

THE NATIONAL DEBT AND ECONOMIC POLICY IN THE MEDIUM TERM

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MEDIUM TERM*

John D. FitzGerald

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Chapter I

INTRODUCTION

The growth in the national debt has been a major concern of public policy in recent years reflecting the increasing cost of servicing this debt. Considerable attention has been given both to the need to bring the debt under control and to the cost to the nation from the outflow of interest on foreign debt. However, rather less attention has been given to the way in which the high level of public sector borrowing has been financed and to the impact on the economy of the method of financing actually adopted. The purpose of this paper is: firstly, to examine the likely trend in the national debt and the cost of servicing it in the period 1986–1990; secondly, to examine the implications for the growth of output and the balance of payments of the manner of financing the increased debt; and thirdly to consider how the results of these exercises should modify our view of the medium-term prospects for the Irish economy and of the appropriate stance of economic policy. It considers these issues in a medium term context and, as a result, is not concerned with immediate developments in the area of exchange rates and interest rates.

Ideally a full model of the financial sector of the Irish economy should be used to examine the effects of different strategies on financing the national debt. However, no such model exists and the empirical research necessary to construct such a model has yet to be undertaken. The research based on data from before Ireland's entry into the EMS is not very relevant to the current situation. As a result a less formal approach is adopted in this paper. Based on the limited range of evidence currently available, Chapter 2 gives a brief discussion of how the monetary sector of the Irish economy works and how it was changed by entry into the EMS. It considers the extent to which interest rates are influenced by domestic policies and the factors affecting the demand for different types of financial assets, in particular for government debt. While this discussion cannot be used to derive quantified results, it does allow some conclusions to be reached in the rest of the paper on the way the monetary sector is likely to react to

future circumstances and on the desirability of different policies on the financing of the debt.

To examine the effects of different borrowing and interest rate assumptions on the national debt and national debt interest, a simple model of the debt was developed. It makes possible projections of interest payments and debt repayments consistent with the structure of the debt of a given base period and with a given set of assumptions concerning borrowing, interest rates and exchange rates. This model, together with the assumptions which underlie it, is described in detail in Appendix 1. It is used in Chapter 3 to examine the growth of the debt and debt interest over the first half of the decade. In particular the effects of different methods of financing the debt, on interest and debt outstanding at the end of 1985, are examined. The demand for government securities and its interaction with the supply of securities is considered using the flow of funds data for the years 1960-85 presented in O'Connell (1986). Some conclusions are drawn concerning policy on the financing of the borrowing requirement.

The future course of interest payments and the level of the national debt over the years 1986-1990 are examined in Chapter 4. To provide a basis for this exercise a benchmark or baseline projection for the real economy over the relevant period is presented in that chapter. In addition a range of alternative assumptions concerning interest rates and government borrowing are also examined. The benchmark projection is a modified version of the *Medium Term Outlook: 1986-1990* (P. Bacon, 1986). The debt simulation model is used to derive consistent forecasts of the national debt, national debt interest and the composition of government borrowing based on the different sets of assumptions concerning the future. The likely demand for government securities is considered on the basis of the benchmark projections for savings and investment. Finally, the implications for interest rates, the exchange rate and the real economy of the interaction of the demand and supply of government securities are considered in a qualitative rather than a quantitative framework.

The conclusion, Chapter 5 sets out the implications of the analysis carried out in this paper for economic policy in the medium term.

Chapter 2

THE EMS AND THE MONETARY SECTOR OF THE IRISH ECONOMY

In the 1970s it was generally accepted that the monetary sector of the Irish economy closely approximated the textbook examples of small open economies operating under fixed exchange rates. Prior to joining the EMS there was no expectation of a change in the fixed exchange rate between the Irish pound and Sterling and the exchange rate was not a source of uncertainty concerning the future value of financial assets within the sterling area. In addition there was free movement of capital into and out of the Irish economy. As a result, Sterling and Irish pound financial assets and liabilities were treated as virtually interchangeable by both Irish and UK lenders and borrowers. The interest rates payable on similar assets denominated in Irish pounds and Sterling were closely related (see Browne and O'Connell, 1978). Even in the mid 1970's, when the exchequer borrowing requirement and the balance of payments deficit rose rapidly, there was a close relationship between the Irish and UK exchequer bill rates. Because of the small size of the Irish economy *vis-a-vis* that of the UK, the volume of government paper offered for sale generally did not affect the interest rate payable on that debt. That interest rate was determined by conditions in the UK market. The foreign sector, in this case the UK, was effectively the residual market which either bought or sold securities to ensure that the market cleared at the going interest rate. However, Honohan, (1982), has cautioned that this picture should not be over-interpreted as it relied on the maintenance of orderly financial markets and other structural objectives of monetary policy.

A corollary of this free movement of capital between Ireland and the UK was that the Irish government could not control the level of domestic interest rates due to its inability to control the domestic supply of money. Attempts to tighten the domestic money supply by open market operations would only attract funds from the UK. This inflow from the UK would not significantly alter UK interest rates but would push Irish rates back into line with UK rates.

In the case of the Irish private sector, its demand for Irish government debt was a function of the wealth that was available for investment and the expected rates of return on government securities and other alternative assets such as residential and commercial property and machinery and equipment. Over the 1960s and 1970s the proportion of private sector funds going on Irish government securities changed markedly from year to year depending on changes in expectations concerning future relative rates of return. While the rate of return on government securities, exchequer bills and certain other financial assets was primarily determined on the UK market, this was not the case for many real (immoveable) assets such as buildings or industrial plant. As indicated above, changes in the expected rates of return on these assets altered the domestic demand for government debt from year to year. However, because of the free flow of capital between Ireland and the UK these changed domestic demand conditions for Irish government debt did not alter the rate of return on that debt but rather resulted in a flow of funds between the UK and Ireland sufficient to bring total demand for such debt into line with total supply.

However, from the time that Ireland decided to join the EMS at the end of 1978 there was a major change in the conditions under which the Irish monetary sector operated. Prior to joining the EMS there was no uncertainty concerning the exchange rate between the Irish pound and Sterling so that Irish debt and UK government debt were treated by the private sector as very similar assets which were close substitutes for one another. After joining the EMS this was no longer the case. The future course of exchange rates could significantly alter the expected rate of return on these two assets making one or the other potentially more profitable. At the time of joining the EMS some people felt that the decision merely involved a shift from a partnership with the UK to one with a monetary group dominated by West Germany (McCarthy, 1979). Instead of the pre-EMS situation, where Irish interest rates were determined by UK interest rates, they would now be determined by German rates. However, the certainty which had persisted for over 150 years concerning the relationship between the Irish pound and Sterling was not replaced by a similar certainty concerning the exchange rate between the DM and the Irish pound. It was this introduction of exchange rate uncertainty which completely altered the situation: Irish government

securities were not seen as perfect substitutes for DM securities in the way they had been for Sterling paper.

The significance of the change to a regime of exchange rate uncertainty was probably not fully realised at the time. Entry into the EMS was felt by the government to represent a commitment to something akin to a fixed exchange rate regime and it was not envisaged that the Irish pound or other currencies would alter their central positions within the EMS other than in exceptional circumstances. However, to those agents in the private sector with funds to invest, the EMS was not seen as such a permanent fixture. To German investors with previous experience of the "snake" there was no certainty that the Irish pound/DM exchange rate would remain fixed for the foreseeable future. As a result, Irish interest rates did not converge to the level of German interest rates. However, this does not mean that Irish interest rates were determined independently of interest rates in the United Kingdom or Germany. While the introduction of exchange controls in the Republic simultaneously with entry into the EMS somewhat restricted the scope of the Irish private sector to invest abroad, this did not prevent capital inflows or outflows through a wide variety of channels. It certainly did not prevent investment or disinvestment in Ireland by foreigners. However, for the Irish private sector, the decision to invest abroad now involved the possibility of a capital loss or capital gain due to exchange rate changes. A similar situation applied to foreigners investing in Ireland. For any given expected change in future exchange rates there was an interest differential between Ireland and Germany (or the UK) which would make it appear profitable to invest abroad or for foreigners to invest in Ireland. Thus, a crucial new dimension to the decision to invest was the expectation concerning the exchange rate.

Under these circumstances, if private agents were not risk averse given their expectations concerning future interest rates and future exchange rates, they would move funds into or out of Irish financial assets depending on whether Irish or foreign assets appeared the more profitable. This would ensure that the expected rate of return on Irish lending equalled that expected on foreign lending (taking account of expected exchange rate changes). In principle this situation would be similar to that prevailing before entry into the EMS in that, ignoring the mechanism whereby the private sector forms its expectations concerning exchange rates, the domestic money supply and domestic interest rates would not be under domestic control.

However, the combination of risk aversion on the part of investors with uncertainty concerning the future movement of exchange rates alters this situation. In a situation of uncertainty concerning the future, the "expectation" concerning the movement of exchange rates is only the mid point of a range of possible outcomes. The greater the uncertainty the wider this range and the greater the possibility of large losses (as well as large gains) due to a wrong forecast. For risk averse investors in Ireland or elsewhere this means that even if a foreign asset is expected to yield a higher return than a comparable domestic asset, investors may not be prepared to back their "hunch" and invest abroad due to the possibility of heavy losses if their forecasts prove wrong. Alternatively, they may be only prepared to invest a limited part of their portfolio in the foreign asset to minimise risk. As a result, the uncertainty concerning future exchange rate movements means that foreign and domestic bonds are no longer perfect substitutes. Within a range of interest differentials around the expected change in the exchange rate, investors will be unwilling to invest in foreign assets. However, as the interest differential increases, the size of the expected profit abroad will tend to overcome the fears of future exchange rate loss. The presence of risk and the risk aversion of investors means that there will exist a band of interest rates around the mid point, determined by foreign interest rates and the expected change in the exchange rate, within which domestic interest rates will be internally determined by domestic supply and demand for funds. This band allows limited scope for domestic policy action to influence interest rates. However, the size of the band within which this scope exists may be relatively small and its mid point will be determined by market forces and expectations concerning the exchange rate.

The extent to which exchange rate uncertainty has made possible an independent domestic monetary policy and independent determination of domestic interest rates is not, as yet, clear. Writing in 1982, O'Connell commenting on the post EMS experience said that:

Short-term interest rates are now much more responsive to domestic influences. At the same time, the broad trend in longer-term rates . . . is still strongly influenced by external developments.

However, he noted that there were exceptions to this such as the latter part of 1980 and also following the February 1982 EMS realignment. In a model of the Irish money market Browne (1986) concluded that "although the exchange rate absorbs some domestic monetary

disequilibrium created by policy and other exogenous factors, it does not provide any long-term autonomy for monetary policy". However, this study did not consider the formation of exchange rate expectations and the related determination of the interest differential between Ireland and other countries. This was due to the precise nature of the model specification. As a result, it does not provide firm evidence on the independence or otherwise of domestic interest rates.

The experience of the last five years suggests that domestic factors have continued to exert a limited influence on domestic rates including interest rates on government bonds. The rise in interest rates in late 1984 can be traced ultimately to the government's policy of maintaining a ceiling on direct foreign borrowing. It was not caused by a change in foreign interest rates or exchange rate expectations. However, because of uncertainty concerning the future movement of exchange rates, rather than a change in their expected future levels, there was at first no flow of funds into Ireland to offset the rise in interest rates. It was not until the first half of 1985 that an inflow of foreign capital helped push down the interest differential between Irish and foreign interest rates into line with expectations concerning future movement in exchange rates. This experience shows the scope, albeit limited, which now exists for domestic monetary policy (including policy on debt management) to influence domestic interest rates.

The rise in interest rates at the end of 1985 and again in July 1986 was substantially driven by changes in exchange rate expectations rather than a direct result of domestic policy changes. This experience highlights the importance of this factor in determining the level of domestic interest rates. However, in spite of its importance, the way exchange rate expectations are formed in Ireland has not been subjected to extensive empirical examination. Expectations themselves are a function of a range of variables and are significantly affected by domestic policies. Trends in the balance of payments, the exchequer borrowing requirement and the overall competitiveness of the Irish economy compared to its trading partners, all have an influence. In the first half of the 1980s expectations concerning the DM/Irish pound exchange rate, reflected in interest differentials, generally over-estimated the actual depreciation of the Irish pound. For the future it is important to consider both how domestic policy will influence expectations and how it will affect the actual exchange rate.

Chapter 3

NATIONAL DEBT AND ECONOMIC POLICY 1980-85

3.1 Introduction

As a result of large and continuing current budget deficits since 1973 and a large public capital programme, Ireland entered the 1980s with a heavy burden of debt. From a position where public debt represented just under 55 per cent of GNP in 1973, the debt GNP ratio had risen to almost 80 per cent of GNP by the end of 1979 (see Table 3.1, Figure 3.1). The acceleration of these trends in the first half of the 1980s needs little elaboration. As can be seen from Table 3.1, the national debt, expressed as a percentage of GNP, rose rapidly over the period 1980-85 to over 120 per cent. National debt interest, having been smaller in magnitude than the current budget deficit in 1979, has substantially exceeded it in all years since 1982 (Table 3.2). As a result, the management of the debt has had a major impact on the budgetary situation through the size of the interest bill as well as having important implications for the working of the economy through its impact on the domestic financial system.

The model of the debt described in Appendix 1 is used in section 3.2 to examine the effects of the rise in foreign real interest rates on

Table 3.1: *Ratio of National Debt to GNP*

<i>End Year</i>	<i>Percentage</i>	<i>End Year</i>	<i>Percentage</i>
1960	64.2	1973	54.4
1961	64.3	1974	61.4
1962	64.9	1975	67.6
1963	65.6	1976	73.6
1964	62.8	1977	72.2
1965	65.6	1978	72.5
1966	66.3	1979	78.7
1967	65.8	1980	79.8
1968	64.7	1981	86.2
1969	63.2	1982	95.6
1970	61.9	1983	109.3
1971	62.5	1984	119.5
1972	58.5	1985	123.6

Source: 1960-1978 Department of Finance Databank; 1979-1985 Finance Accounts
The Definitions used for 1960-1979 are slightly different from those for 1979-85. The latter are described in Appendix 1.

national debt interest paid abroad. The implications of the composition of borrowing for the size of the interest bill are considered in section 3.3. The effects of changes in the currency composition of foreign borrowing, and of the use of different financial instruments for domestic

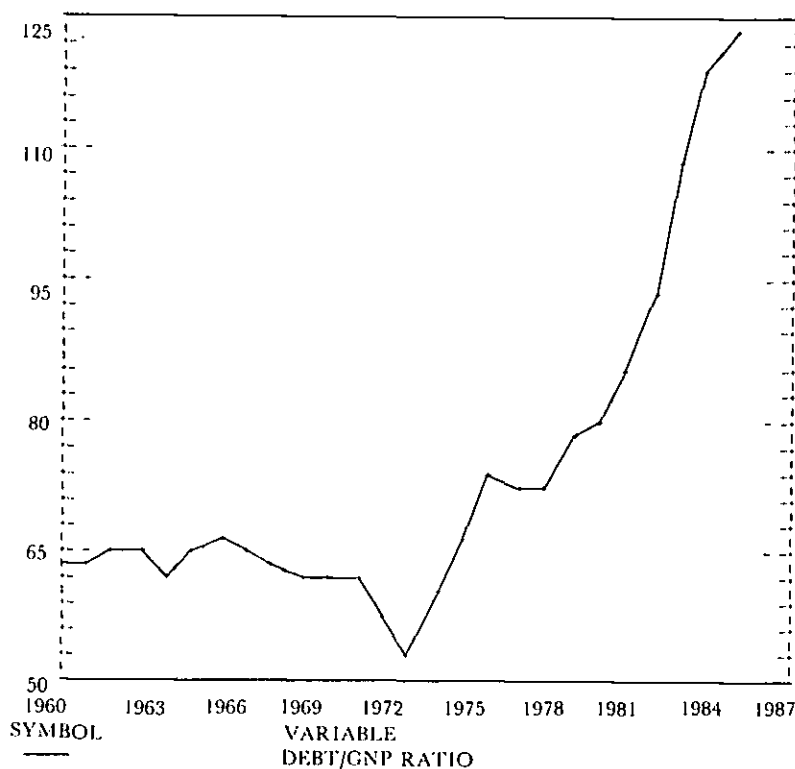
Table 3.2: National Debt Interest and Current Budget Deficit as a Percentage of GNP

End Year	National Debt Interest*		Current Budget Deficit**	
	£ million	%	£ million	%
1979	478	6.3	522	6.8
1980	603	6.7	547	6.1
1981	827	7.6	820	7.6
1982	1,184	9.5	988	8.1
1983	1,348	10.1	1,085	8.1
1984	1,523	10.5	1,039	7.2
1985	1,845	12.1	1,284	8.4

*National Accounts definition, interest paid by Central Government.

**From 1984 onwards the Post Office is excluded.

Fig. 3.1. Ratio of National Debt to GNP (Per Cent)



borrowing are all considered. Section 3.4 looks at the demand for the debt by the domestic private sector. In section 3.5, the implications of decisions on the composition of domestic borrowing for interest rates are examined and the appropriateness of the policies actually followed over the period is considered in the final section.

In carrying out the different simulations described in this chapter, the model of the debt described in Appendix 1 has been calibrated so that its results match the actual outturn for the historical period, 1980-85.¹

3.2 *Effects of High Real Interest Rates*

The real interest rates experienced in the first half of the 1980s have generally been extremely high by historical standards (see Table 3.3). They contrast with the exceptionally low real interest rates of the mid-1970s. The shift from very low to very high real interest rates in the last ten years has been an important contributory factor to Ireland's growing debt problem. In an attempt to identify the effects of this rise in real interest rates on Irish foreign debt interest payments, the debt model was used to examine what would have been the effects of a constant foreign real interest rate² of 2 per cent over the period 1980-1985, substantially below the rates actually experienced. The simulation was carried out using historical exchange rates for the six-year period and the saving in national debt interest was assumed to have been used to reduce the level of foreign borrowing. No account was taken of the effects of such a different interest rate regime on the world economy or, more especially, on the domestic economy. In particular, the effects of such a change in foreign interest rates on domestic interest rates was not examined because of the lack of evidence on how such an alternative external environment would have affected the Irish financial sector. The failure to take account of these additional channels whereby world interest rates affect the Irish economy means that the resulting estimates of the effects of the high interest rates on the public sector debt over the period will be very much a lower bound.

1. This involved adjusting the model simulation results by adding the differences between the actual interest paid in each year and the model's estimate of interest paid (shown in Appendix Tables 1 and 2) to the model's simulation results for the different scenarios examined.

2. Defined as the percentage change in the consumer price index in each country plus 2 per cent.

The results of this simulation are shown in Table 3.4. As can be seen from this table the rise in real interest rates throughout the western world in the 1980s had an important direct effect on the Irish public finances. By 1985, the current budget deficit was two percentage points higher than it would otherwise have been directly as a result of the higher world real interest rates. If account were taken of the effects of the higher world interest rates on domestic interest rates and of the effects of these high interest rates on the real economy both in Ireland and elsewhere, the effects on the Irish public finances (and the Irish economy generally) would be seen to have been much greater than shown here. This exercise suggests that, while Irish eyes have traditionally focussed on the transmission of external shocks to the Irish economy through foreign trade and investment, the effects of economic policies pursued in Germany, the US and the UK on monetary phenomena have been extremely important in recent years for the Irish economy.

The fact that the Irish economy generally, and the Irish public finances in particular, suffered from the rise in world interest rates in

Table 3.3: *Average Real Interest Rates**

	<i>Ireland</i>	<i>USA</i>	<i>UK</i>	<i>Germany</i>
1956-85	0.7	1.8	1.4	3.9
1970-80	-2.7	-0.6	-1.7	2.8
1981-85	2.9	6.2	3.8	4.5
1980	-4.0	-2.7	-6.0	2.9
1981	-2.8	2.5	1.1	4.1
1982	-1.6	6.1	3.2	3.7
1983	4.1	7.6	5.6	4.6
1984	7.5	7.7	5.2	5.4
1985	7.4	7.2	4.0	4.7

Source: USA, UK and Germany: OECD main Economic Indicators; Ireland: Department of Finance databank.

*Long-term bond rate less the percentage change in consumer prices.

Table 3.4: *Interest on National Foreign Debt with 2 per cent real interest rates.*

<i>End Year</i>	<i>Actual Interest Rates</i>			<i>Constant (2%) Real Interest Rates</i>		
	<i>Interest Payments</i>		<i>Current budget deficit as per cent of GNP</i>	<i>Interest Payments</i>		<i>Current budget deficit as per cent of GNP</i>
	<i>£m.</i>	<i>Per cent of GNP</i>		<i>£m.</i>	<i>Per cent of GNP</i>	
1980	161	1.8	6.0	140	1.6	5.8
1981	249	2.3	7.4	194	1.8	6.9
1982	510	4.1	8.0	338	2.7	6.6
1983	577	4.3	7.1	446	3.3	6.1
1984	693	4.7	7.1	488	3.3	5.7
1985	783	5.1	8.2	484	3.0	6.2

the 1980s does not mean that our economic problems over the period were unavoidable. Rather it highlights the fact that in borrowing heavily in the 1970s when interest rates were low, we left the Irish economy very vulnerable to these external forces. If all the borrowing of the 1970s had been undertaken at fixed interest rates for long periods and no new borrowing had been undertaken in the 1980s clearly there would have been no rise in debt interest payments in the 1980s as a result of a rise in real interest rates. However, it was not possible to obtain such financing on a large scale so that a significant part of the foreign debt in 1980 was financed by variable interest rate debt. Of much greater importance was the fact that it proved politically impossible to stop the rise in borrowing which commenced in the early 1970s.

3.3 *The Effects of Alternative Policies on Financing the Deficit*

In this section we examine two options on financing the borrowing requirement, changes in the currency composition of the debt and the effects of financing of the borrowing requirement with bonds bearing differing nominal interest rates.

(a) *Currency composition of the debt:* In the case of foreign borrowing the evolution of debt interest and the overall level of the debt depends on the interest rates prevailing over the relevant period and on movements in exchange rates. Different currency compositions give different results as is illustrated in Tables 3.5 and 3.6. Four options were tried for the composition of all new borrowing from the end of 1979:

- (i) the same composition as that of the existing debt outstanding at end 1979,
- (ii) the same composition as that of the existing debt outstanding at end 1985,
- (iii) all new borrowing in US dollars,
- (iv) all new borrowing in Deutschmarks (DM).

It is not suggested that either of the last two options were a practical possibility as borrowers do not have completely free access to different capital markets. For example, Germany, Switzerland and the Netherlands have, until recently at any rate, operated a queuing system for borrowers. However, these simulations give some indication of the effects of a limited or marginal change in the composition of borrowing

both on interest payments and on the level of debt outstanding. The results suggest that if all the new borrowing undertaken over the six-year period had been in dollars, the overall interest cost to the nation over that period would have been very much higher than the actual outturn. Conversely, if borrowing had all been in DMs, the total interest bill would have been much lower. Borrowing in a mixture of currencies based on the debt outstanding at end 1979 or 1985 would have produced a very similar interest bill to that actually observed. However, if the differences in the value of the debt outstanding at the end of 1985 are taken into account, the picture rather changes. When these capital losses due to exchange rate changes are taken into account the actual cost of borrowing over the period is seen to be substantially worse than either of the two alternatives which involved a mixed composition of borrowing. This result suggests that the policy of changing the mixture of currencies borrowed in each year may have been unwise and that it might have been better to undertake the same proportion of total borrowing in each currency over a period of years.

While the above analysis indicates that the interest bill for the six-year period would have been much lower if all borrowing had been in DMs it also makes clear that the interest bill would have been much increased if all new borrowing had been in dollars. Thus plumping for borrowing in a single currency is in the nature of a

Table 3.5: *Foreign Interest Payments with alternative Currency Compositions*
(£ million)

Year	Actual Interest	Composition as at		All in	
		End 1979	End 1985	US \$	DM
1980	161.4	174.2	176.7	190.1	165.5
1981	249.4	279.6	279.5	327.0	259.7
1982	509.9	512.4	508.5	656.9	442.5
1983	577.4	552.2	559.9	708.0	476.8
1984	692.6	637.2	647.3	863.4	523.1
1985	783.0	711.1	731.0	971.7	570.1
Total 1980-85	2973.7	2866.7	2902.9	3717.1	2437.7

Table 3.6: *Foreign Debt outstanding at end year with Alternative Currency Compositions*
(£ million)

Year	Actual Debt	Composition as at		All in	
		End 1979	End 1985	US \$	DM
1980	2206.8	2248.4	2261.2	2271.7	2229.8
1981	3793.9	3808.7	3817.3	3884.8	3743.5
1982	5290.0	5305.9	5285.0	5475.5	5229.2
1983	7017.5	6875.0	6909.7	7448.6	6558.6
1984	7925.9	7838.0	7856.0	9033.5	7235.6
1985	8441.0	7967.3	7988.1	8056.5	7935.5

gamble. While, with hindsight, borrowing in DMs would have been cheaper, this was not the perception of the world experts in 1980 as reflected in interest rates. Nobody foresaw the nature of US economic policy over the following six years. If everybody in 1980 had expected that the DM would be the best bet for borrowing they would have acted accordingly. In so acting they would have altered interest rates and exchange rates so as to wipe out the potential advantages. It is only possible to save money by shifting currencies if one's forecasts for the future are markedly better and different from those of the other participants in the world financial system. A policy of "playing the market" clearly involves high risks. A more appropriate approach for the Irish government is to hedge bets by borrowing in a range of different currencies³ rather than gambling on the correctness of forecasts of international interest rates and exchange rates. This was, generally, the policy which was pursued over the period 1980-1986.

(b) Choice of Nominal Interest Rates for National Loans: In financing the borrowing requirement by sale of securities on the domestic market the Government has the option of issuing securities with differing nominal interest rates. If the nominal interest rate is below the current market yield for stocks with the same maturity then they will only be sold at a discount. The discount will make the yield on the new securities equal to the going yield on the market for instruments of the same maturity. In such a case the proceeds of the sale will be less than the increase in the book value of the debt. As a result, to raise a given volume of funds, the nominal value of securities issued will have to rise by more than the value of the funds raised as part of the return to the investor is given as a capital gain.

Generally, over the past six years the borrowing requirement has been financed by selling securities with an average nominal interest rate well below going market yields. One of the reasons for the exchequer financing part of its borrowing by giving lenders a capital gain has been the preference of lenders for such instruments. This is due to the fact that some lenders obtain a tax advantage in taking part of their return in the form of a capital gain. While the use of such instruments may have reduced the direct cost to the exchequer of financing the borrowing requirement, it must be questioned whether

3. Clearly the range of different currencies should be drawn from different exchange rate regimes. For example, given the similar behaviour of the DM, the Swiss Franc and the Netherland's Guilder, concentration on these three currencies should not be considered a diversified portfolio.

this saving was more than offset by the loss of tax revenue due to the reduction in the tax base.

In adopting this policy the size of the interest bill and, therefore, of the borrowing requirement has been reduced at the expense of a continuing capital loss resulting in a more rapid increase in the national debt. If the capital loss or gain on such transactions were taken into account in calculating the borrowing requirement it would be seen to have been significantly higher over the six-year period than is shown using current accounting practices. As a result, it is important to look at the change in the debt/GNP ratio as well as the borrowing requirement in considering the state of the public finances to take account of the capital loss on sale of securities (see Honohan, 1985). This problem for the interpretation of the state of the public finances is similar to that posed by capital losses on foreign borrowing due to exchange rate changes. This policy of financing the borrowing requirement by sale of securities with a nominal interest well below market yields resulted in the interest bill in 1985 being approximately £100 million lower than it would otherwise have been, while the debt outstanding at end 1985 was around £800 million higher than if stocks with nominal rates at average market yields were used.

The purpose of this exercise is not to consider what is the correct type of instrument to be used for financing the borrowing requirement. It is intended, rather, to show how a proper evaluation of the public finances must take into account not only interest payments but also changes in the capital value of the debt: the conventional measures of the borrowing requirement do not take account of this cost.

3.4 *The Domestic Demand for Government Securities*

Having examined some of the issues in determining the supply of different kinds of government securities, it is important to consider the factors affecting the demand for these securities by the domestic private sector. The factors affecting this demand are the level of private sector wealth and the rates of return on the different forms of financial and real assets available to the private sector. Ideally this process of determining the demand for the different assets is amenable to empirical examination using a consistent economic model. As mentioned earlier, to date this has not been attempted for the complete range of assets in Ireland. (Browne and Honohan, 1983(a) and 1983(b)) concentrated on demands for the assets and liabilities of certain financial institutions.) As a result, it is necessary to consider

these issues in a less formal fashion.

Figures are not available for the stock of private sector wealth in Ireland. However, we do have figures, derived from the National Accounts, for savings by the personal sector and the company sector which give an indication of the change in wealth of these sectors. Using these data and a wide range of other information, O'Connell (1986) has presented a set of flow of funds accounts for Ireland for the years 1960 to 1985. These data allow us to examine the change in wealth of the different sectors (saving) and how they allocated their saving over the different financial and real assets. Table 3.7 shows the funds available to the personal and company sectors for investment in financial or physical assets over the period 1970–1985. These sources of funds are all expressed as a percentage of GNP. The personal sector funds available for investment grew rapidly in the early 1970s as a percentage of GNP. However, since 1973 they have, with two exceptions, fallen in the range 17½ to 20½ percentage points of GNP, indicating a fairly stable pattern of behaviour over the second half of the 1970s and the first half of the 1980s. The bulk of the funds available to the personal sector are derived from personal savings and depreciation allowances. In the company sector the funds available to that sector generally ranged between nine and twelve per cent of GNP over the period 1970–1985.

Over the period 1980–85 slower growth in GNP meant that private

Table 3.7 *Funds available to the personal and company sectors, as a percentage of GNP*

	<i>Personal sector funds</i>	<i>Company sector funds</i>
1970	12.7	9.0
1971	11.6	9.8
1972	14.9	9.7
1973	17.4	10.2
1974	17.5	9.4
1975	23.9	9.0
1976	20.1	10.4
1977	19.5	10.7
1978	20.5	10.9
1979	19.2	12.1
1980	17.7	11.1
1981	16.6	11.1
1982	19.0	9.8
1983	19.4	9.9
1984	18.4	10.0
1985	18.9	11.6

Taxes on capital have been subtracted from personal sector sources and uses of funds.

sector wealth grew somewhat less rapidly than in the 1970s but this slowdown was certainly not due to a change in the personal savings ratio. Evidence from Ireland and elsewhere has suggested that high inflation tends to result in increased savings whereas a fall in the inflation rate, as in the most recent years, might lead to lower savings (Honohan, 1979 and Von Ungern Sternberg, 1981). High real interest rates might, on the other hand, lead to a higher savings ratio (see Summers, 1981). Whatever the magnitude of these effects, they appear to have roughly cancelled each other out over the recent years giving relative stability in the pattern of personal saving.

The data presented above suggest that the increase in private sector wealth through savings by the personal sector, and also by the company sector, did not show a significant change in pattern between 1980 and 1985. However, the pattern of investment made by the private sector changed substantially in the first half of the 1980s. The proportion of funds available to the personal sector, which were invested in physical assets (private housing and agricultural investment) fell significantly. On average, between 1980 and 1986, only 38.4 per cent of personal sector funds went into physical capital formation, whereas in the previous six-year period the proportion was 47.2 per cent. Instead the personal sector has substantially increased its investments in life assurance and pension funds. It has also, as shown in Table 3.8, been a net lender to the financial institutions every year from 1980-86. While direct investment in government debt has tended to fall in recent years, this tendency has been more than offset by the increased investment by the life assurance and pension funds sector, all of whose funds come from the personal sector. When lending to the government through small savings is added to direct and indirect (through life assurance) lending through purchase of government securities, the proportion of personal sector new assets lent to the government is seen to have increased markedly in the 1980s compared to the second half of the 1970s. This shift away from investment in physical capital, primarily housing and agricultural investment, towards investment in financial assets has probably been due to the change in the relative rates of return on these different assets rather than to a major change in tastes.

In the late 1970s the low real interest rates and the favourable tax treatment of private housing made it a very attractive form of investment to the personal sector (Irvine, 1984). This manifested itself in many cases in people "trading up", moving from smaller to larger

Tables 3.8. *Personal sector use of funds as a percentage of total personal sector funds*

Year	Investment in Physical Capital	<i>Investment in Financial Assets</i>						
		Total	Banks	Non-Bank Financial Institutions	Insurance + Pension Funds		Government Direct + Indirect (including Insurance)	Other
					Total	Government		
1970	58.6	41.4	-47.6	21.3	18.4	0.5	19.8	30.1
1971	62.6	37.4	-66.1	19.9	20.2	6.7	29.9	40.3
1972	70.3	29.7	-22.0	17.0	19.4	-1.8	27.8	-14.3
1973	64.4	35.6	-4.9	8.4	19.3	1.2	11.3	2.8
1974	51.8	48.2	13.7	6.7	13.0	-2.1	9.7	3.0
1975	23.2	76.8	20.7	13.5	9.5	1.6	16.8	18.0
1976	47.4	52.6	-14.4	13.9	10.7	5.9	20.0	28.3
1977	47.6	52.4	-17.4	18.4	13.5	4.3	20.1	22.1
1978	48.0	52.0	5.3	12.7	14.7	3.4	18.8	4.0
1979	60.7	39.3	-19.7	17.4	17.1	3.8	19.2	9.2
1980	39.5	60.5	6.4	16.9	17.9	3.6	22.1	0.8
1981	52.7	47.3	11.4	17.6	22.6	3.3	15.1	-16.1
1982	37.9	62.1	17.8	17.1	18.6	12.4	24.9	-4.0
1983	34.8	65.2	-9.8	16.5	24.7	8.5	27.9	14.4
1984	32.8	67.2	12.4	17.7	33.2	21.5	20.3	5.0
1985	28.5	71.5	0.4	18.2	33.6	22.2	35.2	6.3

Taxes on capital have been subtracted from personal sector sources and uses of funds.

Purchases of government debt by the banking sector are excluded from indirect purchases by the personal sector.

houses. In manufacturing industry the cost of capital was very low (FitzGerald, 1983). At the same time the real rate of return in financial assets such as government debt was very low (see Table 3.3). This low real rate of interest encouraged borrowing from the financial sector to finance a higher rate of capital accumulation.

In the 1980s the returns from investment in housing have fallen as the price of houses has not kept pace with inflation. The cost of capital needed to finance house purchase has risen greatly in real terms. For manufacturing industry the cost of capital in the period 1981 to 1983 was twice that in the five years 1975–80 while the rate of profit showed no such increase. The lower rate of income growth in agriculture and general deterioration in the prospects for agricultural incomes has reduced the prospective rate of return on investment. By contrast the real rate of interest on government securities (and other financial assets) has reached record levels (see Table 3.3). This changed the relative rates of return on real and financial assets. The personal sector and company sector responded by cutting physical capital formation and substituting investment, directly and indirectly, in government debt and net lending to the banking system. This tendency was particularly marked in the 1983 to 1985 period.

Traditionally the banking system has been one of the major investors in government securities. At the end of 1979 over a quarter of the national loans outstanding were held by that sector. The Central Bank requires the banking system to hold a certain proportion of its assets in the form of government securities. This required holding together with actual holdings of government securities is shown in Table 3.9 for 1979–1985. From end 1979 up to the end of 1982 the banks generally held the minimum required level of government debt. However, from 1983 to the end of 1985 the banking system acquired substantially more government securities than were required by their secondary liquidity ratio. While this excess holding was reduced in the first half of 1986 the pattern of investments by the banking system reflects the fact that expected returns from lending to the government rose dramatically with the rise in real interest rates and the fall off in private commercial activity. The rise in interest rates on government securities resulted in a rise in interest rates for lending to the non-bank private sector, choking off demand for such lending. Thus the growth in lending by the banking system to the government in the

1983-1985 period came about more because of the change in prospective rates of return on different assets than because of the growth in the asset base of the banking system.

Table 3.10 shows the sales of Irish government securities denominated in Irish pounds to the rest of the world. As can be seen, there were significant sales in the 1975 to 1978 period, partly due to false expectations about the future movement of exchange rates. Generally over the following four years some of these securities were sold back by foreigners. However, in 1983, 1984 and 1985 there were, once again, some net sales to foreigners, albeit on a very much smaller scale. However, the fact that such sales took place reflects the fact that the rate of return on such securities was attractive to some foreign investors.

In addition to the change in relative rates of return a further factor which may have affected the demand for government securities in recent years is a change in the distribution of income. As indicated in Table 3.8 the 1980s saw a substantial increase in the role of life assurance companies and pension funds. The build up in the assets of

Table 3.9: *Banks' Holdings of Government Securities (£ Million)*

<i>End Year</i>	<i>Banks' required holding</i>	<i>Banks' actual holding</i>
1979	975	1,005
1980	1,163	1,147
1981	1,369	1,340
1982	1,475	1,491
1983	1,623	1,909
1984	1,795	2,186
1985	1,865	2,512

Table 3.10: *Net Foreign Purchases of Irish Government Securities (£ Million)*

1970	0.0
1971	0.0
1972	9.7
1973	5.8
1974	13.7
1975	75.6
1976	0.0
1977	129.0
1978	300.0
1979	-50.0
1980	17.0
1981	-30.0
1982	-18.0
1983	35.0
1984	70.0
1985	84.0

this sector meant that an increasing proportion of the income of the personal sector derived from its investments is channelled through the insurance/pension fund sector. The very high real rates of return on government securities and the extensive government borrowing, documented earlier in this chapter, has meant that there has been a rapid increase in the 1980s in domestic payments of national debt interest and consequently in the cash flow of this sector. Given the pattern of holdings of government securities a substantial part of this income has found its way initially into such institutions. As these assets are the property of the personal sector, from a national accounting point of view, this income is treated as personal income. However, in many cases the indirect owners of these assets, the personal sector, may only become aware of the high rate of return in recent years when the insurance policies or pensions become payable. In the interim the financial institutions will re-invest all the income accruing from the financial assets. While many other factors affect the rate of saving, the combination of the growth in the importance of this mechanism in recent years and the high rates of return on financial instruments may have imparted an upward bias to personal savings. The growth in personal incomes of owners of insurance policies or pension rights may thus have been higher than they perceived and their rate of savings consequently higher than it would otherwise have been. The preference of these financial institutions for investing in government securities in recent years has meant that interest payments have generally been re-invested in new government securities.

3.5: Conclusions

A review of the stance of fiscal policy over the 1980-85 period is contained in Bacon, (1986). Both at the time, and looking back with the benefit of hindsight, the problems of the economy over that period have been diagnosed. Generally, the stance of fiscal policy was much too relaxed, especially given the very high balance of payments deficit over the period. As a result, huge borrowing was undertaken abroad, giving rise to the rapid increase in interest payments documented in section 3.2. Whether fiscal policy should have been tightened by cuts in expenditure or higher taxation may still be a matter for debate but the failure to do either resulted in the economy running at a higher level of activity in the early 1980s than was desirable given the large current balance of payments deficit. Evidence from many sources (e.g. Bradley, et al., 1985, FitzGerald and Keegan, 1982) indicates that the

higher level of activity was transitory in nature. The cost in terms of output foregone in later years to pay the interest on the debt incurred has been substantial. It is not the purpose of this paper to discuss the appropriate stance of fiscal policy but rather to take it as given and examine the implications for financial markets and monetary policy of the manner in which the borrowing requirement was financed.

The magnitude of the growth in debt has meant that any decisions on how it is financed have had major domestic economic implications. As indicated in Chapter 2, prior to 1979, given a fixed and certain exchange rate, the financing of the deficit would have had no effect on domestic interest rates. The domestic private sector would have chosen its level of investment in government securities given externally determined interest rates, and the residual financing would have been carried out externally. However, with the introduction of uncertainty concerning the future value of the Irish pound, consequent on joining the EMS, this situation was altered. As discussed in Chapter 2, there was now some scope for domestic policy to vary Irish interest rates around a long-term trend which was still essentially externally determined. Under these circumstances the volume of debt to be financed could be expected to put limited upward pressure on domestic interest rates as the government bid funds away from alternative uses. The actual outturn in the years 1980–82 was rather different. Strenuous efforts were made to keep down domestic interest rates both by direct exchequer foreign borrowing and by encouraging semi-state bodies such as the ICC and the ACC to do the same. While lower interest rates naturally had some beneficial effects on the level of activity in the short term, these advantages were bought at the price of future economic growth.⁴ At a time when the current balance of payments deficit was extremely high, this policy was especially inappropriate. In addition, the policy of keeping domestic interest rates down by borrowing abroad, if anything, raised the cost of this borrowing to the exchequer due to the higher yields payable. While these factors all suggest that monetary policy should have been tighter in the early 1980s than was actually the case, the scope for such a tightening should not be exaggerated. If the government had attempted to raise a substantially larger proportion of its funds domestically the net result would have been a substantial capital inflow attracted by a limited rise in interest rates above their actual observed levels.

4. Debt interest payments paid abroad reduce the level of GNP.

In 1984 and 1985 the economic situation was somewhat different. The current balance of payments deficit was falling as a percentage of GNP and the level of domestic economic activity was low. In spite of these circumstances which might have suggested an easing of monetary policy, the rigid adherence to a domestic financing target for the exchequer borrowing requirement at the end of 1984 resulted in a substantial rise in Irish interest rates, against the trend of rates elsewhere, with consequential effects on domestic economic activity. The rise in interest rates was such that it attracted foreign capital inflows in early 1985 which tended to push interest rates back down indicating that the upward pressure on domestic interest rates from debt financing policy had reached a limit. A marginal shift of borrowing from domestic to foreign sources, which would have been required to avoid the rise in domestic interest rates, would, if anything, have reduced the direct interest cost to the exchequer of borrowing over those years. Taken together, these factors would suggest that a less rigid adherence to a domestic funding target would have been appropriate.

Chapter 4

NATIONAL DEBT AND ECONOMIC POLICY 1986-1990

4.1 *Introduction*

This chapter examines a number of different factors which will affect the growth of the national debt over the period 1986-1990 and considers how the financing of this debt will affect the economy over that period. Section 4.2 discusses the economic outlook for the rest of the decade. Because of uncertainty concerning many aspects of this outlook two different sets of assumptions are considered for the future time path of interest rates and exchange rates and for the public sector borrowing requirement. Section 4.3 examines the future growth in the national debt and in the cost of servicing that debt under the different sets of assumptions. Section 4.4 considers the likely domestic demand for government debt and in Section 4.5 the implications for interest rates, and the monetary sector generally, of the prospective supply of and demand for government debt are considered.

4.2 *Assumptions Concerning Economic Outlook*

Since the *Medium Term Outlook: 1986-1990* prepared by Bacon was published early in 1986 quite a number of important factors have changed which must affect the future prospects for the Irish economy. In addition, as highlighted in that publication, there were, and still are, considerable uncertainties about the future course of fiscal policy which must be taken into account in any examination of the likely trend in the national debt over time. To deal with these problems Bacon's numbers have been revised in line with the latest forecasts in the August 1986, *Quarterly Economic Commentary* and the impact of the different sets of assumptions concerning fiscal policy and interest rates on the national debt has been examined. The results, while not providing a firm forecast of the future, illustrate the sensitivity of any forecast of trends in the national debt to differing sets of circumstances.

The areas where considerable uncertainty exists and where the effects of alternative sets of assumptions have been examined are the public finances and the future course of real interest rates. In addition,

while no attempt is made to use alternative sets of assumptions concerning the future course of the balance of payments, the factors giving rise to uncertainty in this area are also discussed.

The benchmark scenario in Bacon, (1986), adopts the standard technical assumption of a neutral budget. (The adoption of such a basis implies no normative statement concerning the appropriate stance of fiscal policy.) This assumption implies no volume change in public expenditure and no change in tax rates or tax bands. While to economists this appears a reasonable set of assumptions, in the context of the structure of public expenditure in Ireland today the resulting exchequer borrowing requirement involves significant decisions to cut levels of services (or increase rates of taxation). This is due to the fact that, partly for demographic reasons, there is a trend increase in expenditure. For example, in the case of education, due to the age structure of the population, maintenance of the current level of service, class size, etc., will require increasing expenditure well into the next decade. To make room for this expenditure within a neutral budget there would have to be decisions to cut services elsewhere or to increase tax rates. The problems in achieving such a target have been further aggravated by the budgetary overrun in 1986.⁵ Any departure from this restrictive stance would considerably alter the picture in the benchmark projection. It would increase the government borrowing requirement, and, of necessity, require somewhat higher domestic interest rates. The interest cost of the additional borrowing would, as in the past, aggravate the long-term impact on the National Debt. The higher interest rates would reduce domestic activity and, therefore, tax revenue. As indicated in FitzGerald, 1985, such a domestic stimulus would give a boost to imports leading to a substantial deterioration in the balance of payments. In turn, this would put further pressure on domestic interest rates. The pessimistic alternative of a more relaxed fiscal stance was examined in Bacon, (1986). The implications of such a policy for the national debt and debt interest payments are explored here as an alternative to the more restrictive benchmark (or neutral budget) scenario. Full details of the assumptions concerning how the exchequer borrowing requirement is financed are given in Appendix 4.

A second major area of uncertainty concerns the future course of interest rates and exchange rates. In particular, uncertainty concerning

5. The budgetary overrun of 1986 has not been built into the benchmark figures for borrowing in the medium term.

future US economic policy and its effects on the US budget deficit makes any forecast of interest rates extremely problematic. With this in mind, two different sets of assumptions have been used. In the benchmark case there is assumed to be a fall in interest rates over the rest of the decade to a 2 per cent real rate together with some continuing small adjustment of exchange rates. The alternative assumption involves holding interest rates and exchange rates for Ireland and other countries unchanged at their immediate post-devaluation level of early August 1986. This implies the continuation of high real interest rates, both at home and abroad, for the rest of the decade. While the assumption of unchanged interest rates is not fully consistent with the assumption of fixed exchange rates and a low inflation rate, it provides a useful alternative to the benchmark assumption of falling interest rates. It gives some indication of how Ireland might be affected by unfavourable developments in the world financial sector. Full details of these assumptions are given in Appendix 4.

The third major area of uncertainty concerns future movements in the balance of payments. In the past, the most obvious problem for forecasting has been the unreliability of the actual figures. If reliance had been placed on the balance of payments' figures prior to the discovery of the "Black Hole" in 1983, the policies adopted might have been even more inappropriate than they were. Similarly, if the recent large unexplained outflow on the balance of payments were to persist in the future one would have to guard against the possibility that the figures did not reflect the underlying problems of the Irish economy. However, it is the author's view, that the balance of payments' figures currently available form a reasonably firm basis for developing future economic policy. Even though the precise details of the recent private capital outflow may not be fully understood, the figures should give a reliable indication of the trend in the related balances on capital and current accounts.

Without details of the composition of the large private capital outflow in the last quarter of 1985 and the first half of 1986, it is difficult to assess its full significance. While the Deposit Interest Retention Tax contributed to this outflow, it is probable that fears about the position of the Irish pound within the EMS were of greater importance.

The combination of a perceived loss of competitiveness together with the actual stance of fiscal policy adopted over the period gave rise to fears concerning the position of the Irish pound within the EMS. These fears were partially validated by the developments over

the year which made short-term investment abroad more profitable, both ex-ante and ex-post, than investment in domestic financial assets. For the future these private capital flows will remain volatile, being responsive to changes in factors affecting the exchange rate. If the benchmark scenario were adopted with a tight fiscal policy stance, a maintenance of competitiveness within the EMS and a continuing improvement in the balance of payments on current account, it is likely that these capital outflows would be very much lower than in the recent past. Conversely, a failure to adopt such a fiscal policy stance would encourage further capital outflows, putting pressure on domestic interest rates, with consequential effects for the real economy.

Uncertainty concerning the future course of the current balance of payments can be examined under three headings: the terms of trade; the volume of exports; and the propensity to import. In the case of the terms of trade facing Ireland, due to the fall in oil prices, there has already been a major change since Bacon's benchmark projection was drawn up. While it may well be a temporary phenomenon, it should give some significant boost to activity in Ireland's export markets if not this year, then in 1987 or 1988. These effects have been taken into account in the recent Quarterly Economic Commentary forecasts for 1986 and 1987 and suitable adjustments have been made to the benchmark forecast of Bacon for those years. The benchmark projection also made certain assumptions concerning the terms of trade for agricultural produce. However, as outlined in O'Connor, (1986), the future for agricultural exports and EEC subsidies is extremely uncertain due to the prospect of continuing surpluses in the major food products. Depending on what happens to the CAP over the next five years the terms of trade for agricultural produce could be significantly worse than assumed here with consequential effects on the balance of payments, GNP and domestic savings.

The assumptions in Bacon concerning the future trend in the volume of exports seemed quite reasonable by comparison with the performance in the first half of the decade. Under relatively unfavourable world conditions total exports rose in volume by an average of over 8 per cent a year between 1980 and 1985. However, this growth was driven by the increase in industrial capacity which continued to grow well into the 1980s. The low level of investment in more recent years may mean that the capacity to support a similar increase in the second half of the decade is not present. (Of course, to the extent that the growth in exports proves slower than expected the outflow of profits

and demand for raw material imports will also show slower growth.)

The third area where some uncertainty may exist is over the propensity to import. However, FitzGerald, (1985), suggests that the rising propensity to import, observed in earlier decades, was due to a number of factors which may not be present in the late 1980s. In particular, the continuing fiscal stimulus over the 1970s together with freeing of trade in food, accounted for a significant part of the rapid increase in imports up to 1980. Provided that no stimulus to domestic demand is given by fiscal policy and that there is no major change in competitiveness, it is unlikely that a significant deterioration in the current balance of payments situation will emanate from a surge in imports.

On balance, this examination of the prospects for the current balance of payments suggests that, while Bacon's figures could be on the optimistic side, provided there is no fiscal stimulus to the economy, there should be, at worst, no deterioration in the current situation and, probably, there should be some further improvement. As a result, Bacon's figures, adjusted as described above, have been used as a basis for the analysis described in the rest of the paper.

In the rest of this chapter four different scenarios are examined corresponding to the neutral and high public sector borrowing options and the declining and fixed interest rate assumptions. The benchmark set of assumptions, roughly consistent with Bacon's benchmark scenario, involve a neutral fiscal policy and declining interest rates. Full details of the numbers underlying these scenarios are given in Appendix 4.

4.3 Future Trends in the National Debt and Debt Interest

These four sets of assumptions were fed into the debt simulation model described in Appendix 1 and the resulting estimates of national debt interest and debt outstanding over the period are shown in Table 4.1. A breakdown of these results into foreign and domestic debt is shown in Tables 4.2 and 4.3 respectively. The benchmark run with declining interest rates corresponds most closely to the benchmark projection of Bacon. (However, as outlined later, there are some qualifications to this in the area of interest rates.) As can be seen from Table 4.1 and Figure 4.1, under the benchmark set of assumptions (neutral budget, declining interest rates) the key national debt GNP ratio peaks in 1987 and declines thereafter. From 1988 to 1990 the ratio falls, although even in 1990 it is only back to the level for the current year (1968). This level is very high by the standards of Western

Europe (Chouraqui, Jones and Montador, 1986). The prospect for debt interest payments is for very little change in absolute terms over the rest of the decade giving a gradual decline as a percentage of GNP. This decline in interest payments occurs in spite of the continuing high level of borrowing and is purely due to the assumed fall in interest rates. Once interest rates reach their assumed minimum in 1988, the interest payments begin to rise again in absolute terms though still showing a small fall as a percentage of GNP.

Table 4.2 shows the trend in the ratio of foreign debt to GNP. On the benchmark assumptions, with net foreign borrowing tapering off, this ratio declines giving a rapid fall in foreign debt interest payments relative to GNP. This contrasts with the experience of the first half of the decade when the continuing rise in foreign debt interest payments knocked an average of 1 per cent a year off the growth rate of GNP (Bacon, 1986)

Even the moderate fiscal stimulus assumed in the "high" borrowing option is enough to give a continuing rise in the debt/GNP ratio into the foreseeable future. This option is clearly explosive in that the debt/GNP ratio would reach a totally unsustainable level if such a course were pursued indefinitely. The magnitude of this problem is to some extent masked by the trend in debt interest payments which continues

Table 4.1 *Total Debt Outstanding and Total National Debt Interest, 1985-1990*

Year	Benchmark Borrowing (Neutral Budget)				High Borrowing			
	Declining Interest Rates		Fixed Interest Rates		Declining Interest Rates		Fixed Interest Rates	
	£m.	% GNP	£m.	% GNP	£m.	% GNP	£m.	% GNP
Total Debt Outstanding								
1985	18,857	123.6			18,857	123.6		
1986	21,025	128.0			21,025	128.0		
1987	22,897	132.4			22,960	132.8		
1988	24,530	130.5			24,889	132.4		
1989	26,370	130.4			27,532	137.4		
1990	27,944	127.6			29,965	139.4		
Total National Debt Interest								
1985	1,856	12.2	1,856	12.2	1,856	12.2	1,856	12.2
1986	1,824	11.1	1,834	11.2	1,824	11.1	1,834	11.2
1987	1,831	10.6	1,923	11.1	1,838	10.6	1,925	11.1
1988	1,845	9.8	2,084	11.1	1,856	9.9	2,097	11.2
1989	1,855	9.2	2,217	11.0	1,892	9.4	2,263	11.3
1990	1,928	8.8	2,377	10.9	2,006	9.3	2,475	11.5

Table 4.2. *Foreign Debt Outstanding and National Debt Interest on Foreign Debt, 1985-1990*

Year	Benchmark Borrowing (Neutral Budget)				High Borrowing			
	Declining Interest Rates		Fixed Interest Rates		Declining Interest Rates		Fixed Interest Rates	
	£m.	% GNP	£m.	% GNP	£m.	% GNP	£m.	% GNP
Foreign Debt Outstanding								
1985	8,441	55.3			8,441	55.3		
1986	9,348	56.9			9,348	56.9		
1987	9,827	56.3			9,791	56.6		
1988	9,922	52.8			10,281	54.7		
1989	10,302	51.0			11,464	57.2		
1990	10,375	47.4			12,496	58.1		
National Debt Interest on Foreign Debt								
1985	783	5.1	783	5.1	783	5.1	783	5.1
1986	684	4.2	684	4.2	684	4.2	684	4.2
1987	653	3.8	666	3.9	655	3.8	668	3.9
1988	627	3.3	682	3.6	638	3.4	695	3.7
1989	591	2.9	680	3.4	628	3.1	726	3.6
1990	594	2.7	686	3.1	672	3.1	784	3.6

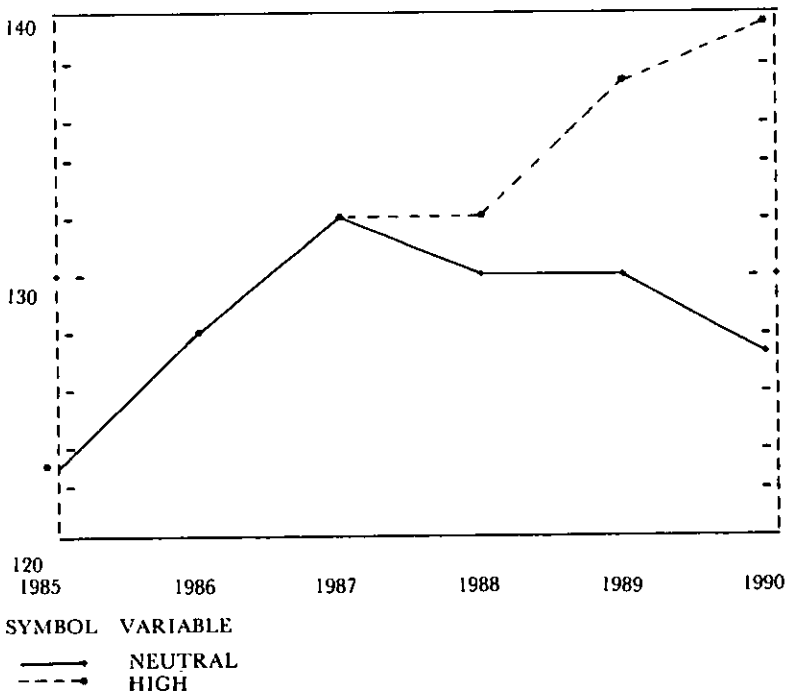
Table 4.3. *Domestic Debt Outstanding and National Debt Interest on Domestic Debt, 1985-1990*

Year	Benchmark Borrowing (Neutral Budget)				High Borrowing			
	Declining Interest Rates		Fixed Interest Rates		Declining Interest Rates		Fixed Interest Rates	
	£m.	% GNP	£m.	% GNP	£m.	% GNP	£m.	% GNP
Domestic Debt Outstanding								
1985	10,416	68.2			10,416	68.2		
1986	11,677	71.1			11,677	71.1		
1987	13,169	76.2			13,169	76.2		
1988	14,608	77.7			14,608	77.7		
1989	16,068	80.2			16,068	80.2		
1990	17,569	81.7			17,569	81.7		
National Debt Interest on Domestic Debt								
1985	1,073	7.0	1,073	7.0	1,073	7.0	1,073	7.0
1986	1,140	6.9	1,150	7.0	1,140	6.9	1,150	7.0
1987	1,178	6.8	1,257	7.3	1,178	6.8	1,257	7.3
1988	1,218	6.5	1,402	7.5	1,218	6.5	1,402	7.5
1989	1,264	6.3	1,537	7.6	1,264	6.3	1,537	7.7
1990	1,334	6.1	1,691	7.8	1,334	6.2	1,691	7.9

to decline as a percentage of GNP. This is purely due to the assumed decline in nominal interest rates. Once these rates level off, interest payments begin to rise in absolute terms (from 1988) and would begin to rise as a percentage of GNP from 1991 onwards.

In simulating the effects of fixed interest rates no attempt was made to simulate the effects of these high interest rates on the major economic aggregates other than debt interest. To do so would require a major exercise with a suitable macro-economic model. The results should be interpreted in this light. In addition no account was taken of the need to finance the additional interest payments consequent on the higher interest rates. If they were financed by borrowing an indication of the effect on the debt/GNP ratio can be obtained by adding the cumulative difference between the two sets of interest payments, expressed as a percentage of GNP, to the debt/GNP ratios of the declining interest rates option. In the case of the Neutral budget assumption this would suggest that the debt/GNP ratio would peak in 1989 at over 134 per

Fig. 4.1 Debt GNP Ratio (%) Under Different Borrowing Assumptions



cent of GNP. In the case of the "high" borrowing assumption the debt/GNP ratio would rise even more explosively to over 145 per cent of GNP by 1990.

The unchanged interest rates assumption, not surprisingly, leads to a continuing rise in interest payments in nominal terms as the level of indebtedness rises. In the case of the neutral budget option, debt interest payments remain almost constant as a percentage of GNP while under the high borrowing assumptions they rise from 1987 onwards.

The conclusions to be drawn from these simulations are:

- (i) Provided that fiscal policy is restrained to the degree implicit in the neutral budget scenario, the crucial debt/GNP ratio will begin to fall before the end of the decade. This will occur even if interest rates remain high, though the situation would obviously be improved by a return to the lower real interest rates experienced in the past.
- (ii) If there is a moderate fiscal expansion, on the lines set out in Appendix 4, even with falling interest rates, the national debt continues on the explosive course which it is on currently. With fixed interest rates the deterioration is all the more rapid.

Simulations were also carried out to examine the effects of alternative compositions of borrowing. In particular, in the benchmark scenario the cost to the exchequer of financing differing proportions of the debt by foreign borrowing was examined. However, given the internally consistent⁶ nature of the declining interest rate assumptions, any change in composition has little or not effect on the exchequer cost, though they obviously have different implications for the management of the monetary sector of the economy.

4.4 *Demand for Government Securities in the Medium Term*

In the absence of a quantitative model which explains how the private sector manages its portfolio of assets it is difficult to forecast the likely demand for government securities over the next five years. The factors which will be crucial in determining the demand for these securities will be firstly the change in the wealth of the private sector through savings. Secondly, the demand for different assets, real and financial, will be affected by the expected rates of return on the different assets. (The level of savings may itself be affected by those rates

6. Generally interest differentials are equal to the assumed annual rate of change in exchange rates.

of return.) Thirdly, the demand for certain types of assets may be affected by the distribution of income. These factors are each considered in turn in the discussion which follows.

While the demand for different assets should ideally be examined in the context of the level of private sector wealth, suitable data are not available. Instead the first part of this exercise involves an examination of the likely effects of a change in wealth due to the level of savings in the benchmark scenario (neutral budget, declining interest rates). Table 4.4 shows the personal sector funds available for investment expressed as a percentage of GNP. These funds are equal to the total of personal savings and depreciation adjusted for capital transfers. As can be seen from this table, the benchmark scenario assumes that the proportion of GNP accounted for by those funds changes little over the period 1984 to 1990. These funds are available for investment by the personal sector in either financial assets or real assets. Table 4.5 gives the breakdown of the allocation of these funds into physical capital formation (residential building and agricultural investment) and the acquisition of financial assets. The proportion devoted to direct investment by the personal sector fell rapidly from 1981 to 1985 and is assumed to stabilize at roughly the 1985 level for the rest of the decade. This drastic change in the use of the funds available to the private sector, which was commented on in the previous chapter, was brought about, at least in part, by a change in the cost of capital and in the relative rates of return on real and financial assets. If, as is assumed in the benchmark scenario, real interest rates fall significantly towards the average levels experienced over the last thirty years, the relative rates of return on fixed assets and financial assets will be altered in favour of investment in physical capital. In this case it must be questioned whether the estimated breakdown between physical and financial assets, shown in Table 4.5 is realistic. It is probable that the unchanging pattern of use of funds shown in that table for the rest of the decade is more consistent with a level of interest rates somewhere between the "declining" and "fixed" interest rates scenarios.

In Table 4.5 domestic borrowing by the government is expressed as a percentage of the total acquisition of financial assets by the personal sector over the period 1980-1990. With the exception of 1981, government borrowing between 1980 and 1985 accounted for between 58 per cent and 65 per cent of the total acquisition of financial assets by the personal sector. The assumptions concerning the financing of the exchequer borrowing requirement in 1986, while consistent with

Table 4.4. *Source and use of funds by the personal and company sectors as a percentage of GNP*

Year	<i>Personal sector</i>			<i>Company sector</i>		
	<i>Source of funds</i>	<i>Investment in Physical Capital</i>	<i>Balance</i>	<i>Source of Funds</i>	<i>Investment in Physical Capital</i>	<i>Balance</i>
1980	17.7	7.0	10.7	11.1	19.3	-8.2
1981	16.6	8.8	7.9	11.1	18.8	-7.7
1982	19.0	7.2	11.8	9.8	16.6	-6.8
1983	19.4	6.8	12.7	9.9	16.0	-6.1
1984	18.4	6.0	12.3	10.0	16.9	-6.9
1985	18.9	5.4	13.5	11.6	15.6	-4.0
1986	18.4	5.1	13.3	10.8	13.5	-2.7
1987	18.3	5.4	12.9	10.4	13.8	-3.4
1988	19.3	5.2	14.1	10.9	14.1	-3.2
1989	18.6	5.1	13.5	11.6	14.8	-3.2
1990	18.3	5.0	13.3	12.7	15.9	-3.3

Taxes on capital have been subtracted from personal sector sources and uses of funds.

Table 4.5. *Personal sector investment in physical and financial assets.*

<i>Year</i>	<i>Physical investment</i>	<i>Investment in financial assets</i>	<i>Government domestic borrowing</i>	<i>Government domestic borrowing</i>
	<i>% of total funds available</i>	<i>% of total funds available</i>	<i>% of total funds available</i>	<i>% of investment in financial assets</i>
1980	39.5	60.5	39.5	65.4
1981	52.7	47.3	20.5	43.4
1982	37.9	62.1	38.1	58.1
1983	34.8	65.2	38.0	58.3
1984	32.8	67.2	39.9	59.4
1985	28.5	71.5	46.6	65.1
1986	27.8	72.2	44.9	62.2
1987	29.6	70.4	49.5	70.4
1988	28.1	72.9	43.5	59.6
1989	27.5	72.5	39.8	54.9
1990	27.2	72.8	38.6	53.0

Taxes on capital have been subtracted from personal sector sources and uses of funds.

this pattern, are clearly no longer attainable. For 1987 the assumed domestic exchequer borrowing would account for 70 per cent of the personal sector's financial assets. Even under normal conditions this is probably too high. However, any change in the assumed composition of borrowing for that year would not significantly affect the figures in the previous section. From 1988 onwards exchequer borrowing would account for a rapidly falling share of personal sector funds leaving a large volume of funds seeking other forms of financial assets.

As shown in Table 4.4 the company sector's borrowing requirement, expressed as a percentage of GNP, is also assumed to remain at a low level for the rest of the decade. As a result, the possibility of transferring spare personal sector funds to the company sector from 1988 onwards, through the medium of the banking system or other financial institutions, would be small. This result is reflected in the growing balance of payments surplus envisaged for the years 1988–1990. In this scenario, there would be a shortage of domestic borrowers in 1989 and 1990 given the volume of funds available for investment in financial assets and given assumed interest rates. Even with the government funding most of its borrowing domestically, it would not be able to absorb all the available funds. This mis-match between the domestic supply and demand for funds could only be resolved by a capital outflow or by a change in the flows of funds and private sector demand for them induced by a change in interest rates, an issue considered in the next section.

So far the mechanism whereby the personal sector's funds find their way into public sector debt have not been considered. In the previous chapter the growth in the importance of the life assurance and pension funds in the period up to 1985 was documented (see Table 3.9). Between 1983 and 1985 the proportion of total personal sector funds invested in these institutions ranged from a quarter to a third. These institutions, in turn, invested the bulk of their funds in government securities. For the future, the range of opportunities for investment open to these institutions will, on the basis of the benchmark scenario, remain largely confined to government securities and foreign investment, the company sector deficit continuing at a low level.

In the case of the banking system, while it commenced 1986 with a substantially higher holding of government securities than was required by secondary liquidity requirements, it had substantially reduced this holding by mid-year. However, the forces which gave rise to this increase in the share of bank resources devoted to such

securities in 1984 and 1985 are, on the basis of the benchmark scenario, likely to continue for the rest of the decade. The tendency for the personal sector to increase its deposits with the financial institutions more rapidly than its borrowing from them, which was apparent in the 1983-5 period, should continue into the future. Similarly, the borrowing requirement of the company sector is assumed to remain at a low level leaving banks with the choice of lending to the government or lending abroad. As a result, the banking sector is likely to continue to absorb a significant portion of the new government securities created in the medium term.

A final factor which may influence the demand for financial assets and possibly even the level of personal sector savings is the distribution of income in the economy. Given the development of the financial sector over the first half of the 1980s, an increasing proportion of domestically held government debt is lodged in the portfolios of the financial institutions, especially insurance companies and pension funds. The corollary of this is that an increasing proportion of domestic national debt interest will be paid directly to these institutions while, in national accounting terms, being deemed to have been paid to the ultimate owners of these funds, the personal sector. With real interest rates at unprecedented levels these investments are much more profitable than at any time over the last thirty years. In addition, on the basis of the interest rate assumptions for the future, considerable capital gains should accrue to them in the next two or three years. However, given the *modus operandi* of these institutions the investors are only likely to receive this increased rate of return as disposable income at some date in the future. In many cases they may not even be aware of just how profitable these investment have been and, as a result, may not adjust their savings patterns for some time to come leaving actual personal savings above the level they might otherwise have been. As well as possibly biasing upwards the rate of savings the high domestic national debt interest payments represent a stream of funds available for reinvestment. Over the rest of the 1980s the national debt interest paid at home will be equal to approximately 70 to 85 per cent of the total domestic borrowing requirement of the government sector, providing a ready demand for new government securities in the absence of alternative assets.

Under the high borrowing option the picture is very different. By 1990 the exchequer borrowing requirement (EBR) is almost £1,000 million above the benchmark. If all of this increment were financed

domestically it would absorb nearly all the personal sector funds available for investment in financial assets. Clearly, this would not be feasible and, as a result in the simulations described above, it is assumed that all the additional borrowing over and above the benchmark EBR is financed abroad. This need to resort to additional foreign borrowing is reflected in the deterioration in the current balance of payments position estimated for this option compared to the benchmark (see Appendix 4). Compared to the benchmark, where the domestic supply of funds is greater than the domestic demand, under this option the financing of the EBR would absorb all available domestic funds. In addition, its effects on private capital flows would further tighten the domestic market for funds, maintaining upward pressure on the domestic interest rate.

Any change in the assumed current balance of payments position would clearly affect the availability of funds for investment in government debt. If exports proved less buoyant than predicted or if there was a serious deterioration in the agricultural terms of trade, the availability of personal sector funds for investment in financial assets would be substantially reduced compared to the figures underlying Tables 4.4 and 4.5. Naturally, any improvement in the balance of payments position over and above that assumed in the benchmark would lead to an increase in funds for investment while, if anything, reducing the public sector's funding needs.

4.5 Interest Rates and the Real Economy

Under the benchmark projection the potential imbalance in the demand for funds highlighted above will be ironed out either by changes in the real economy, resulting in lower savings and higher investment, or else through an increased capital outflow as the private sector invests abroad. The relative importance of these mechanisms will depend on two factors. Firstly, as outlined in Chapter 2, it will be affected by the degree to which interest rates are determined by internal financial conditions. Secondly, in so far as domestic real interest rates are determined by world interest rates it will depend on developments in financial conditions in the rest of the world.

If the Irish financial markets were totally insulated from world markets the effect of any excess supply of funds, as envisaged in the benchmark projection for the late 1980s, would be to drive down interest rates until either personal sector savings fell or investment rose to take up the slack. This would, in turn, reduce the current balance

of payments surplus. However, as outlined in Chapter 2, the Irish financial sector is only insulated from the rest of the world to a limited extent by uncertainty about the exchange rate. If the national debt were seen to be coming under control and the current account of the balance of payments were favourable, as envisaged in the benchmark scenario, uncertainty concerning the exchange rate would be minimised. Under these conditions the effect of an excess supply of domestic funds would be to keep domestic interest rates at the lower bound of the relatively narrow band within which they are internally determined. The mid-point of this band will, as heretofore, be determined by foreign real interest rates. If world real interest rates were to remain at a high level, as implied by the fixed interest rate scenario, domestic savings and investment would continue to generate a surplus of funds for investment in financial assets. Given the limited demand for such funds in the late 1980s under the benchmark (neutral budget) projection, the residual would flow abroad as increased private sector investment. However, if world real interest rates were to fall as envisaged in the declining interest rate scenario, domestic real interest rates would fall too. The effect of this would be to change the relative rates of return on financial and real assets back to the position at the end of the 1970s or early 1980s. This in turn would lead to increased domestic investment in real assets and a general pick up in the domestic economy. It would become more profitable to invest domestically in real assets than to invest abroad in financial assets. As indicated earlier, the pattern of allocation of private sector funds portrayed in Tables 4.4 and 4.5 for the rest of the 1980s is similar to that of the 1983-1985 period when real interest rates were high. As a result, the benchmark projection is probably more consistent with interest rates midway between the assumptions of the fixed and declining interest scenarios.

If world and consequently domestic real interest rates were to fall as envisaged under the declining interest rate assumptions it would result in a higher level of investment both by the personal sector and the company sector. In the case of the personal sector the change in the relative rates of return on financial assets and private residential building would result in an increase in activity in the housing market over and above that foreseen in the benchmark projection. To some extent the savings rate of the personal sector could be affected by a fall in real interest rates on financial assets. In the case of the insurance companies and pension funds it would take some time for this to feed

through due to the term structure of existing securities which would leave them with a continuing substantial inflow of funds. However, a general rise in economic activity above that envisaged in the benchmark would, through increasing disposable income, tend to offset the effects of a lower savings rate on the absolute level of savings.

In the company sector the effect of a fall in interest rates would be to significantly increase the incentive to invest. The borrowing requirement for this sector, when expressed as a percentage of GNP, is forecast in the benchmark projection to be lower than at any point since the early 1970s. The cost of capital to industry would fall directly as a result of the fall in real interest rates while the forecast rate of increase in profits is high. All this points to a significant potential response of company sector investment to a fall in interest rates. A fall in interest rates would of itself increase the internal funds available to the non-financial company sector, which is a net debtor.

The increase in investment brought about by a lower interest rate would tend both directly and indirectly to increase imports. The import content of non-building investment is high. The higher level of activity generally would have an offsetting effect through raising the volume of output. The increased level of activity would also have the effect of reducing the exchequer borrowing requirement through increasing the buoyancy of taxes and possibly reducing expenditure through reducing unemployment. This in turn would tend to reduce the volume of government debt on sale to the private sector.

If world real interest rates were to remain very high as envisaged in the fixed interest rate scenario, the level of activity domestically could fall below that of the benchmark projection. This would leave an even larger volume of domestic funds to be invested abroad corresponding to an even higher balance of payments surplus.

The above discussion only considers some of the many channels through which a fall in real interest rates could be expected to affect the real economy. To quantify the effects and to even understand the direction of change in certain variables where offsetting factors are at work, requires a complete macro-economic model of the Irish economy. The ESRI Medium-Term Model, while it lacks a fully articulated financial sector, is a suitable tool for such an exercise. It is hoped to use it to analyse this question at a future date.

Finally, the high borrowing option, if adopted, would ensure that the public sector demand for funds would, if anything, maintain upward pressure on domestic interest rates. In so far as attempts were

made to finance the additional borrowing domestically, it would raise domestic interest rates to a point where private capital inflows were generated. Such a rise in interest rates, albeit limited, would have a consequential dampening effect on the level of economic activity.

Chapter 5

CONCLUSIONS

5.1 *Introduction*

This chapter first considers certain key aspects of the medium-term prospects for the national debt and the economy set out in the rest of this paper. In particular the likely trend in the debt/GNP ratio, in the balance of payments, and in the financial balance of the domestic private sector are examined. Section 5.3 sets out the implications of these developments for economic policy, in particular for policy on financing the debt. Finally, certain conclusions are discussed in section 5.4.

5.2 *Aspects of Medium-term Prospects for the Irish Economy*

The analysis in this paper documents the continuing rise in the national debt/GNP ratio over the last ten years. If this upward trend is not rapidly brought under control the rise will become explosive; as the ratio rises an ever larger proportion of national resources has to be devoted to servicing this debt and, if allowed to continue, the economy would reach a stage where it could no longer support this cost. In Chapter 4 it was shown that, providing a strictly neutral fiscal policy is pursued, this rise in the debt/GNP ratio would be halted in 1987 or, under an unfavourable scenario concerning interest rates, by 1989. However, as outlined in the previous chapter, the adoption of a "neutral" fiscal stance would involve significant cuts in levels of services or increases in taxation due to the long-term trend rise in expenditure. In particular, given the slippage which appears to have taken place in 1986, the achievement of the exchequer borrowing figures in the benchmark projection would probably require an even more restrictive fiscal stance in the period 1987-1988.

The simulations described in Chapter 4 also show that under a more stimulatory fiscal stance the debt/GNP ratio continues to rise inexorably to the end of the decade. While a decline in real interest rates may give a temporary respite in the budgetary situation, it is not enough to prevent the debt/GNP ratio rising. If, on the other hand, interest rates were to remain unchanged at their current levels, the rise in the debt/GNP ratio under the high borrowing assumptions over the rest of the decade becomes acute.

This paper has not considered the optimal time path for the debt/

GNP ratio or the desired level of the exchequer borrowing requirement.⁷ However, it is worth noting that the very high real interest rates experienced in recent years must have reduced the optimal or desired level of both these aggregates. The government should only borrow up to the point that the marginal cost of borrowing is equal to the marginal social rate of return on the expenditure financed by the borrowing. With high real interest rates and a substantial proportion of borrowing going to finance current expenditure rather than investment, the real costs of such borrowing to the community are very high, as evidenced by the continuous rise in the debt/GNP ratio in recent years.

The current high level of government borrowing involves a future commitment to major changes in the distribution of income. This change in the distribution of income has important implications for equity between different groups and, as highlighted in the last Central Bank Annual report, necessitates high levels of taxation or lower expenditure in the future to meet the interest payments. These high taxes result in distortions in the economy and involve significant deadweight losses (for example, see Ballard, Shoven and Whalley, 1985). The effects of borrowing to finance the current deficit involves a transfer from future taxpayers to current taxpayers or consumers of government services. The level of borrowing also results in a transfer from the community at large to those who have accumulated wealth in the form of government securities. In recent years those who have invested in insurance policies, unit trusts and pension funds have benefitted greatly from high real interest rates and substantial capital gains. The sufferers are the community at large who have to fund the payments.

As discussed in Chapters 3 and 4, the high level of debt and new borrowing also leaves the economy vulnerable to adverse developments in world interest rates. Our problems have been greatly magnified in the past by a rise in world real interest rates and will be further complicated in the future if these rates do not fall towards historically more normal levels.

A second important feature of the benchmark scenario is the improvement in the current balance of payments over the rest of the decade. If the projected surplus on current account actually occurs, it will be the first occasion over the last forty years that the country

7. See Bacon, (1986) for such a discussion.

has run a surplus for a number of years in succession. Even if the surplus fails to occur, due to some or all of the factors discussed in Chapter 4, the current account is likely to come close to balance. This has significant implications for policy on financing the exchequer borrowing requirement over the rest of the decade. If all financial instruments were interchangeable a current balance of payments surplus, would mean that the exchequer borrowing requirement could all be financed domestically. To the extent that government debt is not interchangeable with other assets, such as equities or lending abroad, some foreign borrowing by the public sector may be desirable, in spite of a current account balance of payments surplus, to accommodate the desire of the private sector to hold a mixed portfolio of financial assets. As argued in chapter four, the magnitude of the private capital outflow in the medium term would be likely to be much smaller than in the recent past, due to the improvement in the public finances and the current account of the balance of payments envisaged in the benchmark scenario. Given a current balance of payments surplus, while the government sector is borrowing abroad and incurring a liability to pay interest on that debt abroad, these future interest payments will, from the point of view of the economy as a whole, be offset by the investment income arising from the private sector foreign investment. In undertaking this foreign investment the private sector would be expressing the view that they could obtain a higher return from investments abroad than from domestic investment. To the extent that they are right they would be maximising national income in the longer term although it would do little to reduce the level of unemployment domestically and might erode the domestic tax base.

The analysis in Chapter 4 suggests that from 1988 onwards, on the basis of the benchmark projection, foreign borrowing will account for a rapidly declining share of the exchequer borrowing requirement. It is only if there were a substantial permanent change compared to 1984 or 1985 in the expected relative profitability of foreign investment that the private capital outflow would continue at a high level. Under the benchmark projection, such a change would appear unlikely given the tendency for the current balance of payments to improve, the debt/GNP ratio to fall and given that the projected margin between Irish and foreign interest rates is greater than the projected depreciation in the Irish pound over the period. Even if there were a continuing significant capital outflow, provided the current balance of payments

remained favourable, this should not give rise to an attempt to choke it off by raising domestic interest rates. It is only if the outflow on the balance of payments occurs on the current account, where the money is not invested abroad generating future inflows of profits or interest, that the foreign/domestic composition of government borrowing should be viewed with concern.

The third aspect of the outlook for the Irish economy which must affect policy on financing the debt is the major change in the allocation of private sector resources described in Chapter 4. The shift by the private sector from investing in real capital to investing in financial assets, chiefly government securities, is a major cause for concern. The effects of the fall off in building investment on the economy generally are well documented. The fall off in the investment in productive capacity has reduced the potential growth rate of the economy in the recent past and will, if continued into the future, restrict growth in the economy to the end of the decade. To the extent that this shift has been caused by changes in the expected rates of return on the different assets, it is an issue which must be considered in examining policy on financing the exchequer borrowing requirement.

5.3 *Policy*

The problems facing the Irish economy over the rest of the decade have been discussed elsewhere. In the previous section we highlighted certain aspects of the economic outlook which should affect policy in the medium term. While some positive features emerge, it is clear that the size of the national debt leaves no scope for using a fiscal stimulus to raise growth of output or employment.

The discussion also highlighted the problems posed for the Irish economy by high real interest rates. It is in this area that the policy on debt management can make a contribution, although, as discussed in Chapter 2, the scope for influencing domestic interest rates in an open economy such as Ireland is limited. It arises from two sources: the risk aversion of investors at home and abroad which determines a limited band within which interest rates may be affected by internal factors, and the possibility of influencing expectations concerning the future movement in exchange rates. Policy on the composition of the financing of the exchequer borrowing requirement has, in the recent past, had a significant temporary influence on the domestic rate of interest. In late 1984 the commitment to a fixed level of foreign borrowing resulted in a rise in domestic interest rates unrelated to

external factors or exchange rate expectations. However, the purchase of Irish government debt by non residents in the first half of 1985 indicated that there was an upper limit on the extent to which the borrowing requirement could be financed domestically by raising interest rates. The perceived commitment to a domestic funding target has again been an influence driving up interest rates in the third quarter of 1986, although a number of other factors are also at work.

The effect of trying to maximise domestic funding of the borrowing requirement in recent years has, if anything, raised the interest cost of financing the national debt. Instead of setting a fairly inflexible domestic (or foreign) funding target divorced from the current economic situation it would be preferable if the composition of exchequer borrowing were chosen to minimise the expected cost of financing that borrowing. This would involve increasing the share of foreign borrowing under circumstances where domestic interest rates are coming under upward pressure from domestic sources, as in late 1985 or again in the third quarter of 1986. If the benchmark projection proves correct it would probably involve substantially reducing foreign borrowing in the years 1988-1990. As outlined in the previous section, the current balance of payments situation does not warrant a rigid approach to foreign borrowing.

In choosing the composition of foreign borrowing and the underlying foreign debt, the current policy of spreading risk by borrowing in a range of currencies should be continued. It is not the role of the government to gamble by plumping for borrowing in any one currency.

The adoption of a more flexible policy on the composition of the borrowing between domestic and foreign sources would, as discussed in Chapter 2 only have a restricted effect on domestic interest rates. Over the past four years it was only for limited periods of time that debt financing policy raised interest rates. For the future a change in this aspect of policy can only ensure that Irish interest rates fall in line with a fall in world interest rates.

However, there is another factor which affects domestic interest rates which may be susceptible to limited domestic influence; that is exchange rate expectations. Irish interest rates are equal to foreign interest rates plus a margin determined by the expected change in exchange rates. Over the first half of the decade this margin for expected exchange rate changes compared to the DM has tended to

be greater than the actual change.⁸ Because expectations for the Irish exchange rate vis-a-vis the DM over those years were weaker than the actual outturn, real interest rates were higher than were warranted by the actual outturn. This raises the question of the appropriate stance of exchange rate policy. The devaluation of August 1986 went some way towards validating previous exchange rate expectations and brought about an improvement in competitiveness, albeit temporary, (see Flynn, 1986). The cost is that it will fuel expectations of similar devaluations in the future leading to higher interest rates than might otherwise be the case. It also tends to increase the uncertainty concerning the future value of the exchange rate which in turn adds to domestic interest rates. For the future, exchange rate policy can either validate expectations, and so avoid a rise in *ex-post* real interest rates by raising inflation, or else, by sticking to the current EMS parity, attempt to reduce over time the uncertainty concerning exchange rates. This latter course of action would result in the interest premium (on foreign rates) falling and consequently a reduction in domestic real interest rates. In the longer term the reduction in exchange rate uncertainty and the resulting saving in terms of lower interest rates is to be desired. The fact that it was not achieved in the first seven years of membership was due to the inappropriate nature of the other aspects of public policy in those years. For the future, a change in exchange rate uncertainty and expectations so as to reduce domestic interest rates will depend not only on exchange rate policy but also on the stance of other aspects of domestic policy, in particular fiscal policy.

The upturn in domestic investment which is so necessary to bring about a higher rate of growth depends very much on the evolution of foreign interest rates. Economic policy abroad, in particular in Germany and the US, will determine the underlying trend in real interest rates generally in international markets, and consequently, in Ireland. The minimum that domestic policy on the composition of exchequer borrowing should aim to achieve is the elimination of temporary rises in interest rates above this world trend. In the longer term, it may be possible to reduce interest rates through adopting a set of policies designed to minimise uncertainty concerning the exchange rate.

8. For borrowing by the Irish government in 1980 and 1981 with a maturity of five years the *ex post* yield was lower on DM than Irish pound borrowing. On the basis of the benchmark time profile for exchange rates the same would be true of borrowing in 1982-85.

Finally, it was argued earlier in this paper that the personal sector may have a higher level of saving than it would choose if it had full information on its asset position, in particular on its savings in pension funds, life insurance etc. The effect of this higher saving is to reduce the current balance of payments deficit while raising the current budget deficit. It might be desirable, if the current account of the balance of payments moves into surplus, to consider some change to alter this situation. One approach is that adopted in the recent UK finance bill which aims to improve the flow of information to savers. Another possible approach could be through some limited change in the tax system.

5.4 *Conclusion*

The analysis in this paper shows that the problem of the public finances, as proxied by the national debt/GNP ratio has been considerably aggravated by the rise in real interest rates internationally and remains a major cause for concern. Nevertheless, it also suggests that, given a tight fiscal policy stance and some easing of interest rates, this key ratio could begin to fall from 1988 onwards. This chink of light at the end of what has been a very long tunnel should provide some incentive to pursue appropriate policies. The rewards to effort in the field of the public finances need not be postponed indefinitely. However, the analysis also shows that any relaxation of a strict fiscal policy stance could lead to an explosive increase in the public finance problem with all that that implies for future growth in income, employment, and the distribution of income. While the paper makes recommendations on how policy could best be directed to reducing domestic interest rates and so promoting future growth it also shows that we remain extremely dependent on developments in the outside world. A continuation of current very high real interest rates abroad would directly affect the Irish economy and would slow the resolution of the public finance problem.

Finally, as indicated in the rest of the paper, our knowledge of how the Irish economy operates in the post EMS environment remains incomplete. Our experience of very high real interest rates has been so recent that their full implications for the real economy are not yet fully understood. As a result, policy for the future must be framed in a flexible manner to take account of continuing uncertainty as to its likely effects.

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THE DEBT SIMULATION MODEL

(i) *Introduction*

The model used is, in principle, extremely simple. It takes as input all published information on the existing structure of the debt for the starting date of a simulation. For each loan the following information is used: interest rates, repayment dates, number of interest payments a year etc. When taken together with forecasts for exchange rates and interest rates¹ these data should allow reasonably precise estimates of interest payable, debt repayments and debt outstanding for existing debt. Given forecasts for new foreign and domestic borrowing, forecast repayments on existing debt, and given certain assumptions concerning the instruments used to finance new borrowing, the model also produces estimates of interest payable and debt outstanding for the forecast period. The model produces estimates of interest payments and debt repayments on a monthly and an annual basis. Details of the assumptions underlying the model's treatment of existing domestic debt are given in Section (ii). Similar information for existing foreign debt is given in Section (iii) and the assumptions underlying the treatment of domestic and foreign borrowing undertaken after the start of a simulation are given in Sections (iv) and (v) respectively. Section (vi) sets out the assumptions concerning small savings and Section (vii) examines the tracking performance of this model over the period 1980-85.

(ii) *Existing Domestic Debt*

For existing domestic national loans (including exchequer bills), both fixed rate and variable rate, full information is available from the Finance Accounts and stock exchange listings. This information is updated regularly by the Central Bank (Table D1 in the Annual Report, 1986) and is available in the newspapers. For fixed interest debt the model needs information on the face value of the debt outstanding,² the nominal interest rate on that debt, the earliest and

1. In the case of a simulation for a historical period the exchange rate, interest rate and borrowing data are the historical figures for the relevant period.

2. The amount issued is not necessarily the same as the amount in the hands of the public. Some debt is held by various government extra budgetary funds. New issues of tranches of stock are held by the Post Office Savings Bank fund pending sale to the public. Discussion of the adjustments needed to take account of these and other factors in arriving at national debt interest on a national accounts basis is given in Appendix 2.

latest years when the debt is repayable and the month it is repayable, the first month in the year on which interest is payable and the number of interest payments in a year. In the case of variable interest rate debt the interest rate is the annual mark up on the exchequer bill yield. In addition, where the mark up changes over the lifetime of the debt the alternative mark up and the year in which it changes is supplied. Finally, for variable interest rate debt the lag with which the interest rate is linked to the exchequer bill rate must be supplied: this is generally three or six months. The computer programme, which is available from the author, takes this information, and the forecast exchequer bill rate and calculates the interest payable on each individual loan, monthly, up to the date of repayment. For simplicity, in the case of fixed interest debt with alternative repayment dates, it is assumed that the debt is repaid in the first month in which the forecast yield on medium term government debt is less than the nominal interest rate on the relevant bond. The computer programme can produce forecasts, for each loan and for all loans taken together on a monthly and an annual basis, of interest paid, debt repayment and debt outstanding.

(iii) *Existing Foreign Debt*

In the case of foreign debt, both fixed rate and variable rate, much less information is available to the public from the Finance Accounts and other published sources. For both fixed and variable interest rate debt, the two pieces of information which are available in every case are the amount outstanding and the currency in which the debt is denominated. In the case of fixed interest debt the interest rate and repayment years are generally known. The repayment months, the months in which interest is paid and number of interest payments in a year are generally not accessible.

In the case of variable interest rate debt the interest rate to which the loans are related and the margin on that interest rate are not known with any certainty. While the repayment year is known in certain cases, it is generally not available for the bulk of variable rate foreign debt covered by borrowing from the EIB, revolving credit facilities and other foreign borrowing.

These lacunae in the information required by the model are filled by means of the following assumptions:

- (a) where the repayment month is unknown it is assumed to be end December for fixed interest debt and end September for variable interest debt;
- (b) where the repayment year is unknown (e.g., for the revolving credits) it is assumed to be 1995;
- (c) the interest rate to which the variable rate debt is linked is assumed to be LIBOR for 6 months borrowing in the relevant currency;
- (d) the margin on LIBOR for the variable rate debt is assumed to be 0.25 per cent a year;
- (e) where the first month in which interest is payable is unknown it is assumed to be June for fixed rate debt and March for variable rate debt;
- (f) the number of interest payments in a year is generally assumed to be two. In the case of fixed interest debt incurred in 1985 it is assumed to be one payment per year;
- (g) in the case of the variable interest debt the interest payments are assumed to be related to LIBOR with a six months lag;
- (h) no debt is repaid before the last permitted date.

If more detailed information on individual loans could be obtained the above assumptions would be unnecessary and there would be a resulting improvement in the model's performance.

(iv) *Domestic Debt Issued After Start of Simulation*

All new domestic borrowing by way of national loans carried out after the start of the simulation period is assumed to be in the form of fixed interest debt. A similar assumption is made concerning the refinancing of both variable and fixed rate debt which is repaid. The instrument used is assumed to be a national loan repayable at end September five years after the date of issue. The nominal interest rate of the chosen instrument is optional, being an input into the model. Interest payments are assumed to be made on this new instrument in March and September. The selling price for this instrument in each month is determined by the above information together with the forecast bond yield for that month for bonds maturing in five years' time. The formula used is given in Appendix 3.

(v) *New Foreign Debt*

All borrowing and refinancing of existing foreign debt carried out after the start of the simulation period is assumed to be undertaken using variable interest debt. This new debt is assumed to be repayable

after the year 2000. Interest is assumed to be payable twice yearly in March and September and the mark up on LIBOR is a quarter of a per cent a year. It is assumed that this debt is sold at face value no matter which month in the year the borrowing is undertaken. The currency composition of the new debt can either be input into the model or the default setting is that the composition is the same as that of total existing foreign debt at the commencement of the exercise.

(vi) *Small Savings*

The definition of small savings used here is slightly different from that used in the Finance Accounts. Exchequer bills are included with the national loans. Small savings are here defined as savings certs, prize bonds, tax reserve certs, investment bonds, national instalment savings and index linked savings bonds, all as defined in the Finance Accounts, and lending of the Post Office and Trustee Savings Banks to the government.

The forecast borrowing by way of small savings is turned into a monthly flow by dividing the annual figure by 12. The interest payable is calculated each month as one twelfth of the annual interest rate times the forecast debt outstanding in each month.

(vii) *Model Tracking Performance 1980-85*

The model was applied to data for the period 1980 to 1985 to examine its performance to see whether the data used are sufficiently accurate and whether the level of detail in the model is adequate. To the extent that the model fails to track the actual outturn for the period, it is an indication that some of the model's simplifying assumptions are unreasonable. In principle, if full information were available on the terms of foreign borrowing it should be possible to reproduce exactly the outturn for the simulation period. Actual historical interest rate and exchange rate data were used. The currency composition of the foreign borrowing in each quarter was chosen so that the end quarter currency composition was the same as that given in the Central Bank quarterly for each quarter. The structure of the existing debt at the beginning of the simulation was taken as given at the end of 1979. For simplicity, the nominal interest rate on new domestic fixed interest debt issued throughout the period was taken to be a constant 11 per cent.

A comparison of the model's estimate of interest on national loans (including exchequer bills but excluding small savings) with the actual

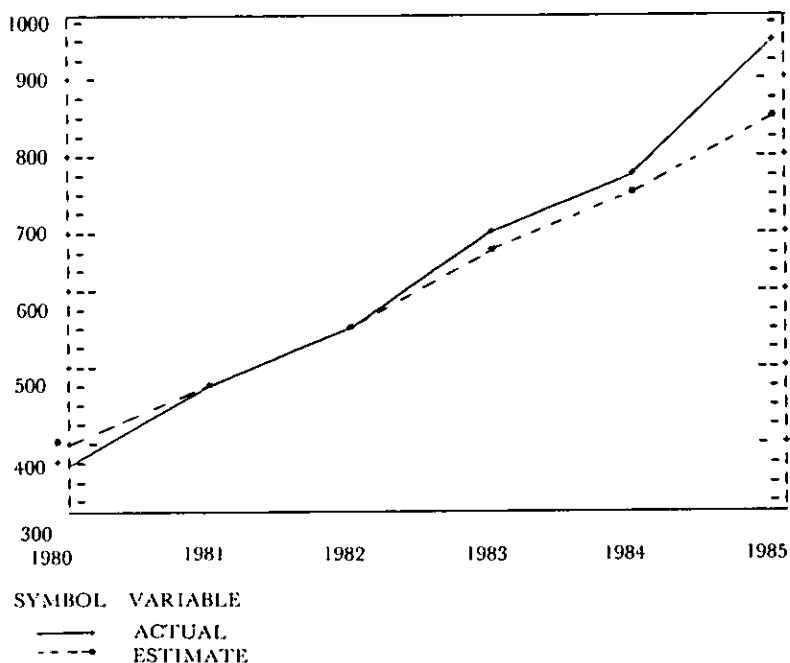
interest payments is given in Table A1.1 and figure A1.1. As can be seen, the model's estimates are reasonably close to the actual interest paid each year. To the extent that there is a discrepancy it is due to the simplifying assumption of a constant 11 per cent nominal rate on new debt issued. If the correct average nominal interest rate on new issues were used for each year the model results would be even closer to the actual outturn.

A similar comparison for foreign borrowing is shown in Table A1.2

Table A1.1: *Comparison of model's estimate with actual interest payments on National Loans*

Year	£ million	
	Actual	Estimate
1980	398.7	425.7
1981	503.5	493.3
1982	573.9	574.0
1983	699.0	667.4
1984	780.6	762.8
1985	950.7	869.1

Fig. A1.1. *Comparison of Estimated and Actual Interest on National Loans*

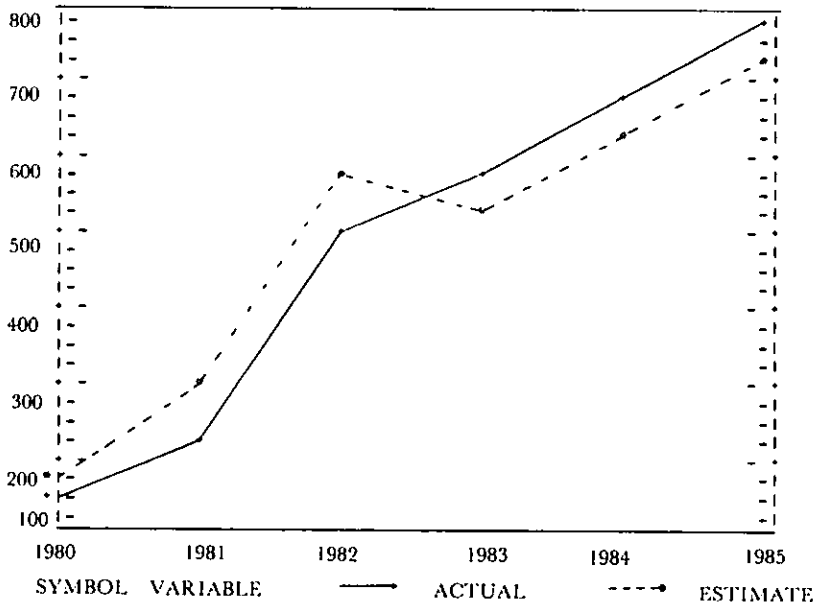


and Figure A1.2. As can be seen from this table the results are much less satisfactory for foreign borrowing than for domestic borrowing. While the results show some improvement as the absolute size of the debt rises, they are still far from satisfactory. The fact that the percentage error falls as the absolute size of the interest payments rise is due to the fact that the problems relate primarily to the handling of interest on new borrowing in the current year. As a result, as the volume of new borrowing in the future will represent an ever decreasing proportion of existing debt the reliability of the model should continue to improve. These results suggest that there is a need to improve the information used in the model on the terms of existing foreign debt and the management of this debt over time.

Table A1.2: *Comparison of model's estimate with actual interest payments on foreign borrowing*

<i>Year</i>	<i>Actual</i>	<i>Estimate</i>
1980	161.4	196.7
1981	249.4	315.4
1982	509.9	582.8
1983	577.4	538.3
1984	692.6	628.2
1985	783.0	742.4
Total	2,973.7	3,003.8

Fig. A1.2. *Comparison of Estimated and Actual Interest on Foreign Borrowing*



Appendix 2

DERIVATION OF NATIONAL DEBT INTEREST ON A NATIONAL ACCOUNTS BASIS

Set out below is the derivation of the Central Government national debt interest figures for 1984. To this must be added land bond interest and interest paid by local authorities to the private sector to obtain Public Authorities' national debt interest payments. The derivation of land bond interest and Local Authorities' interest payments is not discussed here.

The basic source for this information is the Finance Accounts (FA). Set out below is the derivation of the 1984 figures for Central Government national debt interest, item 143 in National Income and Expenditure 1983 and 1984.

	<i>£m.</i>	<i>Description</i>	<i>Source</i>
add	1565.9	Total interest paid from Central Funds	FA, 84, Table XIII, p. 21
deduct	34.7	Issues under Telecomm. Cap. Acts, 1924-81	FA, 84, Table XIII, p. 21
		Issues under Appropriation Act, 1984	
deduct	18.1	Capital Services Redemption <i>etc</i> Interest on ways and means advances	FA, 84, Table XXI, p. 43
add	73.0	Interest paid by POSB and TSB	CSO
deduct	28.0	Special payment because of Central Bank strike. Interest paid to a special account in Central Bank. In 1985 it should be added to national debt interest.	CSO
deduct	41.1	Other payments of interest to extra budgetary funds of which:	
		25.1 Interest paid to sinking funds	Total of interest received in FA, 84, Table XXI (1), XXI (2), and XXI (4)
		(3.5) 1983 figure for interest on invested funds of the Social Insurance and Occupational Injured Funds	Statistical Information on Social Welfare Services, 1983, Table 49.
		Others include payments to POSB in respect of their trading in government stocks	
TOTAL	1517.0		
add	6.0	Land Bond Interest	
TOTAL	1523.0	Net Total Central Government National Debt Interest	<i>Budget, 1985.</i> National Accounts Version of the Budget, Part II.

Appendix 3

RELATION BETWEEN MARKET YIELD AND SALE PRICE OF THE DEBT

In each case the debt instrument is assumed to have a fixed nominal yield maturing at end September in year $n+5$ where n is the current year. Interest is assumed to be payable twice yearly at end March and end September. Given the forecast market yield on this debt instrument, it is desired to obtain the instrument's sale price in each month of the year. The formula is given below:

$$P = [(i((1+r)^t - 1) + r) / (r(1+r)^t)] (1+r)^{m/6} \quad (1)$$

P = the sale price of a stock with nominal value of 1 unit

$$r = (1+R)^{1/2} - 1$$

where R is the yield to maturity.

t = number of interest payments left before the stock matures.

i.e., up to March of year n $t = 10$

April to September of year n $t = 9$

September to December of year n $t = 8$

m = months since last interest payment.

Derivation:

The discounted present value of future interest payments is S_t ,

$$S_t = i/(1+r) + i/(1+r)^2 + \dots + i/(1+r)^t \quad (2)$$

multiply S_t by $1/(1+r)$ and subtract from equation (2) to give equation 3:

$$S_t r/(1+r) = i/(1+r) - i/(1+r)^{(t+1)} \quad (3)$$

The discounted present value (V_t) of the stock on maturity is:

$$1/(1+r)^t \quad (4)$$

Rearranging (3) to give S_t and adding the discounted present value of the stock on maturity (4) gives:

$$V_t + S_t = (i((1+r)^t - 1) + r)/(r(1+r)^t) \quad (5)$$

This must be further adjusted to take account of the interest accrued each month since the last payment of interest. The resulting equation is shown above as equation (1).

Appendix 4

ASSUMPTIONS UNDERLYING DIFFERENT SCENARIOS

The macro-economic assumptions underlying the analysis in this paper are based on Bacon (1986). However, these figures have been subjected to limited adjustment to take account of recent changes in oil prices and exchange rates. Generally, this has been accomplished by taking the latest *Quarterly Economic Commentary* (August 1986) figures and rebasing the major macro-economic aggregates in Bacon (1986) for the years 1988–1990. The resulting GNP and balance of payments figures are shown in Table A4.1. This procedure is essentially unsatisfactory but, in the absence of a full model based forecast, was the only feasible approach. As a result, the adjusted numbers should not be taken as a forecast. They are useful as a framework for carrying out the analysis contained in this paper providing, as they do, an indication of the rough order of magnitude of certain key variables.

The exchequer borrowing requirement figures shown in Table A4.1 have not been adjusted to take account of recent developments so that they may well underestimate borrowing in 1986 and, consequently, in 1987, due to overruns in 1986. However, this should not alter trends in the medium term and the range of possibilities covered by the optimistic and pessimistic scenarios should give a reasonable indication

Table A4.1: *Macro-Economic Aggregates*

	1986	1987	1988	1989	1990
A. Neutral Budget					
GNP value	16,423	17,269	18,820	20,240	21,840
Balance of payments value	210	-330	240	345	450
As percentage of GNP	-1.3	-1.9	1.3	1.7	2.1
Exchequer borrowing requirement	1,955	1,865	1,780	1,650	1,650
Foreign borrowing	600	300	280	150	100
Domestic national loans	1,155	1,350	1,270	1,255	1,290
Domestic small savings	200	215	230	245	260
B. Higher Exchequer Borrowing					
GNP value	16,423	17,269	18,820	20,040	21,410
Balance of payments value	-210	-500	-225	-200	-150
As percentage of GNP	-1.3	-2.9	-1.2	-1.0	-0.7
Exchequer borrowing requirement	1,955	1,930	2,075	2,450	2,600
Foreign borrowing	600	365	575	950	1,050
Domestic national loans	1,155	1,350	1,270	1,255	1,290
Domestic small savings	200	215	230	245	260

of the sensitivity of the results to variations in total borrowing.

The breakdown of the borrowing figures between different sources of finance for the neutral budget set of assumptions is taken from Bacon. In the alternative pessimistic fiscal policy option (B) (Table A4.1), domestic borrowing is held unchanged and all additional borrowing is assumed to be undertaken abroad. For simplicity all new borrowing by means of national loans is assumed to be undertaken by means of securities maturing in five years with a fixed nominal interest rate. That fixed nominal interest rate (or coupon) is the average yield on medium term government debt assumed for the relevant year. As a result the sale price of the debt is close to its face value. Also for simplicity all new foreign borrowing is assumed to be undertaken by issuing variable rate debt. The currency composition of this borrowing is assumed to be identical to the composition of the debt outstanding at the end of 1985. However, given the assumption concerning interest rates and exchange rates, discussed below, changes in the currency composition of foreign borrowing make little difference to the results.

The model also requires assumptions concerning future interest rates and exchange rates. The first set of assumptions (A) (Table A4.1) are based on a reduction in world real interest rates over the rest of the decade together with a marginal change in exchange rates which broadly matches the projected interest differentials. The second set of assumptions takes the nominal interest rates and exchange rates as fixed at their levels immediately after the devaluation of the Irish pound in early August 1986. Neither set of assumptions is intended as a forecast. In preparing the set of assumptions, A, (declining real interest rates) countries were broken up into three broad groups. The first group Germany, Japan, the Netherlands and Switzerland were assumed to have a long run inflation rate of 2 per cent. This together with an assumed real interest rate of 2 per cent gave a long run nominal interest rate of 4 per cent. It was assumed that these countries would generally approach this long run rate by the end of 1986 and remain there. This involves a small fall from end April 1986 interest rates. The second group covered Ireland, France and Belgium whose currencies were assumed to devalue by 1 per cent a year from end 1986 compared to the first group giving a long run inflation rate of 3 per cent. On top of the real interest rate of 2 per cent a further 1 per cent was added to cover a perceived additional risk to lenders in these currencies. This gave a long run interest rate of 6 per cent. It

was assumed that this long run rate would be approached more slowly than is the case for the first group, due to continuing uncertainty about the permanence of current exchange rates in the EMS. For the US and the UK it was assumed that there would be some further small devaluation *vis-à-vis* the Irish pound over the period 1986-1990 and interest rates were adjusted to reflect this trend.

The alternative set of assumptions concerning interest rates and exchange rates (B) involved simulating the effects of holding interest rates and exchange rates at their levels of early August, immediately after the devaluation of the Irish pound. This set of assumptions is also shown in Table A4.2.

Table A4.2: *Assumptions on Interest Rates and Exchange Rates, 1986-1990*

Country	Interest Rate LIBOR at 6 months			Exchange Rate £ Irish per unit of foreign currency		
	Assumption B		Assumption A	Assumption B		Assumption A
	August 1986	End 1987	End 1990	August 1986	End 1987	End 1990
USA	6.38	6	5	0.743	0.743	0.743
Germany	4.63	4	4	0.359	0.363	0.374
Japan	4.7	4	4	0.005	0.005	0.005
UK	9.9	7	6	1.098	1.098	1.098
EEC	7.0	5.6	5.3	0.757	0.759	0.765
Switzerland	4.6	4	4	0.445	0.450	0.464
Netherlands	5.5	4	4	0.319	0.322	0.332
Italy	10.8	9	8	0.001	0.001	0.000
Belgium	7.5	6	6	0.017	0.017	0.017
France	7.3	6	6	0.111	0.111	0.111
Ireland*	10.32	7	6	1	1	1

*Yield on debt with 5 years to maturity.