FISCAL SUSTAINABILITY WHEN TIME IS ON YOUR SIDE

David Cronin[*] and Daniel McCoy[**]

1 Introduction[1]

There will come seven years of great plenty throughout all the land of Egypt, but after them there will arise seven years of famine, and all the plenty will be forgotten in the land of Egypt; the famine will consume the land, and the plenty will be unknown in the land by reason of that famine which will follow, for it will be very grievous.

(Genesis 41, 29:31)

The Irish economy is currently in its seventh consecutive year of historically high economic growth, a growth pattern that is expected to be maintained in the medium term. Recent years have also seen the General Government balance move into surplus. Demographic projections, that are critical both to long-term economic growth and fiscal prospects, indicate an improvement in the dependency ratio up to 2006 and no marked disimprovement in that ratio until about the year

_____

[*] Central Bank of Ireland.

[**] Economic and Social Research Institute, Dublin, Ireland.

2026. It is within this context that fiscal sustainability issues in Ireland are being debated, an environment that might be considered quite favourable in an European context.

A not unreasonable "base case" scenario, outlined in detail in section 2, suggests that demographic developments are unlikely to threaten fiscal sustainability in Ireland in the years ahead. Indeed, the debt ratio, the conventional indicator of fiscal sustainability, is forecast to decline to a zero level by about 2020 and to be still at a very low level by 2050. It is argued in the paper that favourable macroeconomic and fiscal prospects provide, in many ways, no less difficult challenges for public finance management than dealing with poor baseline prospects. In section 3, two long-term policy options with direct impact on the public finances are discussed. The first option - reducing the debt - raises important issues for government and has implications for the financial and monetary system that need careful consideration. The second option - prefunding future pension liabilities - also raises important issues, not least that member states are given a disincentive under EU fiscal rules for prefunding initiatives. In section 4, the dynamics of fiscal sustainability in a fast-growing economy such as Ireland are considered. It is argued that EU fiscal rules may unnecessarily restrict government investment and may consequently have a negative impact on long-term macroeconomic and fiscal prospects. Section 5 concludes.

2   Irish Economic and Fiscal Performance in the Long Run

2.1   *Macroeconomic and Fiscal Performance in the 1990s and to 2002*

In Table 1, data are provided that summarise Irish economic performance over the last ten years and prospects for the medium-term. The GDP growth rate data illustrate that the Irish economy is forecast to experience its seventh consecutive year of historically high growth in 2000. There has been a parallel improvement in the general government balance in recent years with a surplus having been recorded in each of the years since 1997. The debt-to-GDP ratio has also decreased significantly in recent years, as can be seen in column (c) of Table 1.

**Table 1. Summary of Irish Macroeconomic and Fiscal Data
1991-2002**

Year	GDP Growth (%)	General Government Balance* as % GDP Borrowing(-)/Lending(+)	General Government Debt* as % of GDP
	(a)	(b)	(c)
1991	1.9	-2.3	92.0
1992	3.3	-2.5	89.2
1993	2.6	-2.2	92.6
1994	5.8	-1.7	86.1
1995	9.5	-2.1	78.4
1996	7.7	-0.2	68.6
1997	10.7	1.0	59.9
1998	8.9	2.4	49.9
1999	9.5	3.6	47.0
2000	7.4	3.3	46.0
2001	6.5	2.8	40.0
2002	5.7	2.9	36.0

- *The general government data for 1991 to 1999 is measured on an ESA79 basis and for 2000 to 2002 on an ESA95 basis. The transition to ESA95 reduces the general government surplus by about 0.3 per cent. of GDP and adds about 5.5 per cent. to the debt-to-GDP ratio. The 1999 to 2002 general government balance data, for consistency with the earlier data, excludes the impact of prefunding costs initiated in the 2000 Budget (1 December 1999). A Securities Exchange Programme undertaken in May 1999 added 4 per cent. to the debt-to-GDP ratio.*

Sources: (a): 1991-1998: *1999 National Income and Expenditure* (Central Statistics Office); 1999: *Quarterly Bulletin - Spring 2000* (Central Bank of Ireland); 2000-2002: *Ireland - Stability Programme December 1999 Update* (Department of Finance).
(b) & (c): 1991-1999 (ESA79): Excessive Deficit Procedure Notifications to the European Commission and Department of Finance; 2000-2002 (ESA95): *Ireland - Stability Programme December 1999 Update* (Department of Finance).

The 1999 *Stability Programme Update* for Ireland contains macroeconomic and fiscal projections for Ireland for the period 2000 to 2002. It forecasts average GDP growth of 6.5 per cent. per annum over the period and an average budget surplus (excluding prefunding and once-off costs) of 3 per cent. per annum[2].

2.2   *A Long Run Projection of Fiscal Variables in Ireland in the 21st Century*

While the medium-term prospects for the Irish public finances appear quite good, the question naturally arises as to how they will develop in the longer-term. In recent years, the Irish Department of Finance established a Long-Term Issues Group (LTIG) to assess the budgetary implications of potential developments over the period up to 2050. Its assessment, published in the Long-Term Issues Group Paper (1999), provided the background to the recent decision by the Irish government to put aside, with effect from 1999, 1 per cent. of GNP for the prefunding of future public service and social security pension outlays (discussed in detail in section 3).

Demographic Trends

The LTIG utilised the Actuarial Review of Pensions as the source of long-term demographic trends in Ireland. In Table 2, some of the key projections for the years up to 2056 are provided. The total population is projected to increase up to the year 2026 and to decline relatively slowly thereafter. The working age group will increase by 16 per cent. in the years up to 2016 but will fall below 1996 levels by 2056. The over 65 group will more than double by 2036 and will continue to increase up to 2056. The proportion of the population of working age (20-64 years) is projected to increase from 56 per cent. in 1996 to 60 per

_____

[2]   Official projections of the General Government Surplus and GDP growth have proven in recent years to have been too pessimistic. For example, in the *Ireland - Stability Programme 1999 to 2001* (2 December 1998) the General Government Surplus for 1999 was 1.7 per cent. The outturn in 1999, excluding prefunding initiatives, was much higher at 3.9 per cent. due to a considerably higher tax take than expected. Similarly, for 2000 there are already indications of tax revenue being considerably higher than projected in the Stability Programme Update.

cent. in 2006, to decrease slowly up to 2036 to 56 per cent. and fall somewhat faster thereafter to 51 per cent. in 2056. Although the proportion of the population aged 65 and over is projected to increase over the whole period and markedly so after 2016, the old age dependency ratio will remain in the low to mid 20 percentage points range up to 2016. It will rise sharply thereafter, reaching a level of 53 per cent. by 2056. The overall dependency ratio (old age dependants and those in the 0-19 years groups to the working age group) is expected to fall over the period up to 2006 but to rise steadily thereafter to 95 per cent. in 2056.

Table 2. Long-Term Demographic Projections for Ireland

Year	Total Population (000's)	Working Age Group (000's)	Old Age Group (000's)	Old Age Dependency Ratio (%)	Overall Dependency Ratio (%)
1996	3,626	2,013	411	21	80
2006	3,832	2,294	453	20	67
2016	4,012	2,351	584	25	71
2026	4,089	2,331	759	33	75
2036	4,071	2,263	908	40	80
2046	3,949	2,073	1,020	49	90
2056	3,730	1,911	1,018	53	95

Source: *LTIG (1999)*.

The Base Case Scenario

Given this demographic profile, the LTIG prepared a "base case scenario" for the period 2000 to 2050 setting out a potential path for the economy and the government budget by taking into account both the demographic projections outlined above and a series of macroeconomic and fiscal assumptions.

A principal assumption underlying the base case is that the rate of economic growth will average 6 per cent. from 1998 to 2000, 5 per cent. from 2001 to 2006, 4 per cent. from 2007 to 2010, 3.5 per cent. from 2011 to 2014 and 2 per cent. thereafter (inflation is assumed to average 2 per cent. over the period). This "unwinding" of the growth rate pattern in Ireland over the next fifteen years or so has also been suggested recently in a detailed analysis of prospects for the Irish economy by the Economic and Social Research Institute (Duffy *et al.*, 1999)[3].

Assumptions relating to government expenditure and government revenue are also outlined in the report. Among the critical assumptions made is that trends over the last decade in pay-related social insurance receipts relative to GNP continue over the period. On the expenditure side, pension rates are assumed to rise by 2 per cent. per annum above inflation and pay-related social insurance rates are also assumed to continue to reflect current arrangements. Both old age pensions and child benefit outlay projections are based on an annual real increase of 1 per cent. per annum and on pensioner and children numbers from the Actuarial Review of Social Welfare Pensions. The capital expenditure projections assume that spending in this area is maintained at 4.5 per cent. of GNP over the period. Finally, a contingency provision rising to 2.4 per cent. of GNP by 2003, and maintained at that level in subsequent years, is assumed in respect of the possibility of adverse developments in economic activity or changes in taxation and/or expenditure arising in the future.

_____

[3]   The positive impact that demographic developments is expected to have on future Irish growth patterns is likely to be added to by continued improvements in educational attainment and an increase in the rate of female participation in the labour force.

Given these various assumptions, the resultant projected paths for both the Exchequer balance and the National Debt are outlined in Figure 1[4]. An Exchequer surplus would be maintained for about 30 years after which a deficit would emerge - this deficit would rise to 2.3 per cent. of GNP by 2050. The debt would be eliminated in about 20 years. It is assumed by the LTIG in the base case scenario that in the following years the State will use budget surpluses to increase its cash balances, i.e. it will take a "negative debt" position. This negative debt position will peak at 14 per cent. of GNP by 2030. Beyond this date, as the Exchequer balance moves into deficit, the negative debt will be unwound and the debt will rise to about 11 per cent. of GNP by 2050.

Sensitivity Analysis

The base case scenario indicates that the continuation of a pay-as-you-go approach in state pensions would not place a particularly great burden on the Exchequer within the 50-year horizon considered. Any exercise in assessing long-term sustainability, however, should look at the sensitivity of the underlying assumptions to unfavourable developments. One scenario that dramatically illustrates how the public finances in Ireland could deteriorate is where annual GNP growth is assumed to be 1 percentage point lower than in the base case. In particular, with its total trade with the rest of the world amounting to almost 200 per cent. of GNP and its small size in an international context, the impact of an external shock on the Irish economy could be severe. Duffy *et al*. (1999, chapter 6) argue that a sudden shock to the US economy from collapsing equity prices, or a monetary policy shock to the EU economy, could give rise to a 3 percentage points or more decline in Irish GNP growth for a limited period.

The lower growth rate scenario results in the surplus quickly deteriorating into deficits by 2010 and ending up at 36 per cent. of GNP

_____

4   The data are Exchequer-based. The Exchequer balance is cash-accounting based and covers the balance between the expenditure and receipts of central government only. The debt projections, likewise, relate to central government debt. The focus on Exchequer data, however, provides a fairly comprehensive view of the evolution of the public finances in Ireland because of the centralised nature of government in Ireland. The 1999 Exchequer balance was a surplus of 2 per cent. of GNP.

by 2050, if no policy action was taken in the interim, see Figure 2. The debt would also become unsustainable rising to 455 per cent. of GNP by the end of the period.

Setting Aside 1 per cent of GNP for Prefunding Purposes

The long run impact of a partial prefunding arrangement of setting aside one per cent. of GNP per annum for prefunding purposes on the Exchequer balance and debt was considered by the LTIG. The LTIG simulation is particularly interesting given the decision by the Irish government on 1 December 1999 to provide pre-funding of 1 per cent. of GNP per annum with effect from 1999 (discussed in detail in section 3).

In the LTIG study, the funding commitment is assumed to take place up to 2020 and to involve an annual allocation from the Exchequer to the fund of 1 per cent. of GNP that is invested at a rate of return one percentage point. higher than the interest rate on the national debt. The Fund would then be progressively run down to zero between 2021 and 2050.

The initial impact of setting up the Fund in comparison to the base case assumed by the LTIG would be a smaller reduction in the national debt. The Fund grows to 26 per cent. of GNP in 2020. The Fund has the effect of lowering the range of the Exchequer balance over the period. The budget deficit is 1.5 per cent. of GNP in 2050 compared to 2.3 per cent. in the base case without the Fund, see Figure 3a, while the debt ratio is down to 1 per cent. compared to being higher at 11 per cent. at that time in the base case, see Figure 3b.

3   Long Term Fiscal Policy Issues in Ireland

While the outcome of the lower-GNP sensitivity scenario in the LTIG paper is not realistic since policy would have to react to pre-empt the implied ruinous outcomes, it demonstrates that in the current benign macroeconomic conditions prudent fiscal decision-making remains vital. Since 1997, the General Government balance in Ireland has been in surplus and the Stability Programme Update for Ireland indicates that before any pre-funding initiatives are considered an average yearly surplus of 3 per cent. is expected for the period 1999-2002. The review
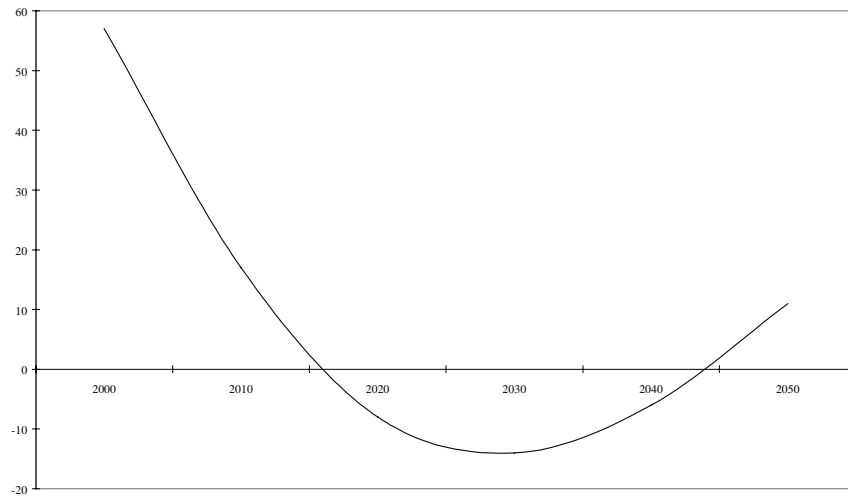
Figure 1

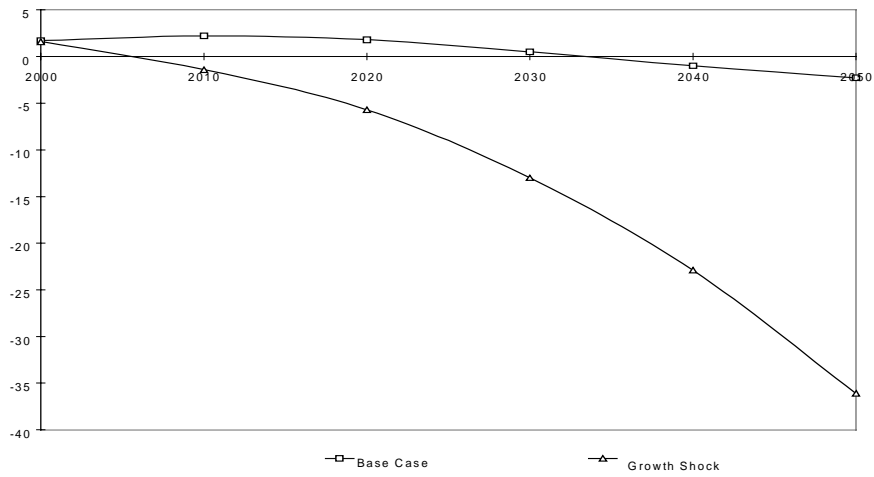## Figure 1a. Budget Balance as % of GNP under the Base Case
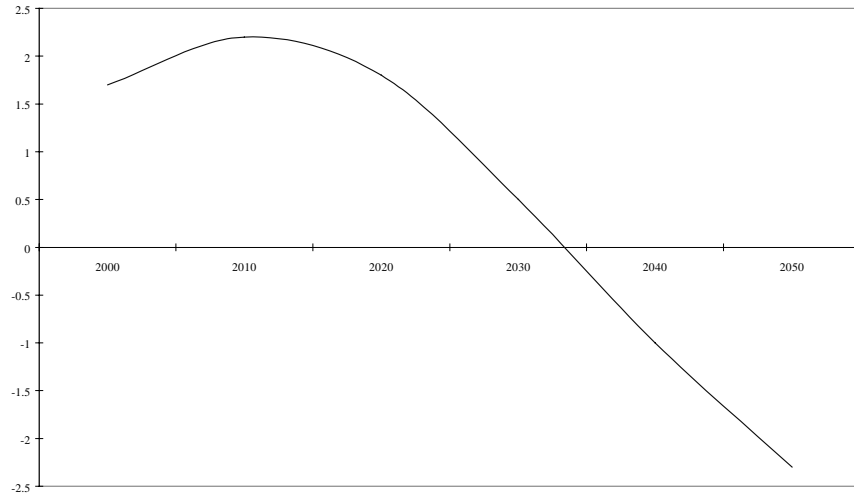
Figure 1b. National Debt as % of GNP under the Base Case
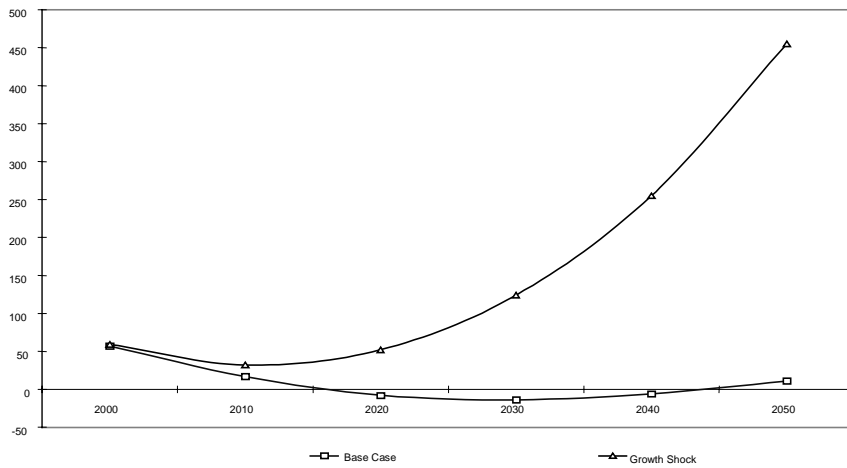

Source: LTIG (1999).

Figure 2

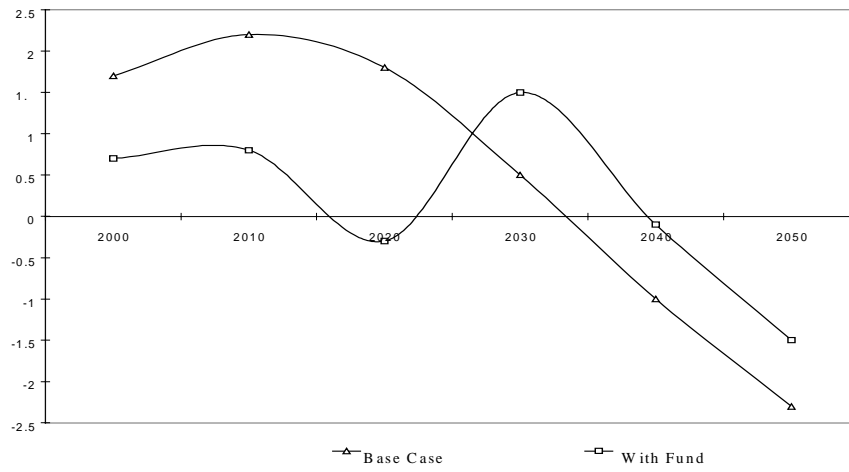### Figure 2a. Budget Balance as % of GNP under the Base Case and a 1 Percentage Point Fall in Growth

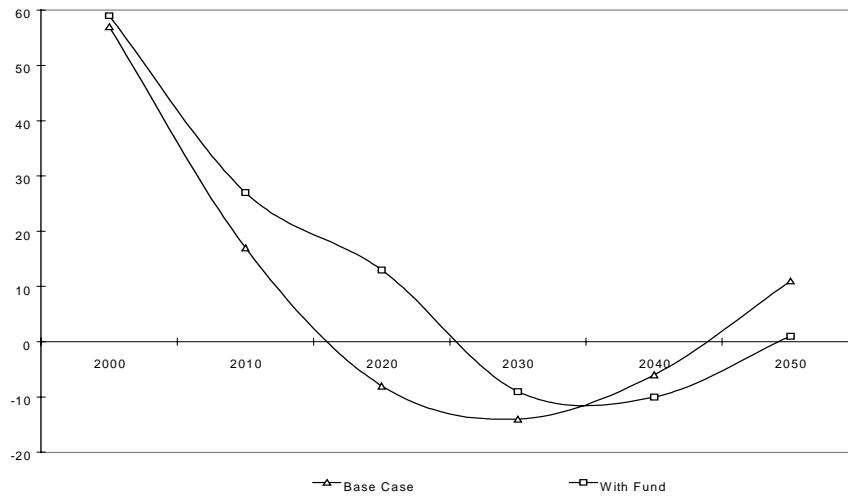### Figure 2b. National Debt as % of GNP under the Base Case and 1 Percentage Point Fall in Growth

Figure 3

Figure 3a. Budget Balance as % of GNP in Base Case with and without State Pension Fund

Figure 3b. National Debt as % of GNP in Base Case with and without State Pension Fund

Source: LTIG (1999).

of recent and prospective future economic and fiscal developments in Ireland in section 2 indicates that the "baseline" prospects for Ireland on fiscal sustainability appear quite favourable, with the LTIG assessment pointing to budget surpluses being in prospect up to 2030.

In this context, the natural question that arises for any country with favourable growth and fiscal prospects is: how best can the favourable fiscal position be best managed or utilised? In this section, there is a focus on policy alternatives that will have a direct impact on the evolution of the government budget balance and government debt over time. Two particular policy options are considered: using prospective fiscal surpluses solely to reduce government debt, and initiating a partial prefunding of future pension commitments of the government. In section 4, consideration is given to how budgetary policy, in particular government investment policy, could enhance long-term growth prospects in a fast-growing, catching-up economy such as Ireland and in so doing have, in turn, a positive impact on future fiscal outturns.

3.1   *Reducing the Government Debt*

In the period 1994 to 1999 the General Government debt-to-GDP ratio in Ireland almost halved from 86 per cent. to 47 per cent. (in ESA79 terms). The debt-to-GDP ratio is expected to decline further to 36 per cent. (in ESA95 terms) by 2002, according to the Stability Programme Update. Although a regular pre-funding contribution is being made in 1999 and subsequent years and government investment has also increased considerably in recent years, fiscal surpluses and a decline in the absolute level of the debt is projected in the years 2000 to 2002. Beyond that period, the LTIG "baseline" projections suggest that continuing surpluses and strong, if slowing, economic growth would lead to the absolute and relative level of debt continuing to fall well into the 21st century.

While the prospect of a falling government debt would seem to be a welcome and enviable situation for any government to be faced with, it nevertheless raises a number of issues for consideration by government. It also raises some practical difficulties for central banks in conducting monetary policy operations and could also have implications

for financial management more generally. The specific difficulties for government and for the monetary/financial system are addressed separately below.

Issues for Government

The reduction in the debt-to-GDP ratio to a level of 52 per cent. (ESA95 basis) by end-1999 means that the Irish debt ratio is within the 60 per cent. Maastricht Treaty reference value. As Balassone and Monacelli (2000) illustrate, however, member states (even those attaining balanced structural budget positions) whose debt-to-GDP ratios remain close to the 60 per cent. level may need in a cyclical downturn to pursue procyclical fiscal policies to ensure that their debt levels do not rise and violate the Treaty's debt rule. Lane (1999) argues that given its greater vulnerability to external shocks the Irish fiscal authorities should strive for a below-average debt ratio relative to other countries. These arguments suggest that as a starting point in examining longer-term fiscal policy options a further reduction in the debt-to-GDP ratio through running fiscal surpluses should not be neglected. Focussing on maintaining fiscal surpluses over the medium-term not only helps to reduce the debt but may also have the benefit in an economy such as Ireland, where a positive output gap appears to exist at the moment, of acting to damp domestic demand and inflationary pressures.

Against this, fiscal surpluses generate demands for increased government expenditure and tax reductions which if successful would add to overheating pressures. It is possible that private sector behaviour will be influenced by a commitment to a continued debt reduction strategy. For instance, the personal savings ratio in Ireland seems to have declined in recent years at least in part it seems due to the government having become a net saver (Central Bank of Ireland, 1999, pp.31-32). Duffy et al (1999, p.98) expect the personal savings ratio to continue to decline in the medium-term *"because of the considerable improvement in the state of the public finances which means that the household sector can afford to consume today, safe in the knowledge that tax rates and government borrowings are unlikely to rise rapidly in the medium-term"*.

Combined with a buoyant economic environment, a continued reduction in the debt-to-GDP ratio effecting a lower private savings ratio might have two significant implications for private sector behaviour and

the economy more generally. First, a lower rate of savings has as its corollary a higher rate of current spending by the private sector. Such an increase in the rate of spending could add to any overheating pressures that exist in the economy. Secondly, lower or declining savings could also increase the net borrowing position of the Irish household sector that emerged in the late 1990s, leaving that sector more exposed to increases in interest rates or adverse economic developments.

Issues for Monetary Policy and the Financial System

Government securities have traditionally played an integral role in the operation of monetary policy. Open market operations involve the buying and selling of government securities and derivatives of those securities. Government bond markets, through their large size and diverse maturity spectrum, also facilitate a smooth monetary policy signalling process.

Government securities also have an importance in financial markets more generally. Since they have little or no credit risk, government security prices provide a benchmark against which the prices of private securities and derivatives can be ascertained or based. Their comparatively low credit and liquidity risk also means that government securities are often seen as essential to reducing the overall risk of private asset portfolios. Furthermore, government debt is also often required as preferred or required capital backing for banks and private pension funds.

A falling level of debt has implications for these areas of monetary and financial management. For the banking and pension fund industries, it means that there is less government debt available for holding for hedging or prudential needs. The reduction in the overall size of the bond market and the prospect of lower or even negative gross and net issuance of bonds could impair the government bond market's ability to facilitate smooth signalling within financial markets in general and by the monetary authority in particular.

With government deficit levels in the European Union having decreased to low levels in recent years and with seven EU member states expecting to have government balances in surplus by 2002[5], the implications of falling debt levels for monetary policy and financial security could soon emerge as an important issue in Europe. Given the difficulties that falling debt might pose in this area, governments might have to consider maintaining a minimum level of gross debt to facilitate the smooth operation of financial markets and monetary policy (OECD, 1999)[6]. This might suggest that EU governments faced with the prospect of budget surpluses might need to consider alternatives to using them solely to reduce gross government debt.

3.2   *The Establishment of Pension Funds*

One alternative to reducing the government debt alone as a long-term fiscal strategy in favourable circumstances is to initiate a policy of prefunding future government pension outlays. The adoption of a policy of partial prefunding was announced by the Irish government in 1999. In this sub-section, the proposed prefunding scheme and the initial prefunding payments made in 1999 and 2000 are described. There is also a discussion of a number of issues arising from this policy initiative.

The Social Welfare Reserve Fund and the Public Service Pensions Fund

The Irish government decided in 1999 to initiate a policy of prefunding part of the future costs of social welfare and public service pensions by setting aside one per cent. of GNP annually for this purpose. The first annual contributions to the funds for both 1999 and 2000 were made on 1 December 1999.

_____

[5]   According to the Stability Programme Updates and Convergence Programme Updates.

[6]   See OECD (1999) and the Gensler, Bennett et al, and Fleming papers in Federal Reserve Bank of New York (2000) for a detailed discussion of the difficulties and possible solutions in this area.

Two pension funds are being set up. The first fund is a *Social Welfare Reserve Fund* (SWRF) which, according to Eurostat accounting conventions, will be inside the General Government Sector, and will receive two-thirds of all contributions. The second fund is a *Public Service Pension Fund* (PSPF) which, according to Eurostat accounting conventions, will fall outside the General Government sector and will be in receipt of the other one-third of all contributions. The impact of this accounting practice and the distribution of contributions between the two funds is that the annual 1 per cent. of GNP contribution will reduce the General Government balance by about one-third of 1 per cent. of GDP per annum[7].

In 1999, the state telecommunications company, Telecom Eireann, was privatised with £3.7 bn. being received by the state from the shares sale. It was decided firstly to utilise £1.25 billion of the proceeds to discharge in 1999 existing pension liabilities arising in respect of employees and former employees in both Telecom Eireann and the State postal company, An Post. Because these liabilities arise to entities outside the General Government sector, the impact on the 1999 General Government balance is to reduce it by 1.9 per cent. of GDP. The balance (£2.4 billion) of the privatisation receipts will be allocated to the two new pension funds in 2000 in the agreed two-thirds to one-third breakdown. This means that £0.8 billion will be allocated to the PSPF which will have the effect of reducing the General Government balance by about 1.1 per cent. of GDP in 2000.

A further tranche of funds will arise from the Telecom Eireann privatisation in 2000 and will be distributed to the two Funds in the two-thirds to one-third ratio. This will reduce the General Government balance by a further 0.5 per cent. in 2000. The full impact, therefore, of using Telecom privatisation receipts for prefunding public sector pensions is to reduce it by 1.9 per cent. of GDP in 1999 and by 1.6 per cent. in 2000. The privatisation allocation to the PSPF in 2000 will be

_____

[7]   Care must be taken when switching between GNP and GDP bases in the case of the Irish economy since there is a substantial difference between these two measures due to exceptionally large Net Factors Income Flows arising from the openness of the economy and high levels of direct foreign investment.

added to by the first two annual contributions of one-third of one per cent. of GNP (for the years 1999 and 2000) being put into that Fund during 2000. Accordingly, the total payments to the PSPF will reduce the General Government balance by 2.2 per cent. in 2000 (see Table 3 for the impact of these measures on the 1999 and 2000 General Government Balance).

Substantive legislation required for the establishment of the two funds is not yet in place. The amounts being allocated from the Telecom Eireann privatisation proceeds for prefunding purposes and the initial regular contributions to the Funds are being held in a Temporary Holding Fund (established in December 1999) until the substantive legislation is enacted. Among the issues to be addressed in drawing up that legislation is the need to ensure that the Funds are "ring-fenced" in the sense that monies in the Funds can be utilised solely for meeting the future pension outlays for which they are intended; at what time in the future and in what manner will drawdowns from the Funds to meet pension costs commence; who will manage and control the Funds; and what investment mandate is to be followed by the managing authority.

Accounting Issues and the Stability and Growth Pact

Table 3 illustrated that, within ESA95 general government accounting practice, payments to the SWRF will have no impact on the General Government budget balance because that fund is within the General Government sector. In contrast, the PSPF is, under ESA95, outside the General Government sector so that payments by government to that fund reduce the General Government budget balance.

This feature of ESA95 is particularly interesting in the context of EU member states' need to adhere to the Maastricht Treaty and the Stability and Growth Pact. The Treaty requires that "Member States shall avoid excessive government deficits" (Article 104c). Compliance with Article 104c requires that the General Government deficit does not exceed 3 per cent. of GDP and that the General Government debt does not exceed 60 per cent. of GDP. The Pact was adopted in 1997. It clarifies and strengthens the Treaty's fiscal requirements. In particular, member states are required to adhere to the medium-term objective of budgetary positions close to balance or in surplus. The emerging view is that, in practice, this provision will require that member states' structural

budget balances do not fall below a level that ensures that the actual General Government budget balance will not exceed the 3 per cent. Treaty deficit limit in normal economic circumstances.

Table 3. The Impact of Pensions Prefunding and Once off Pensions Costs on the General Government Balance (GGB)

	Impact on 1999 GGB (% of GDP)	Impact on 2000 GGB (% of GDP)
Payment of Telecom Eireann and An Post Pensions liability from Telecom Privatisation Proceeds	-1.9	
Payment to SWRF of Telecom privatisation proceeds		No Impact
Payment to PSPF of Telecom privatisation proceeds		-1.6
Payment to SWRF of regular 2/3 of 1 percent of GNP allotment for 1999 and 2000		No impact
Payment to PSPF of regular 1/3 of 1 per cent of GNP allotment for 1999 and 2000		-0.6
Total Impact on GGB	-1.9	-2.2

Source: *Stability Programme December 1999 Update.*

The ESA95 statistical standard is used to assess fiscal performance in the EU member states. As illustrated above, a payment to a pension fund outside the General Government sector reduces the General Government budget balance. Since it constitutes a discretionary policy action, it will also reduce the structural budget balance. Payments to a pension fund like the PSPF, therefore, imply that, all other things being equal, there is a greater possibility of an excessive deficit arising in the medium term and the member state being found to be in violation of

its Treaty and Pact commitments. The Pact accounting rules, therefore, seem to provide a disincentive insofar as member states may wish to prefund their future public service pension outgoings but are penalised under the Pact for doing so. Payments to both Funds also occur at the expense of a reduced pay-off of gross government debt. For member states, therefore, whose structural budget balance is not yet at or just at the close to balance level required by the Pact and/or whose gross debt is close to or in excess of 60 per cent. of GDP, there appears to be no incentive within the EU fiscal code to initiate prefunding.

The use of privatisation receipts for prefunding of public sector pensions is also discouraged within the Pact framework. This is because in ESA95, privatisation receipts are not counted as General Government revenue but their use as a pre-funding contribution to future public service pension outlays increases General Government expenditure with a consequent decline in the General Government budget balance. Privatisation of state-owned companies is being promoted by many EU governments as a means of improving their efficiency and competitiveness in increasingly globalised markets. What might be considered a prudent application of privatisation receipts over the next few years - using them to reduce future public service pension liabilities - may, however, be less desirable in a fiscal environment governed by the Treaty and the Pact, given the negative impact the overall transaction has on the General Government budget balance.

Political Economy Considerations of Prefunding Initiatives

One of the immediate effects of the decision to set up the regular payments to the two Funds and to use the Telecom Eireann privatisation receipts for prefunding purposes was that the General Government surplus in 1999 and 2000 is being reduced by about 2 per cent. in both years. A potential benefit is that with there now being lower recorded budget surpluses the government might be in a position to argue that there is less scope available at this time for increases in current expenditure or reductions in tax rates. Although this argument would suggest that the public is myopic (in the sense that it does not see the positive impact that pre-funding has on the long-term fiscal position), the government can at least point to the fall in the structural budget surplus as a result of the prefunding and the Pact requirement of budgetary positions close to balance or in surplus as a basis for resisting

demands for expenditure increases or tax cuts. This is one benefit of the Pact framework: it means that member states whose structural budget balance is significantly better than the close to balance or in surplus level can use prefunding (which has no direct impact on domestic demand) to eliminate pressures for spending the "excess" structural budget balance in other ways [8].

Beyond the Pact-related considerations, a more long-term benefit is that the Funds specifically target meeting the prospective increases in government pensions bills in the future (the government has signalled its intention to "ring-fence" the Funds to ensure that they cannot be utilised for any other expenditure purpose in the future). Promoting the reduction of the debt-to-GDP ratio as a basis (through lower future debt servicing costs) for meeting future increases in government pensions outlays may lead to a debt reduction policy being initially accepted by both the public and politicians. There is always a danger, however, that the savings on debt servicing will be utilised prior to or during the onset of a "pensions timebomb" for other purposes such as increased current expenditure or tax reductions for short-term political gain. While there is no guarantee either that a "prefunding dividend" would not lead to similar actions, the prefunding's specific focus on meeting future pension payments would likely mean that there will be less pressure to spend the dividend in other areas.

One possible downside to the adoption of the prefunding policy is that the initiation of the Funds could engender a lack of urgency in the need for more fundamental pensions reform in Ireland. It might induce individuals to be more complacent with regard to managing their own private pension plans. Another important consideration relates to the political economy implications of an ageing population. An ageing electorate could be expected to increase the political pressure for increases in social welfare pension rates and for improvements in the

_____

[8]   In the Stability Programme Update, the Department of Finance estimates that the cyclically-adjusted budget balance (exclusive of the prefunding payments) will be of the magnitude of 2.4 to 3 per cent. of GDP in the years 2000 to 2002. This indicates that the structural budget balance is well inside the 0.9 per cent. deficit estimated by the European Commission as the minimum required for Ireland for compliance with the close to balance provision of the Pact.

terms of public sector pensions. This political pressure (given the demographic projections) might well become substantial at a time when the PSPF and the SWRF have grown to substantial levels (for example, to the overall 26 per cent. of GNP level in 2020 in the LTIG scenario). A lobby for increased pension rates might argue that since these funds safeguard a minimum level of pension payments there is always scope for further pension rate increases.

Investment Strategies for the Funds

Both the regular 1 per cent. of GNP allocations for 1999 and 2000 and the receipt of the bulk of the Telecom Eireann privatisation receipts will imply that the two Funds will have received resources for investment of about £5 billion, some 6.6 per cent. of GDP, by end-2000. Based on the LTIG estimates (which does not allow for the impact of the Telecom Eireann privatisation allotment in 1999 and 2000 or include provision for any other possible future one-off payments to the Fund), the Funds would have a capital value of over 20 per cent. of GNP by 2020. The investment strategy for these Funds is, therefore, a very important consideration.

The investment decision-making criteria can be assessed along a number of lines. First, there is the decision whether to invest funds in public or private projects. The number of Irish public projects that would generate future revenues would appear quite limited. There is, as exemplified in the Telecom Eireann privatisation, a movement away from state ownership of commercial enterprises in Ireland (as is also the case in many other countries). Non-commercial state enterprises do not offer the prospect of generating future dividends and there is little tradition of charging for the use of certain public goods in Ireland (for example, there are few toll roads in Ireland); there is, consequently, little expectation of those activities generating competitive returns, at least in the short-to-medium term.

If investment in private capital markets, therefore, seems to be the more viable consideration for the Funds' managers, the question arises as to how the investment strategy should be weighted between investing in the domestic Irish capital market or in foreign capital markets. Besides the normal investment considerations (for example, the risk-return tradeoffs available), the impact of investing in the domestic

capital market needs special consideration. The Irish equity market is small with a capitalised value of £108 billion (at end-1999). As mentioned above, the two Funds will have about £5 billion for investment by end-2000. Investment of large tranches of the Funds in the domestic stock market could have significant consequences. In particular, such large-scale buying could lead to a substantial rise in the overall stock market value that might be unwarranted from an economic perspective.

The initial investment of a large part or all of the £5 billion being alloted to the Funds in 1999 and 2000 in the domestic stock market might add, via a wealth effect, a significant stimulus to domestic demand that would be untimely given the signs of overheating already visible at this time in the Irish economy. Concerns have also been expressed that large-scale investment in domestic stocks could lead to effective nationalisation of much of Irish industry with negative consequences for the long-run performance of the affected companies and thereof for the return to the Funds investment (see, for example, Davis (1999)). Lane (1999) advocates investing largely in overseas assets as a sensible hedge, to improve the liquidity of the investment portfolio, and to avoid politicisation problems.

4   Fiscal Sustainability in Fast-Growing and Catching-Up Economies

This section examines the role economic growth plays in the long-run evolution of the public finances and the sustainability of the public finances. The notion of fiscal sustainability embraced in the Maastricht Treaty links fiscal variables and national income, with public finances being regarded as sustainable when the General Government deficit-to-GDP ratio is below 3 per cent. and the General Government debt-to-GDP ratio is below 60 per cent.

The role of investment in economic growth theory also deserves consideration. Government investment, particularly in the area of public goods provision, may be very important in fast-growing, catching-up economies. In spite of its possible strong role in consolidating and maintaining economic growth, government investment

is not distinguished from other government expenditure items in meeting the basic requirements of the Maastricht and Pact fiscal codes.

Sub-sections 4.1 and 4.2 review the facets of the economic growth literature with particular relevance to fiscal sustainability issues. In sub-section 4.1, the arithmetic of fiscal sustainability underlying the Treaty's requirements is considered. The importance of the rate of economic growth and its relationship to the rate of interest in examining fiscal sustainability issues is highlighted. In sub-section 4.2, there is a discussion of the critical role of the relationship between the interest rate and the growth rate and between savings and investment in standard neoclassical growth theory. The distinction between short run and long run equilibria in neoclassical growth theory is also highlighted.

In sub-section 4.3, the implications of this review for the fiscal rules that have been adopted in EMU are considered. It is argued that the rules may prove over-imposing on fast-growing, catching-up economies, in particular by restricting government investment.

4.1 The Arithmetic of Fiscal Sustainability

The Domar Framework

The predominant analytical framework used to assess fiscal sustainability is based on the intertemporal budget dynamics introduced by Domar in the 1940s. This arithmetic of sustainability is centred around the relationship between government budget balances and debt levels. This framework provides the threshold figures of 3 per cent. and 60 per cent. of GDP for government deficits and debt, respectively, that underlie the Maastricht Treaty and the Stability and Growth Pact.

Albert Einstein is credited with the remark *"that everything should be made as simple as possible but not simpler"*. The conditions for the sustainability of fiscal policy are presented quite simply in the Domar framework. Expressing the government budget constraint as follows:

$$\mathbf{D = G - T = \Delta B + \Delta M}$$

where   D is the government deficit
              G is government expenditure

B is government debt

T is tax receipts

M is the money supply

The budget deficit can be financed by issuing money ΔM or by issuing government debt through bonds ΔB. Under EMU, no monetary financing is allowed so $\Delta M = 0$ such that $D = \Delta B$. Expressing each as a percentage of GDP (Y) we get the deficit to GDP ($d = D/Y$) and the debt to GDP ($b = B/Y$) ratios. Using the latter we get $B = b.Y$. To get the change in the debt (ΔB) we can use total differentiation, or in this case the product rule of differentiation, to get

$$\Delta B = b.\Delta Y + Y.\Delta b$$

Divide both sides by GDP (Y)

$$\Delta B/Y = b.(\Delta Y/Y) + Y/Y.\Delta b$$

$$\Delta B/Y = b.g + \Delta b$$

where $g = \Delta Y/Y$ is the NOMINAL growth rate of GDP.

Using the fact that $\Delta B = D$, then $\Delta B/Y$ is $\Delta/Y = d$. The debt sustainability rule in this simple framework is

$$\Delta b = d - b.g$$

Fiscal policy is defined to be sustainable in this context if it leads to a stable or decreasing government debt ratio over time. In order to stabilise the debt ratio (not necessarily the level of debt) we should set

$$\Delta b = 0 = d - b.g$$

$$d = b.g$$

This implies a very simple rule for sustainability that the deficit to GDP ratio must equal the nominal growth of GDP times the debt to GDP ratio. With this neat rule the Maastricht convergence ratios can be inserted such that $d = 0.03$ and $b = 0.6$. The nominal growth rate of GDP consistent with these ratios is 5 per cent. ($g = 0.03/0.6 = 0.05$). This rule highlights in a simple way the importance of nominal output growth for debt dynamics.

Fiscal Sustainability and the Relationship between the Rate of Interest and the Rate of Growth

While this representation illustrates the role of economic growth in assessing fiscal sustainability, a more useful representation, with a richer economic interpretation, separates out interest payments on the debt from the budget balance, leaving a primary budget balance. Let P denote the primary balance such that

$$P = G - T$$

where

$$D = P + i.B$$

Dividing by GDP (Y) to express as a ratio

$$d = p + i.b$$

From earlier we have

$$d = \Delta b + b.g$$

such that

$$\Delta b = p + i.b - b.g$$

The sustainability rule now is

$$\Delta b = 0 = p + (i - g).b$$

or

$$- p = (i - g).b$$

In this representation, the requirements for fiscal sustainability depends on the rate of interest (or the intertemporal price) and the rate of growth such that:

- If $i > g$ then $p < 0$ (primary surpluses) required;

- If $i < g$ then $p > 0$ possible in medium term but not sustainable in the long term.

This formulation can be used with both growth and interest rates in real or nominal terms as long as they are consistently applied.

While this representation enhances the basic Domar framework, it may still be too simple. The dynamics involved are obviously much more complex and the cyclical position of the economy is important for sensibly interpreting such rules[9]. However, this simple framework highlights the importance of the relationship between the economy's interest rate and growth rate for fiscal sustainability.

4.2   *Economic Growth Theory and Fiscal Sustainability*

The Golden Rule

The relationship between the interest rate and growth rate is also critical within standard neoclassical growth theory. Neoclassical growth theory states that an economy is dynamically efficient when it follows the so-called "golden rule"[10]. This golden rule determines how much capital stock is required to ensure that each generation has a constant, or sustainable level, of per capita consumption. The precise conditions of the golden rule depends upon the model of the economy used and its treatment of investment and savings.

A simple version of the golden rule based on a growth model with a constant savings rate (described as the Swan-Solow model) is that the marginal productivity of capital (MP_K) at the golden rule level of capital stock (K^G) equals the effective depreciation rate for the capital/labour ratio. This effective depreciation rate is equal to the rate of capital depreciation (δ) and the rate of growth in the labour force or population (n). This condition ($MP_K(K^G) = \delta + n$) keeps the economy at its steady state or long run equilibrium growth rate[11]. The intuition is that

_____

[9]   The dynamics can be much richer using difference equations as in Marin (1999) or with differential equations as in Kinnunen and Kuoppamaki (1998).

[10]   Phelps christened the "golden rule" with its biblical connotation of "do unto others as you would have others do unto you".

[11]   While in principle the long run equilibrium can follow a path that is quite irregular, issues of tractability and simplicity have led to attention being confined to the steady-state, that is where the various quantities grow at constant rates. Ironically this is why the neoclassical growth theory is not really a theory of growth at all.

capital must grow at a rate that matches both the growth in the labour supply factor, in order to keep the capital/labour ratio constant, and the rate of depreciation, in order to account for the decay in the capital stock that naturally occurs over time.

Savings and Investment

In the 1940s economic growth debate, Domar, along with Harrod (although working independently of each other), attempted to integrate the implications of full employment with elements of economic growth in response to the Keynesian revolution.

The Harrod-Domar growth model has only one sector with three elements - exogenously determined labour supply growing at a given rate g_L; a production function converting capital and labour input into output and a savings and investment relationship. They derived two fundamental conditions that need to be satisfied to ensure long-term full employment. The first condition was that the economy must invest the full employment level of savings every year, or else if investment is short of this level, demand will be insufficient for full employment. The second condition was that the rate of growth of output must equal the growth of the labour force plus the rate of increase in labour productivity.

For this equilibrium growth to hold it is necessary that the labour force and the capital stock be fully employed. The level of investment is associated with the level of output but also with the rate of growth of output through changes in the capital stock. To maintain the full employment capital stock, output must grow at a rate equal to what Harrod described as the "warranted" rate. This warranted rate was equal to the constant savings from output rate (s) divided by the coefficient for capital in the fixed coefficients production function (v).

$$g = \frac{s}{v}$$

On the labour side the condition is that output growth should equal the growth in the labour force (g_L) plus the productivity growth (λ). Therefore

$$g = g_L + \lambda$$

So these constitute the Harrod-Domar conditions

$$g = g_L + \lambda = \frac{s}{v}$$

This is a "knife-edge" condition. If it is violated, either excess capital or unemployed labour results which leads to instability in the model. This results in oscillations around the steady state path. However, this instability results from the overdetermination of the model with its initial assumptions of constant capital/labour, capital/output ratios etc.. These rigidities can be removed by allowing for less specific production functions that allow for more realistic input substitutability and savings rates that are determined by profits and incomes that derived from the growth process. These extensions are carried out in the neoclassical growth model of Swan-Solow and so on.

Modern Growth Theory and the Modified Golden Rule

Barro and Sala-i-Martin (1995, p.10) state in their widely acclaimed text that *"between Ramsey and the late 1950s, Harrod and Domar attempted to integrate Keynesian analysis with elements of economic growth. They used production functions with little substitutability among the inputs to argue that the capitalist system is inherently unstable. Since they wrote during or immediately after the Great Depression, these arguments were received sympathetically by many economists. Although these contributions triggered a good deal of research at the time, very little of this analysis plays a role in today's thinking"*.

More modern neoclassical growth models endogenise savings rather than assuming them to be a constant fraction of income. This is done on the basis of optimising choices made by households. In order to handle this optimisation it is necessary to assume either a "representative agent" that is infinitely long lived or else consider an economy of "overlapping generations". These Ramsey-type growth models with

consumer optimisation state that the golden rule level of the capital stock occurs where the interest rate (i) equals the steady state growth of output (g)[12]. The interest rate is equal to the marginal productivity of capital less the rate of capital depreciation $(MP_K(K^G) - \delta)$. This equality depends upon an assumption of competitive firms, so it is important to note that perfectly competitive markets and constant returns to scale are assumptions of these type of growth model. The steady state growth rate is equal to the rate of technical progress (x) plus the rate of population growth (n). Therefore, in these models, the golden rule is

$$i = MP_K(K^*) - \delta = n + x = g$$

$$i = g$$

While this a simple condition, it may be too simple. This model can lead to too much savings. A modification to this condition is where the real interest rate equals the effective discount rate. The intuition here is the usual rationale given for discounting future values. The social rate of time preference, reflected by the effective discount rate, is equal to the social opportunity cost of capital, reflected by the interest rate. However, again the interest rate will typically only equal the discount rate under the quite restrictive assumptions of perfectly operating capital markets, no capital taxes and so on. The "modified golden rule" is

$$i^* = MP_K(K^*) - \delta = \rho + \theta x$$

where ρ is the rate of time preference and θ is the intertemporal substitutability of consumption, such that θx term is the diminishing marginal utility of consumption. This modified golden rule overcomes the dynamic inefficiency problem of oversaving that arises in the simpler model because the households optimise and being infinitely lived as in the representative agent model or interacting with future generations as in the overlapping generations model they will not be myopic. The lower optimal savings imply that the modified steady state golden rule capital stock $K^* < K^G$. The intuition here is that the optimising household does

_____

[12]   These long run growth models deal only in real terms so that the interest rate (i) throughout this section is the real interest rate along with real growth rates of output (g).

not save enough to attain the golden rule capital stock because their impatience, reflected in the effective discount rate, does not make worthwhile sacrificing more current consumption for higher steady state consumption. Here another key assumption of these models becomes vital, that is diminishing returns to capital such that $MP_K (K^*) > MP_K (K^G)$. Therefore

$$i^* = MP_K(K^*) - \delta > MP_K(K^G) - \delta = i$$

$$i^* = \rho + \theta x > n + x = i$$

$$i^* > g = i$$

This modification therefore suggests that the equality of the growth rate (g) and the interest rate (i) may have no general applicability outside the growth model with constant savings.

Short Run and Long Run Equilibria

There are two kinds of equilibria in neoclassical growth theory that need to be distinguished. One is the short run, or momentary, equilibrium where the population, capital stock and technical know-how are fixed. The other is the long run equilibrium where all of the production factors can grow. The long run equilibrium, or steady state, implies momentary equilbria for all dates. However, a series of momentary equilibria are not necessarily a long run equilibrium. For momentary equilibria to constitute a long run equilibrium there must be a rational expectations, or dynamically efficient, equilibrium. This dynamically efficient outcome requires that the actions of agents taken on a given date, based on their expectations of future dates, is still consistent when these future dates arrive[13].

These are important distinctions. If the momentary outcome is dynamically inefficient then the economy is not on its long run

_____

[13]   In the context of fiscal policy, such dynamic efficiency arguments are tied up with the Ricardian Equivalence theorem. It is interesting to note that the fiscal performance of the Irish economy in the late 1980s has been offered as an example of "expansionary fiscal contractions" based on a version of the Ricardian Equivalence theorem.

equilibrium path. If the economy is not on its long run growth path the conditions for dynamic consistency may no longer be desirable. This is the same intuition as the "theory of the second best". Indeed, as seen above, many of the assumptions used in the growth theory, such as constant returns and perfectly competitive markets, are those invoked by the "fundamental welfare theorems"[14]. The theory of the second best says that in the absence of being able to attain all the conditions necessary for the existence of Pareto efficient equilibrium the second best position is not necessarily the one in which the remaining conditions will hold. As Obstfeld and Rogoff (1996, p.172) point out, *"the behaviour of dynamically inefficient economies wreaks havoc with much of our intuition about the laws of economics".*

4.3   *Implications for Fast-Growing and Catching-Up Economies*

Economies in Transition

In the current circumstances, with the growth rate exceeding the interest rate, the long run dynamic efficiency conditions for steady state growth are not being met in Ireland. This in itself, however, does not give any clear indication whether it would be better for interest rates to at least equate with the growth rate in the short term. It may be that the Irish economy is not on its equilibrium path but is in a transitional phase, moving towards a higher sustainable growth path. This might justify the current interest rate - growth rate relationship.

Although the evidence is mixed, a view held in growth economics is that poorer countries tend to grow faster than richer countries and thereby eventually converge in living standards with those richer countries. Once this convergence is achieved a slowdown in growth rates occurs. For countries starting from a relatively low base, convergence over time to slower-growing, richer countries would be expected given the openness to foreign direct investment, technology,

_____

[14]   The first fundamental welfare theorem is that all competitive equilibrium outcomes are Pareto efficient while the second fundamental welfare theorem is that all Pareto efficient outcomes can be derived from competitive equilibria if there are suitable lump sum transfers available.

trade and financial flows. There is evidence of this convergence occurring for Ireland, for example, as it quickly approaches the EU average standard of living. Within this growth context, the Irish economy can be seen to be in an exceptional growth phase as it moves onto another growth path. The economy can be expected to slow down once it reaches a new steady state path. Factors that can be expected to slow economic growth over the coming decades include the elimination of economic slack, physical congestion constraint, slowdown in population growth, convergence achievement, achieving a steady state skills level, and reaching environmental sustainability limits.

While Ireland is the classic example of an economy currently experiencing high economic growth rates in the EU, there is a wide range of growth rates and stage of development experiences across the EU at present. A dichotomy between mature economies and fast-growing, catching-up economies may become more clearcut if there is an accession of eastern and southern European countries into EU in the future. It is important in this context to assess whether the commonly-applied EU fiscal rules, provided by the Maastricht Treaty and the Stability and Growth Pact, will cater successfully for the diversity of investment and public finance considerations that is becoming more evident in the EU.

Government Investment, Debt Reduction, and the Treaty and Pact Fiscal Rules

The lesson from the quick pass-through of traditional economic growth theory in the previous sub-sections suggests that sustainability rules involving interest rates and growth rates need to take account of the stage of development of the economy. It also points to the need for an economy that is experiencing a rapidly growing labour force to acquire greater capital and infrastructure provision to return to an equilibrium growth path. An infrastructure deficit, as is recognised to exist in Ireland at present (see Appendix 1), may justify increased investment to bring the economy onto an equilibrium growth path.

Government may need to play a key direct role in the investment process, particularly in the provision of infrastructure. In this respect, the Irish government has in recent years increased significantly its investment programme and has committed itself to increase the level

of investment per annum over the medium term in the *National Development Plan 2000-2006* (NDP) (see Appendix 2 for further details).

The economic growth literature, therefore, and experience may point to the need for a comparatively high level of government investment while economies are in transition. The difficulty is that the fiscal requirements of the Treaty and the Pact, however, may limit the scope for increased government investment at a time when it is needed to eliminate infrastructure and capital deficiencies that hinder long-term growth prospects.

The Treaty and the Pact impose practical constraints on the level of government investment and do not differentiate between the varying growth rates across member states and the different current debt positions of member state governments. From a monetary policy and demand management perspective, this is understandable as imposing a uniform, low deficit limit ensures that member states' fiscal policies are each complementing the single monetary policy. The imposition of a uniform deficit limit may be open to criticism, however, on two grounds, both with particular relevance to developing EU economies.

First, from a pure fiscal sustainability perspective, uniform requirements of a 3 per cent. deficit limit and budgetary positions close to balance or in surplus may make less sense when viewed from the varying stages of economic development across member states. The Treaty's 3 per cent. deficit limit, for example, may be unnecessarily restrictive for ensuring fiscal sustainability in economies where nominal growth rates exceed 5 per cent. (as illustrated in Appendix 3). Achieving a budget balance that averages close to zero or in surplus over the economic cycle, as specified in the Pact, would be more restrictive again than what is required for a sustainable debt level. For fast-growing economies, therefore, the EU fiscal criteria may impose deficit requirements that go beyond what is required to achieve sustainable debt positions.

Secondly, the Treaty and Pact rules may restrict government investment within EU member states. All other things being equal, increased government investment reduces the structural budget balance and, consequently, increases the possibility of the member state

concerned being found to be in violation of the Pact requirement of having a structural budget position close to balance or in surplus. If a member state is struggling to meet the close to balance requirement, either in the future or more immediately[15], reducing government investment before increasing taxes or reducing current expenditure may be a comparatively easy political option but would occur at a greater cost to the long-term development of the economy.

A reduction in government investment may be less critical in mature economies with an already well-developed infrastructure and where an improved primary balance may be of critical importance, either to reduce high debt ratios or to meet imminent increases in ageing-related expenditures. For other member states with comparatively low debt levels and favourable demographic prospects but a poor and increasingly restrictive infrastructure, an improvement in the structural budget balance to the close to balance level may make little sense from either a fiscal sustainability or a long-term economic growth point of view. Fast-growing economies may even be in a position to run budget deficits in excess of the 3 per cent. Treaty limit for investment purposes while still reducing their debt-to-GDP ratio. In this context, where some economies can achieve declining debt-to-GDP values with deficits in excess of 3 per cent. and are also those in need of a significant increase in government investment, there are some grounds for considering allowing the government deficit to exceed the 3 per cent. limit for investment purposes. This stresses the need to examine the appropriateness and feasibility of fiscal "golden rules" in EMU[16].

To sum up, the economic growth literature suggests that there may be some justification for an economy that has under-utilised resources, underdeveloped capital or deficient infrastructure running larger budget deficits for investment purposes than other countries. Fiscal rules designed to aid short-term macroeconomic management, however,

_____

[15] According to the Opinion of the Monetary Committee (MC/II/482-98-final), which was endorsed by the Ecofin Council, the medium-term objective should be achieved by no later than 2002.

[16] See Buti and Sapir (1998) and Balassone and Franco (2000) for discussions in this area.

may impede government investment programmes. With the existing EU member states having different medium-to-long term growth rate prospects and such differences across the EU likely to be accentuated if there is an accession of new member states in the future, it is important that the implications of the Treaty and Pact fiscal rules for long-term economic growth are more closely examined.

5   Conclusion

With a favourable demographic profile in prospect for many years to come, the expectation of only a gradual unwinding of output growth rates from the current very high levels, and a budget balance currently in surplus and gross government debt under 60 per cent. of GDP and falling, Ireland would seem to be an economy with time on its side before any concerns about fiscal sustainability might arise.

In this paper, it has been argued that even in economies with time on their side policy-makers must address important issues in assessing how best to manage benign fiscal prospects. They have to assess the pros and cons of reducing the government debt against prefunding state pension liabilities, for instance. They may also have to assess whether a large increase in government investment would be prudent. This is because while a fast-growing economy can provide an environment for favourable fiscal outturns, it can also highlight infrastructure deficiencies, particularly in a converging economy, that threatens to retard long-term growth prospects.

The paper has also pointed to how long-term fiscal decision-making in EU member states has been made more complex by the Treaty and Pact rules governing fiscal behaviour in the EU. These rules and General Government accounting practice appear to provide a disincentive against prefunding schemes. Furthermore, the rules may limit the attainment of optimal growth path of an economy and may restrict government investment policy, particularly in economies where significant government investment may be warranted. Assessing how EU fiscal rules could be reformed to overcome these difficulties seems like a topic worthy of immediate consideration by policy analysts and academics alike.

APPENDIX 1
THE IRISH INFRASTRUCTURE DEFICIT

Some Indicators of the Infrastructure Deficit

The relatively high rate of economic growth in Ireland in recent years has seen per capita Irish income levels rapidly converging on the average EU level. This growth has coincided with a large increase in the number of employed persons from 1,220,000 in 1994 to 1,669,000 in 1999 (CSO, 2000). One of the issues highlighted and exacerbated by these developments is Ireland's infrastructure deficit in an international context. While Ireland's competitiveness rankings in many key areas (see Table 4), are quite impressive in both an international and EU context, Ireland's competitiveness ranking for infrastructure is quite poor.

To illustrate its infrastructure deficiency in key areas, some indicators of Ireland's road infrastructure provision are given in Table 5. Ireland's road network provision appears on first viewing to be quite satisfactory. Both the density of road network and population per kilometre of road network compare reasonably in an EU context. As

Table 4. Ireland's Competitiveness Rankings 1999

	Among 46 Countries	Among EU
Overall	11	6
Domestic Economy	2	1
Internationalisation	8	4
Government	5	1
Finance	16	10
Infrastructure	23	12
Management	7	4
Science	11	7
People	21	9

Source: IMD (1999).

Table 5. Road Infrastructure in Ireland

	Density of Road Network (km of roads/ km^2 of area)	Population per km of Road Network	Motorways as a % of Total Road Network
Ireland	1.3	39	0.1
Belgium	4.6	71	1.2
Denmark	1.7	73	1.1
France	1.8	60	0.8
Germany	1.8	127	1.7
Greece	0.9	90	0.2
Italy	2.7	70	0.8
Luxembourg	1.7	80	2.0
Netherlands	2.5	148	2.1
Portugal	0.8	138	0.8
Spain	0.3	229	4.4
UK	1.6	150	0.8
Austria	1.3	75	1.5
Finland	0.2	65	0.5
Sweden	0.3	66	0.8

Source: IBEC (1998)

Table 5 illustrates, however, Ireland has a quite poor motorway provision. The pick-up in both commercial and non-commercial traffic has put the existing road infrastructure under considerable strain[17].

The pressures in road transport are being echoed in other transport areas. In terms of water transportation, Ireland ranks 14th of the 15 EU member states in the IMD (1999) indicator of water transportation efficiency. This ranking arises in a context where, for example, the total tonnage of goods handled by Irish ports has risen from 27 million tonnes in 1992 to 40 million tonnes in 1998 (CSO, 1999). Outside the transport sphere, IBEC (1998) and the National Competitiveness Council (1999) also point to substantial infrastructure needs in Ireland in the environment, energy, telecommunications, and education, science and technology areas.

Ireland's infrastructure deficit, therefore, is being increasingly highlighted in recent years as rapid economic growth and inward migration have put considerable pressure on the existing infrastructure, in particular transport infrastructure. As a number of recent reports have pointed out, this increased congestion threatens to lead to significant infrastructure bottlenecks emerging unless addressed by rapid, major investment[18].

"The impact of this serious structural deficit can be clearly seen in the spatial distribution of industry, and particularly foreign industry, in Ireland. The absence of road links of sufficient quality to allow speedy transportation of goods and persons between major population centres and air/seaports has led to a huge concentration of industry in and around Dublin. This in turn is having serious consequences in terms of congestion, leading to heavy demands on all public services, with public transport, the road network, and environmental infrastructure coming under particular pressure." (IBEC, 1998, pp.9-10)

_____

[17]   The total number of motor vehicles (commercial and non-commercial) under current licence in Ireland rose from 1,151,000 in 1993 to 1,510,000 in 1998 (Department of Environment, 1999).

[18]   See, for example, Duffy *et al.* (1999) and IBEC (1998).

It seems that Ireland's infrastructure deficit could hinder Irish economic growth prospects by acting as a direct constraint on industrial development, threatening Ireland's attractiveness as a location for new investment, and reducing existing industry's competitiveness on international markets. In a worst case scenario, a widening of the infrastructure deficit could threaten existing industry through forcing closure or relocation to another country.

APPENDIX 2
THE NATIONAL DEVELOPMENT PLAN, 2000-2006

The recent National Development Plan (NDP) (Department of Finance, 1999) details a commitment to invest £21 billion (in 1999 prices) in economic and social infrastructure over the period 2000 to 2006. The NDP also allocates a further £11 billion to investment in employment and human resources and £9 billion to the productive sector, bringing total expenditure to £41 billion. Some £5 billion of funding will come from the EU and a minimum of £2 billion or so from Public Private Partnerships. The remaining £34 billion of funding will be provided by Irish government. The adoption of the NDP means that Gross Fixed Capital Formation (GFCF), will continue its considerable year-on-year increase of recent years in 2000 and 2001 (see Table 6).

Table 6. General Government Capital Formation, 1996-2002

Year	IR£ million	Year-on-Year Increase	% of GDP
1996	1,059	10.5	2.3
1997	1,306	23.3	2.5
1998	1,586	21.4	2.7
1999	2,083	31.3	3.1
2000	2,522	21.0	3.4
2001	3,159	25.3	3.9
2002	3,252	2.9	3.7

Source: 1996-2000: 1 March 2000 Excessive Deficit Notification, 2001-2002: Stability Programme Update (1 December 1999) and 2000 Budget material.

APPENDIX 3
THE EU FISCAL RULES' RESTRICTIVE ARITHMETIC

The sustainability condition requiring a stable or falling debt to GDP ratio, Δb ≤ 0, can be attained with a deficit to GDP ratio in excess of 3 per cent when an economy has nominal GDP growth above 5 per cent. To illustrate this use can be made of the Domar debt sustainability condition:

$$\Delta b = d - b.g \leq 0$$

where b is debt to GDP ratio, d is the deficit to GDP ratio and g is the nominal growth rate. This arithmetic shows that the maximum 3 per cent. deficit allowed under the Treaty can prove unnecessarily restrictive for the attainment of a debt ratio of 60 per cent. or less. For example, a converging economy with a potential real GDP growth rate of 5 per cent and a price deflator of 2 per cent. (implying 7 per cent. nominal GDP growth) could run a deficit of 4 per cent. and eventually stabilise at a debt to GDP ratio below 60 per cent. (b = d/g = 0.04/0.07 = 0.57). Table 7 shows that at higher growth rates larger deficits are congruent with the attainment of debt ratios of 60 per cent. or less.

Table 7. Debt to GDP Stabilisation Ratios (b =d/g)

g \ d	3%	3.5%	4%	4.5%	5%
5.0%	60.0%	70.0%	80.0%	90.0%	100%
5.5%	54.5%	63.6%	72.7%	81.8%	90.1%
6.0%	50.0%	58.3%	66.6%	75.0%	83.3%
6.5%	46.2%	53.9%	61.5%	69.2%	76.9%
7.0%	42.8%	50.0%	57.1%	64.3%	71.4%
7.5%	40.0%	46.6%	53.3%	60.0%	66.6%
8.0%	37.5%	43.8%	50.0%	56.3%	62.5%

REFERENCES

Balassone, F. and D. Monacelli (2000), "EMU Fiscal Rules: Is there a Gap?", Temi di Discussione, No. 375.

Balassone, F. and D. Franco (2000), "Public Investment, the Stability Pact and the 'Golden Rule'", *Fiscal Studies*, Vol. 21, No. 2, pp. 207-229.

Barro, R.J. and X. Sala-i-Martin (1995), *Economic Growth*, McGraw-Hill.

Buti, M. and A. Sapir (1998), *Economic Policy in EMU - A Study by the European Commission Services*, Oxford University Press.

Central Bank of Ireland (1999), *Quarterly Bulletin*, Spring.

CSO (1999), *Statistics of Port Traffic 1998*, Dublin, Central Statistics Office.

___ (2000), *Quarterly National Household Survey,* Dublin, Central Statistics Office.

Davis, G. (1999), "Dangers in Government Plan to Provide for Pensioners of Future", Dublin, *The Irish Times*, August 18.

Department of Environment (1999), *Irish Bulletin of Vehicle and Driver Statistics 1998*, Dublin, Department of the Environment and Local Government.

Department of Finance (1999), *Ireland - Stability Programme December 1999 Update,* Dublin, Government Publications.

_____ (1999), *The National Development Plan 2000-2006*, Dublin, Government Publications.

Duffy D., J. Fitz Gerald, I. Kearney and D. Smyth (1999*), Medium-Term Review 1999-2005*, Dublin, Economic and Social Research Institute.

Federal Reserve Bank of New York (2000), "Fiscal Policy in an Era of Surpluses: Economic and Financial Implications", Conference

Proceedings, Federal Reserve Bank of New York *Economic Policy Review*, Vol. 6, No. 1, New York.

IMD (1999), *The World Competitiveness Yearbook 1999*.

IBEC (1998), *"Filling the Gap" - The Nature, Scale and Costs of Ireland's Infrastructural Deficit,* Dublin, Irish Business Employers Confederation.

Kinnunen, H. and K. Kuoppamaki (1998), "Sustainability of Public Finances in Finland and the Four Largest Euro-area Economies", Discussion Papers No. 25/98, Bank of Finland.

Lane P.R. (1999), "Budgetary Policy in Times of Plenty", *Budgetary Perspectives*, Dublin, Economic and Social Research Institute.

LTIG (1999), *Long Term Issues Group Paper,* Dublin, Department of Finance.

Marin, J. (1999), "Monitoring Budget Discipline: Some Simple Indicators", in *Indicators of Structural Budget Balances*, Rome, Banca D'Italia, pp.285-324.

OECD (1999), "Public Debt Management at the Cross-Roads", *Economic Outlook*, No. 66, pp. 161-77, Paris.

National Competitiveness Council (1999), *Annual Competitiveness Report '99,* Dublin, Forfas.

Obstfeld, M. and K. Rogoff (1996), *Foundations of International Macroeconomics*, MIT Press.