad debts to its Supply Business.

9.95. NIE said that investors taking into account all of these factors would have attributed, at best, a zero value to the PPB and, quite possibly, a value of -£5 million.

9.96. The DG told us that the PPB had, at worst, a zero value. He based his view on the fact that the costs of the PPB could be passed through, thereby isolating NIE from any risk.

Supply Business

9.97. NIE stated that its Supply Business was a high-turnover, low-margin business and that inefficient handling of billing or debt collection was capable of eroding a large proportion of its profit. It said that its Supply Business faced the prospect of immediate competition, with large customers having the right to buy direct from the PPB, some customers turning to own-generation (for example, CHP) and second-tier suppliers entitled to supply all types of customers. NIE told us that at the time of the flotation, all of these options presented themselves as genuine threats to its Supply Business.

9.98. NIE said that in the light of these risks, a well-informed investor would have had no expectation of profits after the first three years and would have attributed no substantial value to the Supply Business, certainly no more than £20 million.

9.99. The DG gave three reasons in support of his valuation of NIE's Supply Business (£40 million). First, NIE's Supply Business was a profitable operation. Secondly, there was no, and was unlikely to be during the next price control period any, significant competition in the supply market in Northern Ireland, owing to the structure of the electricity sector in Northern Ireland and the requirements for all second-tier suppliers to contract with NIE's PPB. Thirdly, allocating a positive value to the Supply Business ensured that the allocation of the IMV to the T&D Business was consistent with the profits allowed under the pricing regime. The DG said that the allowed profit of the Supply Business was consistent with an asset value possibly double the £40 million he had used.

Retail Business

9.100. NIE told us that its Retail Business had lost money prior to flotation. The 1993 results contained in the prospectus showed an operating loss of £0.8 million before an exceptional charge of £4.3 million relating to reorganization and restructuring costs. NIE said that investors would have been sceptical as to the long-term viability of the Retail Business. They would have been aware that the Great Britain RECs were likely to pull out of their retailing activities, in some cases at a substantial loss. NIE stated that prior to its flotation Dixons and Currys had established retail outlets in Northern Ireland but that Comet had closed its outlets having failed to find a buyer. [

Details omitted. See note on page iv.

]

9.101. Regarding NIE's Retail Business, the DG said that an asset value of zero was very generous. He told us that investors would expect a business either to become profitable-which happened to NIE's Retail Business within six months of flotation-or to be sold.

9.102. Table 9.13 shows NIE's estimates of the values that well-informed investors would have placed on NIE's businesses other than T&D. The total value of these businesses ranges from -£[*] to £[*].

*Figures omitted. See note on page iv.

TABLE 9.13 NIE's estimates of the values of its businesses other than T&D

<i>£ million, 1993/94 prices</i>		
	<i>Minimum</i>	<i>Maximum</i>
PPB	[
Supply		<i>Figures omitted.</i>
Retail		<i>See note on page iv.</i>
Total]	

Source: NIE.

Depreciation

9.103. The methodology for determining the permitted revenues of the T&D Business in the next review period from 1997/98 to 2001/02 is discussed in paragraph 9.131. It requires a valuation of the business assets (RAB) at the beginning of the period and a calculation of the change in the NPV of the RAB between the beginning and end of the period. Depreciation is a factor in the calculation of both these elements and indeed the methodology allows the depreciation of the allowed RAB over the review period¹ to be recovered in revenues of NIE. Consequently there are advantages in using depreciation rates in the NPV methodology which are consistent with rates used by NIE in its accounts.

9.104. From the year ended 31 March 1993, NIE's depreciation policy for the T&D Business was to write off the T&D network assets over 40 years, representing a 3 per cent charge for the first 20 years and a 2 per cent charge for the remaining 20 years. NIE refers to this as a 'kinked' depreciation policy. NIE told us that this policy was in line with best practice in the industry.

9.105. The other assets of NIE are depreciated on a straight-line, unkinked basis as follows:

- non-operational freehold and long leasehold buildings-up to 60 years;
- fixtures and equipment-up to 15 years;
- vehicles and mobile plant-up to five years.

Freehold land is not depreciated.

9.106. Table 9.14 shows NIE's HCA net book value for its various categories of fixed assets from 31 March 1992 to 31 March 1996 and the movements in the categories over the four-year period. At March 1992 the book value of T&D fixed assets was £273 million and it increased over the four years by £127 million to £400 million at March 1996. At March 1996 T&D fixed assets represented 90 per cent of NIE's total fixed assets. Over the four years the net book value of other fixed asset categories increased by £6 million. The detailed analysis of movements in assets is shown in Appendix 9.7.

¹In the first price control period the depreciation has been based on the opening asset value (RAB) at June 1993 over 18.5 years, and on most subsequent assets acquired at 3 per cent a year.

TABLE 9.14 NIE historical cost fixed asset summary from 1992 to 1996

	<i>£ million</i>				
	<i>T&D network</i>	<i>Non-op land & buildings</i>	<i>Fixtures and equipment</i>	<i>Vehicles and mobile plant</i>	<i>Total</i>
Net book value at 31 March 1992	273	10	23	4	310
Change for 1992/93	<u>37</u>	<u>0</u>	<u>(5)</u>	<u>1</u>	<u>33</u>
Net book value at 31 March 1993	310	10	18	5	343
Change for 1993/94	<u>23</u>	<u>0</u>	<u>(1)</u>	<u>(1)</u>	<u>21</u>
Net book value at 31 March 1994	333	10	17	4	364
Change for 1994/95	<u>30</u>	<u>1</u>	<u>4</u>	<u>2</u>	<u>37</u>
Net book value at 31 March 1995	363	11	21	6	401
Change for 1995/96	<u>37</u>	<u>0</u>	<u>4</u>	<u>1</u>	<u>42</u>
Net book value at 31 March 1996	<u>400*</u>	<u>11</u>	<u>25</u>	<u>7</u>	<u>443</u>
Total change over period	127	1	2	3	133
Percentage increase (%)	46	8	11	80	43

Source: NIE.

*At March 1996 the gross cost of T&D network assets was £587 million and cumulative depreciation was £187 million, compared with a gross cost at March 1992 of £404 million and cumulative depreciation of £131 million.

9.107. The movements in CCA fixed assets from March 1992 to 31 March 1996 are shown in Table 9.15. The net book value of the T&D assets increased by £80 million over the period, from £534 million to £614 million. The detailed movements in the CCA assets over the period are shown in Appendix 9.8. At March 1996 the difference between the CCA and HCA net book values for the T&D assets was £214 million (53 per cent of the £400 million HCA net book value).

TABLE 9.15 NIE current cost fixed asset summary from 1992 to 1996*

	<i>£ million</i>					
	<i>PPB, generation and interconnector</i>	<i>T&D network†</i>	<i>Supply</i>	<i>Total for regulated businesses</i>	<i>Total other assets</i>	<i>Total per CCA accounts</i>
Net book value at 31 March 1992	3	534	0	537	24	561
Change for 1992/93	<u>1</u>	<u>17</u>	<u>0</u>	<u>18</u>	<u>2</u>	<u>20</u>
Net book value at 31 March 1993	4	551	0	555	26	581
Change for 1993/94	<u>2</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>(1)</u>	<u>1</u>
Net book value at 31 March 1994	6	551	0	557	25	582
Change for 1994/95	<u>19</u>	<u>34</u>	<u>0</u>	<u>53</u>	<u>5</u>	<u>58</u>
Net book value at 31 March 1995	25	585	0	610	30	640
Change for 1995/96	<u>(10)</u>	<u>29</u>	<u>0</u>	<u>19</u>	<u>3</u>	<u>22</u>
Net book value at 31 March 1996	<u>15‡</u>	<u>614§</u>	<u>0</u>	<u>629</u>	<u>33</u>	<u>662</u>
Total change over period	12	80	0	92	9	101
Percentage increase (%)	356	15	0	17	38	18

Source: NIE.

*The CCA accounts are prepared for regulatory purposes and the breakdown of information is therefore different from that in the HCA accounts.

†At March 1996 the gross CCA value of T&D network assets was £1,692 million and cumulative depreciation was £1,078 million. The equivalent figures at March 1992 were £1,386 million and £852 million respectively. NIE told us that the gross CCA value and cumulative depreciation value were substantially in excess of the equivalent HCA figures shown in Table 9.14 because network fixed asset lives were increased to (principally 40) years in 1992/93. Prior to this T&D network fixed assets were depreciated over as little as 25 years, hence understating the asset base for both HCA and CCA assets. A major one-off exercise was also carried out in 1992/93 to establish MEAV based on engineering records rather than indexing HCA values.

‡The net book value of £15 million represented system operational assets of £2 million, interconnector assets of £7 million, and fixtures and equipment of £6 million.

§The net book value of £614 million represented T&D network assets of £605 million, non-operational land and buildings of £6 million, and fixtures and equipment of £3 million.

9.108. The revaluation to current cost is based on NIE's estimates of the gross current replacement costs using the convention of MEAV. This is based on the cost of replacing an asset with a technically up-to-date,

new asset having the same service capability, after allowing for differences both in the quality of output and in operating costs. Depreciation is applied using the same rates as shown for the HCA accounts.

9.109. NIE told us that it was considering a further revaluation of its fixed assets and a review of its capitalization policy. In general, the greater the depreciation that NIE writes off in its accounts, the greater is the revenue that it can be permitted to recover via the NPV methodology. Where there are substantial revaluations, however, the accounting depreciation will not necessarily be the amount permitted for recovery under the NPV methodology. The methodology enables the company to be remunerated for capital expenditure that the DG thinks is reasonable. This includes a return on the capital invested and, to the extent that assets require replacement, the recovery of the depreciation on such costs.

NIE's financial projections

9.110. As part of its case for a modification in the DG's proposals, and in the hope of averting an MMC inquiry, NIE prepared a corporate plan in August 1996, covering the period to 2002, as a basis for counter-proposals to the DG for a set of mutually acceptable price formulae. However, no agreement was reached between the DG and NIE on these proposals-which NIE called its composite proposal-nor was the corporate plan submitted to the DG. NIE told us that it had hoped to be able to discuss the basis of the plan with the DG but deduced from initial discussion that he was not willing to make any concessions and decided that there was nothing to be gained from submitting any plan to him.

9.111. The information in paragraphs 9.113 to 9.128 is substantially taken from the corporate plan, which assumes annual inflation rates-set out in Table 9.16-of between 3.2 and 3.5 per cent in the six years to 2001/02. The DG told us that he did not have sight of the corporate plan on which NIE's discussions with the MMC were based, but believed that if revised plans existed, they should have been submitted to him for discussion as this would have assisted the process of consultation on the price control revisions. NIE did not tell the DG that the plan existed until the MMC reference was under way.

9.112. NIE further told us that, following consideration of the DG's price control proposals, it made its own proposal to the DG for a modified price control and expressed its hope that the DG would be willing to discuss NIE's proposal. In his response the DG stated that he had made proposals for the modification of NIE's licence and that he could not increase the allowed revenue (beyond that reflected in his own proposals) without reopening the entire basis for the review, but that he would be prepared to consider restructuring the proposals for P_0 and X (see paragraphs 9.145 and 9.146 for an explanation and discussion of the P_0 and X issues). NIE subsequently obtained confirmation from the DG that restructuring or rephrasing of the controls would provide no benefit to NIE in terms of the NPV to NIE of the total revenues recoverable over the regulatory period as a whole. In the light of this information, it was clear that the DG would not accept NIE's proposal. Therefore NIE saw no benefit in submitting to the DG its corporate plan which formed the basis of NIE's counter-proposal.

9.113. The basis of the plan was that NIE was prepared to accept the DG's proposals for the PPB but not those for the T&D and Supply Businesses. For the T&D Business, the main source of NIE's profits, NIE wanted the DG to approve a P_0 fall of 20 per cent and X of -3,¹ as opposed to the DG's proposals for P_0 falling by 30 per cent and X of -2. The DG's proposals envisaged that NIE's maximum permitted T&D revenues for the next five years (in 1996/97 prices) should be £128 million for 1997/98 falling to £124 million by 2001/02, whereas NIE's counter-proposal implied revenues of £146 million in 1997/98 falling to £137 million in 2001/02. The difference amounts to some £77 million in revenues over the five-year period. This subject is discussed further in paragraphs 9.130 to 9.151.

9.114. For the Supply Business NIE's composite proposal envisaged a P_0 fall of 32 per cent, compared with the DG's proposals for a P_0 fall of 45 per cent, although NIE was prepared to agree to his proposal for an X factor of -1.5. This implied revenues of £26 million in 1997/98 and continuing at broadly that level,

¹In this report we refer, for example, to X as -2. By this presentation we mean that the RPI-X formula should be read as RPI-2. We note that strictly from a mathematical point of view, X should be quoted as 2, but this form of presentation can cause misunderstanding of the effect of X, which in the example noted is meant to set regulated prices on a downward path at 2 per cent below the annual RPI percentage increase. Therefore an X of -3 would emphasize the increased downward pressure on regulated prices over the price control period.

whereas the DG's proposals would have entailed annual revenues of around £20.6 million falling to £20.1 million over the price control period, all at 1996/97 prices.

9.115. Table 9.16 shows NIE's forecast profit and loss account, taken from the corporate plan, for the six years from 1996/97 to 2001/02 in nominal terms. NIE told us that this was based on its estimates of costs and the income required to maintain a satisfactory supply of electricity services in Northern Ireland and to meet the expectations of its shareholders. The first year of the forecast, 1996/97, is the last year of the current price control period. [

Details omitted. See note on page iv.

]

TABLE 9.16 NIE's 1996 corporate plan: consolidated forecast profit and loss account, 1996/97 to 2001/02

£ million, nominal prices

	<i>Years ended 31 March</i>					
	<i>1996/97</i>	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>
<i>HCA accounts</i>						
Turnover*	[
Net operating costs						
Operating profit on ordinary activities						
Exceptional items						
Profit before interest						
Net interest payable†						
Profit on ordinary activities before taxation						
Taxation charge‡						
Profit after taxation						
Dividends						
Retained profit for the year						
<i>Performance indicators summary</i>						
Turnover growth (%)						
Operating profit as percentage of turnover (%)						
Profit before interest as percentage of turnover (%)						
Profit after tax growth (%)						
Dividend cover (times)						
Dividend per share (p)						
Dividend growth (%)						
Assumed change in RPI (%)						
Number of employees (FTE)						
Reduction in employees in year						
Net cash inflow from operating activities (£m)]

Figures omitted. See note on page iv.

Source: NIE.

*The assumptions on T&D revenues are a P₀ fall of 20 per cent for 1997/98 and an X factor of -3, for Supply revenues a P₀ fall of 32 per cent for 1997/98 and an X factor of -1.5, and for the PPB a P₀ fall of 30 per cent for 1997/98 and an X factor of -3. Further analysis of turnover is shown in Table 9.18.

†Major expenditure on the Scottish interconnector is expected from late 1997/98 leading to a need for increased borrowings by way of lease finance (see paragraph 9.118).

‡The tax shown is less than will apply after the change to capital allowances arising out of the November 1996 Budget takes effect-see paragraphs 9.24 to 9.26.

9.116. [

Details omitted. See note on page iv.

]

9.117. NIE divides its costs into controllable and non-controllable categories. It categorizes the following as non-controllable costs:

- [*Details omitted. See note on page iv.*]

- *Rates:* these have been the subject of a revaluation which is due to take effect from April 1997. NIE estimated that as a result of the revaluation, its rates liability would increase to £6.9 million in 1997/98 and £7.2 million in 2001/02, compared with a level of £4.9 million for 1995/96.

- [*Details omitted. See note on page iv.*]

9.118. [

Details omitted. See note on page iv.

]

9.119. [

Details omitted. See note on page iv.

]

TABLE 9.17 NIE's 1996 corporate plan: consolidated forecast balance sheet, 1997 to 2002

	<i>£ million, nominal prices</i>					
	<i>As at 31 March</i>					
	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>
<i>HCA accounts</i>						
Fixed assets excluding interconnector	[
Interconnector fixed assets*						
Tangible fixed assets						
Stock and debtors less creditors (excluding borrowings)						
Net operating assets						
(Borrowings) net of cash (debt)						
Long-term lease creditors (debt)*						
Dividends payable						
Deferred income and grants						
Provisions						
Net assets						
<i>Financed by</i>						
Share capital and reserves (equity)†						
						<i>Figures omitted. See note on page iv.</i>
<i>Changes in fixed assets</i>						
Increase in general fixed assets						
Change in interconnector fixed assets						
Increase in fixed assets for year						
Increase in deferred income and grants						
<i>Performance indicators summary</i>						
Operating profit as % of average net assets (%)						
Operating profit as % of average net operating assets (%)						
Debt to equity multiple						
Post tax profit as percentage of equity (%)]

Source: NIE.

*Major expenditure on the Scottish interconnector is expected in late 1997/98. The interconnector is assumed to be lease financed, with the assumption that the grant aid is transferred to the lessor.

†There are expected to be proceeds of £1.5 million in 1997 relating to exercise of options under the executive share option scheme and £6.5 million in 1998 under the Employee Sharesave Scheme.

9.120. [

Details omitted. See note on page iv.

]

TABLE 9.18 NIE's 1996 corporate plan: analysis of forecast turnover and profits, 1996/97 to 2001/02

£ million, nominal prices

	Years ended 31 March					
	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02
<i>Analysis of turnover</i>						
PPB	[
T&D						
Supply						
Interconnector						
Inter-business sales						
Total: regulated activities						
Appliance retailing (external sales)						
Other (external sales)						
Total turnover per Table 9.16						
Supply turnover net of PPB and T&D						
				<i>Figures omitted. See note on page iv.</i>		
<i>Analysis of operating profit</i>						
PPB						
T&D						
Supply						
Interconnector						
Total: regulated activities						
Appliance retailing						
Other						
Total profit per Table 9.16]
						<i>per cent</i>
<i>Operating profit as percentage of turnover*</i>						
PPB	[
T&D						
Supply (net of PPB and T&D turnover)†						
Interconnector						
Total: regulated activities						
Appliance retailing						
Other (external)						
Total for all activities						
Supply profit as percentage of supply turnover†]

Source: NIE.

*The percentages are calculated on unrounded figures, rather than those shown on the table.

†The Supply profit is shown as a percentage of its gross turnover, and as a percentage of Supply turnover net of PPB and T&D turnover. Most of the inter-business sales relate to the pass-through of charges from the PPB and T&D Businesses.

[Details omitted. See note on page iv.]

9.121. [

Details omitted. See note on page iv.

]

9.122. [

Details omitted. See note on page iv.

]

[

Details omitted. See note on page iv.

]

9.123. [

Details omitted. See note on page iv.

]

TABLE 9.19 NIE's 1996 corporate plan: forecast returns on net assets, 1996/97 to 2001/02

£ million, nominal prices

	Years ended 31 March					
	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02
<i>Analysis of net assets (HCA)</i>						
PPB	[
T&D						
Supply						
Interconnector*						
Total: regulated						
Appliance retailing						
Other (including inter-business adjustments)†						
Total per Table 9.17]
						<i>per cent</i>
<i>Operating profit as percentage of average net assets</i>						
PPB	[
T&D						
Supply						
Total: electricity (excluding inter-business adjustments)						
Appliance retailing						
Other†						
Total]

Source: NIE.

*This is the interconnector net assets balance, after deducting the lease obligations.

†This represents profit centre net assets, less borrowings, dividends payable and taxation. Because NIE operates a central treasury function, borrowings were not allocated to the relevant businesses in the corporate plan. Most of the borrowings would be allocated to the T&D Business, and therefore the net assets shown for the regulated businesses are overstated to the extent of borrowings not allocated to these businesses.

9.124. [

Details omitted. See note on page iv.

]

TABLE 9.20 NIE's 1996 corporate plan: forecast staff numbers, 1996/97 to 2001/02

	As at 31 March					
	1997	1998	1999	2000	2001	2002
<i>FTEs by activity at year end</i>						
PPB	[
T&D						
Supply						
Inter-division*						
Retailing						
						<i>Figures omitted. See note on page iv.</i>
Reduction in numbers in year						
Percentage reduction in year (%)]
						<i>per cent</i>
<i>Percentage analysis by activity</i>						
PPB	[
T&D						
Supply						
Inter-division*						
Retailing]

Source: NIE.

*This includes telecommunications ([†] people), transport ([†] people), information systems ([†] people), civil engineering ([†] people), other profit centres ([†] people), corporate ([†] people) and interconnector ([†]).

9.125. [

Details omitted. See note on page iv.

]

TABLE 9.21 NIE's 1996 corporate plan: forecast profitability of PPB, 1996/97 to 2001/02*

	£ million, nominal prices					
	Years ended 31 March					
	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02
Turnover	[
Operating profit						
HCA net assets at year end]
						<i>per cent</i>
Operating profit as percentage of turnover	[
Operating profit as percentage of average net assets]

Source: NIE.

*The full table summarizing NIE's performance for all its activities is shown in Table 9.18.

9.126. [

Details omitted. See note on page iv.

]

9.127. [

Details omitted. See note on page iv.

]

TABLE 9.22 NIE's 1996 corporate plan: forecast profitability of T&D Business, 1996/97 to 2001/02*

£ million, nominal prices

	<i>Years ended 31 March</i>						
	<i>1996/97</i>	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>	
Turnover	[
Operating profit			<i>Figures omitted. See note on page iv.</i>				
HCA net assets at year end]	
						<i>per cent</i>	
Operating profit as percentage of turnover	[
Operating profit as percentage of average net assets			<i>Figures omitted. See note on page iv.</i>]

Source: NIE.

*The full table summarizing NIE's forecast performance for all its activities is shown in Table 9.18.

9.128. [

Details omitted. See note on page iv.

]

TABLE 9.23 NIE's 1996 corporate plan: forecast profitability of Supply Business, 1996/97 to 2001/02*

£ million, nominal prices

	<i>Years ended 31 March</i>						
	<i>1996/97</i>	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>	
Supply turnover	[
Set-off of Bulk Supply Tariff and Use of System turnover			<i>Figures omitted. See note on page iv.</i>				
Net Supply turnover							
Operating profit							
HCA net assets at year end]	
						<i>per cent</i>	
Operating profit as percentage of turnover	[
Operating profit as percentage of net Supply turnover			<i>Figures omitted. See note on page iv.</i>				
Operating profit as percentage of average net assets]	

Source: NIE.

*The full table summarizing NIE's performance for all its activities is shown in Table 9.18.

9.129. Our review of the forecast capital expenditure and operating costs is set out in Chapters 7 and 8.

The DG's proposals for the T&D Business price controls and NIE's response

9.130. We now look at the NPV methodology for assessing the permitted revenues of the T&D Business, how the methodology was applied by the DG, and NIE's submission to us on where it disagreed with the DG's analysis.

The DG's proposal

9.131. The T&D price control is based on an NPV methodology that aims to give NIE revenues to cover its operating costs, the depreciation applicable to its opening capital assets base and subsequent capital expenditure in the review period, and a return on the capital invested in the T&D Business. In preparing his proposals for the T&D price control, the DG therefore examined the operating costs and capital expenditure forecasts of NIE. His proposals estimated that on the basis of a discount rate of 7 per cent (that is, assuming a rate of return equal to this amount), the NPV of revenues required by the T&D Business in the five years to March 2002 was £535 million in 1996/97 prices.

9.132. The DG's proposals included the following elements:

- an initial RAB value at April 1997 of £463 million (discussed further in the following paragraphs);
- operating expenditure starting at just under £64 million in 1997/98 and falling to some £59 million in 2001/02 (see Table 8.7); and
- net capital expenditure (after customer contributions) at £63 million in 1997/98 falling to some £43 million in 1999/2000, increasing to £55 million in 2000/01, and then falling back to £46 million in 2001/02, an annual average of approximately £52 million (see Table 7.4).

The DG also proposed reducing the NPV of NIE's permitted revenues by £7 million in order not to refinance some of the capital expenditure underspend in the initial regulatory period. He estimated that the benefit to NIE of the underspend for the years 1993/94 and 1994/95 was £14 million and proposed that this should be shared equally between NIE and its customers. NIE contended that this was wrong in principle as any 'clawback' of past revenues was against the principle of incentive regulation.

9.133. The DG calculated the closing fixed RAB value at March 2002 as £571 million. Table 9.24 shows the movements from the opening RAB value of £463 million at March 1997 to the closing value of £571 million. The DG assumed that assets in existence at the flotation in June 1993 would be depreciated over 18.5 years and assets added thereafter at 3 per cent a year. Paragraphs 9.103 to 9.109 discuss depreciation in more detail. The 18.5-year depreciation period for pre-flotation assets was agreed between NIE and the DG as a fair approximation to the remaining lives of those assets at June 1993, and the 3 per cent depreciation rate for new assets reflected NIE's policy (see paragraph 9.104). The 3 per cent rate is 0.5 per cent more generous than the rate of 2.5 per cent which would have applied if the T&D assets were depreciated evenly over the assumed lives of 40 years. For example, on the basis of a capital expenditure level of £50 million in a year, this difference would amount to an annual depreciation effect of £0.25 million, which the NPV methodology gives as additional revenue.

TABLE 9.24 The DG's T&D price control proposals: summary of RAB movements

	<i>£ million, 1996/97 prices</i>				
	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>
Opening value	463.3	498.5	523.9	536.4	558.9
Capital expenditure (net of contributions)	62.4	54.2	42.6	54.2	45.6
Depreciation*	(27.2)	(28.8)	(30.1)	(31.7)	(33.1)
Closing value (used by DG in NPV model)	498.5	523.9	536.4	558.9	571.4

Source: The DG.

*Depreciation on opening RAB value in 1993 is calculated over 18.5 years and on later asset additions at 3 per cent.

9.134. For the next price control period the DG and NIE agreed that so-called non-operational capital expenditure for the T&D Business (for example, land and buildings, fixtures and fittings, and plant with lives shorter than 30 years) would be treated as additional operating expenditure. Hence NIE was permitted to recover revenues at 100 per cent on such assets rather than only the depreciation on them. From an accounting viewpoint, however, these sums would normally be treated as additional capital expenditure and depreciated in the case of NIE over, for example, an assumed 20 years. Table 9.25 shows movements in non-operational capital expenditure and the total T&D fixed assets carried forward at each year end, including this category of fixed assets.

TABLE 9.25 The DG's T&D price control proposals: summary of movements in non-operational capital expenditure

	<i>£ million, 1996/97 prices</i>				
	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>
Non-operational capital expenditure brought forward	0.0*	0.7	1.4	2.2	2.8
Additions	0.7	0.8	0.9	0.8	0.8
Depreciation-20 years	(0.0)	(0.1)	(0.1)	(0.2)	(0.2)
Balance carried forward	0.7	1.4	2.2	2.8	3.4
Total fixed assets carried forward at year end (operational capital expenditure and non-operational capital expenditure)	499	525	539	562	575

Source: The DG.

*The non-operational capital expenditure brought forward is deemed as zero for the purpose of the price control methodology.

9.135. We have summarized the DG's proposals for the T&D Business in Table 9.26. The total NPV of allowed costs is shown as £535 million, and by proposing a value of X as -2, the DG used the T&D price control formula (discussed in Chapter 4) to set the maximum permitted revenues for the T&D Business as £128 million in 1997/98, falling to £124 million in 2001/02. This price determination gave rise to a P_0 fall of 30 per cent (see also paragraph 9.145 *et seq* for discussion of P_0 changes).

9.136. The DG disregarded the forecast cost of the Scottish interconnector because its costs are recovered by a separate regulated Interconnector Business, rather than NIE's T&D Business, and will be recoverable via Use of Interconnector charges. The DG recognized that interconnection with Scotland opened up the possibility of wheeling units across the NIE system, for example from Scotland to the Republic of Ireland. He proposed that if such wheeling gave rise to T&D costs (for example, a requirement to reinforce the T&D network), these costs could be met through a special 'wheeling' term which would be an amount set when appropriate.

TABLE 9.26 The DG's T&D price control proposals: calculation of NPV of allowed revenues

	<i>£ million, 1996/97 prices</i>						
	<i>April 1997</i>	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>	<i>April 2002</i>
RAB valuation (see Table 9.24)	463.3						571.4
Operating expenditure*		63.3	62.8	61.4	60.8	59.2	
Non-operational capital expenditure†		0.7	0.8	0.9	0.8	0.8	
Capital expenditure (see Table 9.24)‡		62.4	54.2	42.6	54.2	45.6	
Total		<u>126.4</u>	<u>117.8</u>	<u>104.9</u>	<u>115.8</u>	<u>105.6</u>	
NPV @ 7% of operating expenditure		61.2	56.7	51.8	48.0	43.7	
NPV @ 7% on non-operational capital expenditure		0.7	0.7	0.8	0.6	0.5	
NPV @ 7% of capital expenditure		<u>60.3</u>	<u>49.0</u>	<u>36.0</u>	<u>42.8</u>	<u>33.6</u>	
NPV @ 7% (operating expenditure and capital expenditure)		<u>122.2</u>	<u>106.4</u>	<u>88.6</u>	<u>91.4</u>	<u>77.8</u>	
<i>Summary for five years</i>							
NPV of operating expenditure		261.4					
NPV of non-operational capital expenditure		3.3					
NPV of capital expenditure		<u>221.7</u>					
Total NPV		486.4					
NPV of RAB as at April 2002							<u>407.4</u>
Change in NPV of RAB values over period (463.3 less 407.4)		<u>55.9</u>					
Total NPV		542.3					
Past capital expenditure underspend adjustment		<u>(7.1)</u>					
NPV of allowed costs		<u>535.2‡</u>					

Source: The DG.

*Table 8.7 shows the supporting details for these figures, adjusted to out-turn RPI at October 1996.

†Table 7.4 shows the supporting details for these figures.

‡The discount rate used is 7 per cent.

9.137. The DG also confirmed that NIE should be permitted to recover any accumulated under-recovery from the present price control in the new control period through the correction factor. NIE initially told us that the use of the under-recovery accumulated from the present price control could partly offset the impact of the T&D price proposals, but subsequently said that it appeared unlikely that there would be an under-recovery in the current year.

9.138. We have modelled the information in Table 9.26 to show the accounting effect of the NPV model in Table 9.27, a summarized profit and loss account. The model shows that annual profits before interest and tax would fall from £38 million to £32 million over the five years. The profit margin would be between 29 and 25 per cent, and the average return on fixed assets would fall from 7.8 per cent to 5.6 per cent at 2001/02.

TABLE 9.27 The DG's T&D price control proposals: accounting effect

	<i>£ million, 1996/97 prices</i>				
	<i>1997/98</i>	<i>1998/99</i>	<i>1999/00</i>	<i>2000/01</i>	<i>2001/02</i>
<i>Profit and loss account</i>					
T&D revenue	128	127	126	126	124
Operating expenditure	(63)	(63)	(62)	(61)	(59)
Depreciation	(27)	(29)	(30)	(32)	(33)
Profit before interest and tax	<u>38</u>	<u>35</u>	<u>34</u>	<u>33</u>	<u>32</u>
Profit margin (%)	29	28	27	26	25
Return on average fixed assets (%)	7.8	6.9	6.5	5.9	5.6
Fixed assets at year end (see Table 9.25)	499	525	539	562	575

NIE's submission to the MMC

9.139. NIE disputed the DG's proposals in respect of the opening RAB value and the levels assumed by the DG for both operating and capital expenditure. In attempting to achieve a compromise with the DG, NIE offered a P₀ fall of 20 per cent and an X of -3, which we calculated as giving rise to an NPV of allowed costs of £599 million compared with the DG's estimate of £535 million. NIE's forecast profit and loss accounts and balance sheets based on this counter-proposal, which are summarized in Tables 9.16 and 9.17, show its calculation of the revenues which the proposal would allow.

9.140. In its submission to us, however, NIE abandoned the proposals embodied in its August 1996 corporate plan, which it said had been put forward only with a view to avoiding an MMC reference and were in some respects unsatisfactory (see paragraph 10.10). Instead it argued the case for T&D revenues over the forthcoming period with an NPV of £650 million based on a discount rate of 7.5 per cent. It also disputed the £7 million reduction for past underspend of capital expenditure (see paragraph 9.132). NIE's NPV model is reproduced in Table 9.28 and its calculation of T&D RAB movements is given in Table 9.29. This shows an estimated RAB value at March 2002 of £658 million, compared with the level estimated by the DG of some £575 million (see Table 9.25).

TABLE 9.28 NIE's proposals to MMC for T&D price controls: calculation of NPV of allowed revenues

	<i>£ million, 1996/97 prices</i>						
	<i>April 1997</i>	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>	<i>April 2002</i>
RAB valuation	523.3						657.9
Operating expenditure*		76.4	77.4	73.0	72.1	73.2	
Capital expenditure net of contributions (see Table 9.29)†		<u>73.1</u>	<u>72.7</u>	<u>55.4</u>	<u>60.6</u>	<u>58.9</u>	
Total		<u>149.5</u>	<u>150.1</u>	<u>128.4</u>	<u>132.7</u>	<u>132.1</u>	
NPV @ 7.5% of operating expenditure		73.7	69.4	60.9	56.0	52.9	
NPV @ 7.5% of capital expenditure		<u>70.5</u>	<u>65.2</u>	<u>46.2</u>	<u>47.0</u>	<u>42.5</u>	
NPV @ 7.5% (operating and capital expenditure)		<u>144.2</u>	<u>134.6</u>	<u>107.1</u>	<u>103.0</u>	<u>95.4</u>	
<i>Summary for five years</i>							
NPV of operating expenditure		312.9					
NPV of capital expenditure		<u>271.4</u>					
Total NPV		584.3					
NPV of RAB as at April 2002							<u>458.3</u>
Change in NPV of RAB values (523.3 less 458.3)		<u>65.0</u>					
Total NPV of allowed costs		<u>649.3</u> ‡					

Source: NIE.

*Table 8.3 shows supporting details. NIE subsequently revised these figures downwards by £10 million in total to those shown in Table 8.3.

†Table 7.3 shows supporting details.

‡The discount rate used is 7.5 per cent.

9.141. In Table 9.29 'other depreciation' represents NIE's estimates of depreciation on corporate and non-operational capital expenditure incurred prior to March 1997, assuming lives of five years. The DG declined to allow for corporate capital expenditure totalling £1.6 million for the four years to March 1997 on the grounds that it did not relate to the T&D Business. He allowed a deduction for depreciation in respect of non-operational capital expenditure of £10.2 million in the same four-year period, but assuming a life of 33.3 years compared with NIE's estimate of five years. Approximately 60 per cent of non-operational capital expenditure relates to buildings and the balance relates to plant and fixtures. We note, however, that based on

NIE's depreciation policy described in paragraph 9.105, a life of, say, 20 years appears more appropriate for depreciation of this class of assets.

TABLE 9.29 NIE's proposals to MMC for T&D price controls: calculation of RAB movements

	<i>£ million, 1996/97 prices</i>				
	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>
<i>Movements based on RAB at June 1993</i>					
RAB opening value	366.4	341.1	315.8	290.5	265.2
Depreciation*	<u>(25.3)</u>	<u>(25.3)</u>	<u>(25.3)</u>	<u>(25.3)</u>	<u>(25.3)</u>
Closing value	341.1	315.8	290.5	265.2	239.9
<i>Movements on additions since June 1993</i>					
Opening value	157.0	220.6	282.3	325.8	373.4
Operational capital expenditure net of contributions	73.1	72.7	55.4	60.6	58.9
Operational depreciation†	(7.1)	(9.3)	(10.9)	(12.8)	(14.5)
Other depreciation‡	<u>(2.4)</u>	<u>(1.7)</u>	<u>(1.0)</u>	<u>(0.2)</u>	<u>0.0</u>
Closing value	220.6	282.3	325.8	373.4	417.8
Closing RAB value-all assets	562	598	616	639	658

Source: NIE.

*This depreciation is over 18.5 years based on NIE's estimate of the opening RAB value at June 1993 of £467 million.

†This depreciation is over 33.3 years based on T&D additions from June 1993 and NIE's forecast additions.

‡This depreciation is over five years based on non-operational and corporate capital expenditure totalling £10.2 million and £1.6 million respectively between June 1993 and March 1997.

9.142. We prepared a model to adjust NIE's submission to incorporate the DG's assumptions of the RPI for 1996/97 and the discount rate of 7 per cent. The result was an NPV of £638 million compared with the £535 million proposed by the DG, a difference of £103 million equating to some £20 million a year of additional revenue for the T&D Business (see Table 9.30). In 1996/97 prices, NIE's proposals include the following elements:

- an initial RAB value of £518 million at March 1997;
- operating expenditure over the five years to March 2002 forecast to fall from £76 million to £72 million; and
- net capital expenditure over the five years forecast to fall from £72 million to £58 million.

9.143. The adjusted closing value of T&D's RAB estimated by NIE at March 2002 is £651 million compared with its original estimate of £658 million. Table 9.31 shows movements in such assets over the five years to March 2002 (which is a summary of Table 9.29 adjusted to the RPI used by the DG for 1996/97).

TABLE 9.30 NIE's proposals to MMC for T&D price controls: adjusted calculation of NPV model to same basis as the DG
£ million, 1996/97 prices

	<i>April 1997</i>	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>	<i>April 2002</i>
RAB valuation	517.7						650.8
Operating expenditure		75.6	76.6	72.2	71.3	72.4	
Capital expenditure		<u>72.3</u>	<u>71.9</u>	<u>54.8</u>	<u>60.0</u>	<u>58.3</u>	
Total		<u>147.9</u>	<u>148.5</u>	<u>127.0</u>	<u>131.3</u>	<u>130.7</u>	
NPV @ 7% of operating expenditure		73.1	69.2	61.0	56.3	53.4	
NPV @ 7% of capital expenditure		<u>69.9</u>	<u>65.0</u>	<u>46.3</u>	<u>47.3</u>	<u>43.0</u>	
NPV @ 7% (operating expenditure and capital expenditure)		<u>143.0</u>	<u>134.2</u>	<u>107.3</u>	<u>103.6</u>	<u>96.4</u>	
<i>Summary for the five years</i>							
NPV of operating expenditure		313.0					
NPV of capital expenditure		<u>271.5</u>					
Total NPV		584.5					
NPV of RAB as at April 2002							<u>464.0</u>
Change in NPV of RAB values (517.7 less 464.0)		<u>53.7</u>					
Total NPV of allowed costs		638.2					

Source: NIE as adjusted by MMC.

*The discount rate is 7 per cent.

TABLE 9.31 NIE's proposals to MMC for T&D price controls: adjusted RAB movements to same basis as the DG

	<i>£ million, in 1996/97 prices</i>				
	<i>1997/98</i>	<i>1998/99</i>	<i>1999/00</i>	<i>2000/01</i>	<i>2001/02</i>
Opening value	517.7	555.6	591.7	609.7	631.9
Capital expenditure net of contributions	72.3	71.9	54.8	60.0	58.3
Depreciation	<u>-34.4</u>	<u>-35.8</u>	<u>-36.8</u>	<u>-37.8</u>	<u>-39.4</u>
Closing value	555.6	591.7	609.7	631.9	650.8

Source: NIE as adjusted by MMC.

9.144. Based on an X of -2, NIE's submission (as adjusted to the same basis as the DG) would give rise to annual revenues starting at £153 million for 1997/98 and falling to £148 million by 2001/02, resulting in a Po fall of 16 per cent. Table 9.32 shows the accounting effect of the adjusted NIE proposals, namely annual profits falling from £43 million to £36 million over the five years, a profit margin falling from 28 to 24 per cent, and return on average HCA fixed assets starting at 8 per cent for 1997/98 and ending in 2001/02 at 5.7 per cent.

TABLE 9.32 NIE's proposals to MMC for T&D price controls: adjusted calculation of accounting effect

	<i>£ million, 1996/97 prices</i>				
	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>
Profit and loss account:					
Revenue	153	152	150	149	148
Operating expenditure	(76)	(77)	(72)	(71)	(73)
Depreciation	(34)	(36)	(37)	(38)	(39)
Profit before tax	43	39	41	40	36
Profit margin	28	26	27	27	24
					<i>per cent</i>
Return on average fixed assets	8.0	6.9	6.8	6.4	5.7
Fixed assets carried forward (RAB)	556	592	610	632	651

Source: NIE as adjusted by MMC.

9.145. Once the NPV of T&D permitted costs is determined, the T&D price control formula gives different revenue profiles for various values of X. As discussed above, both NIE and the DG agreed that the T&D Business's permitted revenues for 1997/98 (the first year of the new control period, designated as P₁) should be less than the permitted revenue in 1996/97: the extent of the reduction is referred to as the P₀ change. Under the price control formula, the larger is the (negative) value chosen for X, the smaller will be the P₀ percentage fall.

9.146. Table 9.33 shows the effect on the permitted revenues of applying different values of X, based on the DG's proposals of £535 million (see Table 9.26), and the adjusted value submitted by NIE of £638 million (see Table 9.30). When X is + 1, the permitted revenues increase over the period, when X is -1 the revenue profile is flat, and when X is -2 or more the revenues decrease over the period. For example, using the DG's NPV estimate of £535 million, an X of -4 gives rise to permitted annual revenues which fall by £14 million over the five years from £133 million to £119 million. The profile and thus the extent of the downward slope should take account of efficiencies expected in the T&D Business over the five years. It would be imprudent to have a high negative value for X if, as a result, revenues in year 5 (2001/02) then fell significantly below expected levels of expenditure plus the desired profit margin in that year. If, moreover, the level of revenues fell below that which was likely to be needed in the next price control period, there could be a need for a substantial increase in prices in the first year of that period, which might be seen as undesirable.

TABLE 9.33 Alternative T&D price controls: sensitivity of maximum permitted revenues, based on different values of X
£ million, 1996/97 prices

<i>Value of X</i>	<i>P₀ fall</i>	<i>Revenues in years</i>				
		<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>
<i>Revenues based on the DG's NPV of £535 million of allowed costs†</i>						
+ 1	-34	121	124	127	129	132
+ 0*	-32	124	125	127	128	130
-1	-31	126	126	126	126	127
-2	-30	128	127	126	125	124
-3	-28	131	128	126	123	121
-4	-27	133	129	126	122	119
-5	-26	136	130	125	120	116
<i>Revenues based on NIE's adjusted NPV of £638 million of allowed costs†</i>						
+ 1	-21	144	148	151	154	158
+ 0*	-19	147	149	151	153	154
-1	-18	150	150	151	151	151
-2	-16	153	152	150	149	148
-3	-15	156	153	150	147	145
-4	-13	159	154	150	145	141
-5	-11	162	155	149	144	138

Source: MMC based on T&D price formula model supplied by the DG.

*When X is 0 the revenues increase because the T&D price formula assumes an increase in demand and customer numbers which accordingly increase the permitted revenues over the five years.

†These results all give the stated NPV based on a 7 per cent discount rate.

9.147. In calibrating the T&D price control revenue formula, both we and the DG have adopted NIE's forecast that customer numbers will increase over the five-year period from 662,000 in 1997/98 to 689,000 in 2001/02 and that the quantity of electricity transmitted through the T&D network will increase from 7,060 GWh to 7,598 GWh. The DG proposed that the formula should weight the permitted revenues each year based as to 25 per cent on the actual quantity transmitted and 75 per cent on forecast numbers of customers in the year (see Chapter 4).

9.148. As NIE and the DG have used different opening RAB values at March 1997, we have had to look at the calculation of this figure. The difference between NIE and the DG results from disagreements over the value of NIE's RAB when the company was floated in June 1993, and over the movement of fixed assets, net of depreciation and customer contributions, in the intervening period to March 1997. As noted in paragraph 9.80, NIE proposed an initial RAB value for the T&D Business of £458 million based on the Government's financial model (in 1993/94 prices), whereas the DG used a value of £332 million (also in 1993/94 prices-see Table 9.12). Using the depreciation profile in the Government's financial model, NIE estimated that this RAB of £458 million would reduce to £336 million in April 1997 (at 1993/94 prices). NIE told us that the DG used a depreciation profile which differed from that in the Government's financial model: the DG used straight line depreciation over 18.5 years which resulted in slightly less depreciation in the first price control period. Substituting the depreciation profile used by the DG in its calculations, NIE estimated that an initial value of £429 million at April 1993 produced a net book value of £336 million in April 1997. In its modelling for this inquiry, NIE therefore adopted the revised RAB of £429 million at April 1993. When these figures were adjusted to 1996/97 prices, NIE proposed an initial RAB of £462 million compared with the DG's estimate of £359 million.

9.149. Table 9.34 shows the movements of fixed assets to March 1997 as computed by NIE and the equivalent calculation by the DG, both at 1996/97 prices. Comparison shows the difference on asset additions and the consequent depreciation, for example because estimates for additions were used when actual expenditures were known and therefore should have been substituted.

TABLE 9.34 Comparison of assets roll-forward to March 1997

	<i>£ million, 1996/97 prices</i>				
	<i>9 months 1993/94</i>	<i>1994/95</i>	<i>1995/96</i>	<i>1996/97</i>	<i>Summary totals</i>
<i>Per NIE</i>					
Opening value	462	468	482	500	462
Capital expenditure, net of contributions	32	42	49	50	173
Depreciation	<u>(26)</u>	<u>(28)</u>	<u>(31)</u>	<u>(32)</u>	<u>(117)</u>
Closing value	<u>468</u>	<u>482</u>	<u>500</u>	<u>518</u>	<u>518</u>
<i>Per the DG</i>					
Opening value	359	368	388	416	359
Capital expenditure, net of contributions	24	42	51	73	190
Depreciation	<u>(15)</u>	<u>(22)</u>	<u>(23)</u>	<u>(26)</u>	<u>(86)</u>
Closing value	<u>368</u>	<u>388</u>	<u>416</u>	<u>463</u>	<u>463</u>

Source: NIE and the DG.

9.150. In the course of our inquiry, we investigated the reasons for the differences and we obtained both NIE's and the DG's agreement on the correct additions for each year. We were therefore able to calculate the roll forward as shown in Table 9.35 in respect of fixed asset additions from June 1993. The additions for 1996/97 are the estimate for the year.

TABLE 9.35 Summary of movements of T&D assets to March 1997

£ million, 1996/97 prices

	<i>9 months 1993/94</i>	<i>1994/95</i>	<i>1995/96</i>	<i>1996/97</i>	<i>Summary totals</i>
Balance brought forward	*	23.6	63.2	107.9	*
Additions including non-operational capital expenditure, net of contributions	24.2	41.7	48.2	50.2†	164.3
Depreciation‡	(0.6)	(2.1)	(3.5)	(5.1)	(11.3)
Balance carried forward	23.6	63.2	107.9	153.0	*

Source: NIE and the DG.

*The opening RAB value is an element of our proposed modifications-see Chapter 2.

†This is NIE's estimate for 1996/97.

‡This represents depreciation on operational additions at 3 per cent, and depreciation on non-operational capital expenditure additions over 20 years.

9.151. Our conclusions on all the above issues are given in Chapter 2.

Supply Business price control

9.152. The DG proposed that the Supply Business price control should be for a period of four years from 1997/98 to 2000/01, based on an RPI-X form of control, and should apply to the supply of electricity to customers with maximum demand not exceeding 1 MW. The DG considered that customers with demand greater than 1 MW now had sufficient options actually or prospectively open to them not to require the protection of price controls. First, they could contract directly with the PPB to purchase electricity at the Bulk Supply Tariff and with the T&D Business for Use of System as an alternative to NIE's Supply Business. Secondly, now that the supply of natural gas to Northern Ireland had been established, they would have the option of on-site generation via CHP schemes. Thirdly, the DG also proposed to allow future uncontracted Northern Ireland generators to sell electricity directly to large customers. Fourthly, second-tier suppliers could compete for these customers.

9.153. The DG estimated that the number of customers taking 1 MW or less would increase from 662,000 to 682,000 over the four years to March 2001 and that customer demand would increase from 5,656 GWh to 5,881 GWh.

9.154. The DG's analysis for determining the Supply Business's revenues looked first at the costs relating solely to the supply of electricity to customers taking 1 MW or less. The DG assessed that such costs in 1996/97 prices would fall in the four years to March 2001 from £17.8 million to £17.5 million. He then set the allowable profit as equal to 0.5 per cent of adjusted Supply turnover, equating to a profit of some £2 million a year in 1996/97 prices.

9.155. The DG proposed that the Supply Business should be able to recover a constant amount of £7.75 million, together with an allowance per customer of £12.2653 and an allowance per unit sold of .07155p per kWh. This would ensure that 80 per cent of NIE's supply revenue (before adjustment for green tariffs or energy efficiency allowance) would be predictable, being based on the constant amount and customer numbers allowance, and the remaining 20 per cent would depend upon units of electricity sold. As most of the Supply Business's costs are fixed, the DG considered that this weighting was fair and would not create any incentive to discourage energy efficiency.

9.156. The DG also proposed that, in the calculation of Supply Business permitted revenue for any year, the figure used in the formula for income from customers should be based on actual customers and units sold rather than forecast customer numbers and units. The reason for this was the DG's conclusion that if NIE's Supply Business became more open to competition, use of forecast numbers in the Supply price control formula would be anomalous. In this situation, where competition ensued and customers moved to other suppliers, those remaining with NIE would suffer higher average charges if the revenues recoverable by NIE were based on higher forecast customer numbers and units as opposed to lower actual customer numbers and

units. Therefore the price control was set so that if NIE lost customers its total revenues would fall. NIE thus had an incentive to maximize customer satisfaction in order to maintain market share.

9.157. The formula for the Supply price control is discussed in Chapter 4. Based on the analysis noted above, and using an X factor of -1.5, the DG used the Supply price formula to determine that NIE's maximum permitted Supply revenue over the four years to March 2001 at 1996/97 prices should fall from £19.9 million to £19.4 million before the green tariff and energy efficiency allowance. The DG chose X as -1.5 to match the rate of decline which he expected in the Supply Business costs taking account of growing projected numbers of customers and units. He estimated those costs as having an NPV, at a 7.5 per cent discount rate, of £61 million over the four years. The DG calculated that the first year's revenue equated to a P_0 fall of 44.5 per cent. The magnitude of the fall arises because NIE has been earning a profit several times higher than the level proposed for the future (see Table 5.5 where, for example, the Supply Business turnover for 1995/96 net of the Bulk Supply Tariff, Use of System charges and other costs of sale is shown as £36 million and its HCA operating profit as £13 million).

9.158. In addition to the basic revenue, the DG permitted NIE to receive a green tariff allowance based on 0.35p per kWh of electricity sold from renewable energy sources, which would give NIE over the four years to March 2001 revenues rising from £18,000 to £67,000 based on the DG's estimate of sales of 5 GWh of renewable tariff electricity in 1997/98 rising to 20 GWh in 2000/01. There is the potential for NIE's Supply Business to earn greater revenue: thus if NIE sells, for example, 100 GWh or 200 GWh of renewable tariff electricity, it would earn £0.34 million or £0.67 million respectively, by 2000/01. Finally, the DG allowed NIE a further incentive to promote energy efficiency by permitting it to charge an extra £1 per customer at out-turn prices, giving annual revenues over the same period (when adjusted to 1996/97 prices) of some £650,000 falling to £630,000. The DG expected this allowance to be spent on energy efficiency programmes so that NIE would make no profit from this additional income. The DG's intention for the £1 per customer allowance is that it be used to stimulate a market in energy efficiency goods. The detail of how it is to be used is under discussion with the DG. Revenue derived from energy efficiency activities will be unregulated as noted in the DG's proposal document.

9.159. We reviewed the sensitivity of the Supply Business price control formula. Because much of the income is fixed, the above results do not significantly change with large variations in X. For example, if X is -10 and assuming no change in the NPV of costs, revenues for 1997/98 would be £22.9 million and would fall to £17.2 million by 2000/01, and the P_0 fall would be 38 per cent. If X is -5, revenues for 1997/98 would be £21.5 million and would fall to £18.9 million by 2000/01, equating to a P_0 fall of 42 per cent.

9.160. Table 9.36 shows a summary of NIE's permitted Supply revenues and the profit arising therefrom based on the DG's estimates of the Supply Business's costs. If costs are at the level forecast by NIE, the profits would fall to almost zero in 1997/98 and 1998/99, and would be only £1 million in the two years thereafter, compared with the level imputed by the DG of £2.0 million a year.

TABLE 9.36 Comparison of the DG's and NIE's estimates of the Supply Business performance, 1997/98 to 2000/01

	<i>£ million, 1996/97 prices</i>			
	<i>1997/98</i>	<i>1998/99</i>	<i>1999/00</i>	<i>2000/01</i>
<i>Per the DG</i>				
DG's permitted revenues	20.6	20.4	20.3	20.1
DG's estimate of Supply costs	(17.8)	(17.8)	(17.7)	(17.5)
DG's estimate of energy efficiency costs	(0.7)	(0.6)	(0.6)	(0.6)
Operating profit	<u>2.1</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
<i>Per NIE</i>				
DG's permitted revenues	[
NIE's estimate of costs				
Energy efficiency costs*				
NIE's estimate of operating profit, assuming the DG's revenues]

Figures omitted. See note on page iv.

Source: MMC based on NIE and the DG proposals.

*This assumes that the DG's estimate for energy efficiency costs is maintained.

9.161. NIE objected to the DG's Supply proposals on the grounds that the profit allowed was too little and that the costs of some £17.8 million from 1997/98 were too low. NIE told us that a combination of tight costs and low profit margin would lead to high risk, and NIE could be seriously affected by the loss of more profitable customers to 'cherry picking' competition. In NIE's view, the loss of 67,000 customers could seriously erode the profits proposed by the DG of £2 million a year. NIE estimated that the cost profile (excluding energy efficiency costs) for the Supply Business in the four years to 2000/01 (in 1996/97 prices) totalled £77.9 million compared with the DG's estimate of £70.8 million. It argued that, on the basis of the DG's proposals, it would not achieve the profits forecast by the DG because it could not reduce its cost base further. The DG disagreed with this assertion; he was of the view that an efficient cost base for the Supply Business was around £17.5 million in 1996/97 prices and that profits of £2 million were then achievable.

9.162. NIE commented that the DG, in proposing a profit margin of 0.5 per cent of turnover, proposed to reduce the value of turnover by 20 per cent on grounds of the relatively high cost of generation in Northern Ireland. NIE said that the DG's decision to make a 20 per cent adjustment was arbitrary and prejudged the outcome of his current negotiations with the generators. NIE told us that its working capital requirement and bad debt write-off to the profit and loss account were both inextricably linked to the gross turnover before adjustment. If a profit margin of 0.5 per cent of gross turnover was allowed, the Supply Business would have a profit allowance of £2.3 million a year.

9.163. NIE contended that the MMC's decision in the SHE inquiry had been to give SHE's supply business a profit equivalent to 0.5 per cent on turnover and about 7 per cent on assets. The DG had decided not to base his proposals on the assets of NIE's Supply Business but NIE stated that, if the profit margin was based on this indicator and a net asset level of £35 million was imputed to the business, its profits allowed by the DG should be around £2.5 million a year.

9.164. NIE also said that, as competition increased in the future, it would have less ability to pass on under-recoveries permitted by the Supply price control because competition on tariffs could be expected to prevent this. It believed the price control should take account of this issue.